

TIMBER RIGHTS
and
FOREST POLICY
In British Columbia

VOLUME 1

REPORT OF THE ROYAL COMMISSION ON FOREST RESOURCES
PETER H. PEARSE, COMMISSIONER

VICTORIA
1976

LARNER BOWMAN

148

3/77

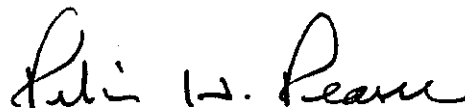
The Honourable WALTER S. OWEN, Q.C., LL.D.,
Lieutenant-Governor of British Columbia.

MAY IT PLEASE YOUR HONOUR:

In accordance with your Order-in-Council of June 12th, 1975, a Commission was issued under the Great Seal of the Province pursuant to the *Public Inquiries Act*. That Commission appointed me sole Commissioner to inquire into and report upon certain matters relating to forest policy in British Columbia.

The Inquiry has been completed, and I beg to submit my report herewith.

I have the honour to be, Sir
your obedient servant,



Peter H. Pearce, B.S.F., M.A., Ph.D., R.P.F.
Commissioner

Victoria, British Columbia,
September, 1976.

CONTENTS

Volume 1

	PAGE
Tables	vii
Figures	x
Preface	xi
 CHAPTER	
1 Forest Tenure Policy in Perspective	1
 PART I: THE RESOURCE AND THE INDUSTRY	
2 The Resource Base	15
3 Rights to Forest Land and Timber	22
4 The Industry	35
 PART II: BASIC TENURE FORMS ON CROWN LAND	
5 Priorities for Tenure Policy	55
6 Rights in the Public Sustained Yield Units	69
7 The Tree-farm Licence System	85
8 Old Temporary Tenures	97
9 Pulpwood Agreements	105
 PART III: GENERAL ISSUES OF TENURE POLICY	
10 New Allocations, Transfers and Termination of Licences	115
11 Responsibilities for Management and Development	128
12 Roads and Public Access	146
13 Taxes and Other Charges	155
 PART IV: PRIVATE FORESTRY AND SPECIAL RIGHTS	
14 Regulation of Private Forestry	181
15 Small Scale Forestry	188
16 Special Forms of Rights	195

Volume 1—*Continued*

PART V: TIMBER UTILIZATION AND MULTIPLE USE PLANNING

CHAPTER	PAGE
17 Regulating the Timber Supply	219
18 Cut Controls and Recovery Standards	241
19 Resource Planning	257
20 Special Management Problems	274

PART VI: MARKETING AND INDUSTRIAL DEVELOPMENT

21 Forest Products Markets	291
22 Export Controls	305
23 Prospects and Priorities for Industrial Development	317

PART VII: ADMINISTRATION AND POLICY REVIEW

24 Resource Administration	337
25 Policy Implementation and Review	357
26 Retrospect	372
Glossary	382
Abbreviated Titles of Frequently Cited Publications	383
Statutes Cited	383
Index	385

Volume 2

APPENDICES

A Evolution of Forest Tenure Policy	A 1
B Structure and Dimensions of the British Columbia Forest Industry	B 1
C Taxation of Forest Land	C 1
D Regulating the Harvest Rate	D 1
E Restrictions on Exports of Logs and Chips	E 1
F A Note on the Public Hearings	F 1
G Participants and Exhibits at the Public Hearings	G 1

TABLES*

Volume 1

TABLE		PAGE
2-1	Areas of Major Land Categories in the Province	16
2-2	Parks and Related Reserved Areas	19
2-3	Major Forms of Forest Cover by Forest District	21
3-1	Tenure Status of Forest Lands, 1975	26
3-2	Origin of Harvest by Tenure	27
4-1	Dimensions of the Forest Industry, 1974	36
4-2	Distribution of Committed Harvesting Rights and Timber Harvested Among Controlling Companies on the Coast	39
4-3	Distribution of Committed Harvesting Rights and Timber Harvested Among Controlling Companies in the Interior	40
4-4	Holdings of Private Forest Land and Old Temporary Tenures Outside Tree-farm Licences	42
4-5	Distribution of Manufacturing Capacity Among Largest Controlling Companies (ranked by control of lumber manufacturing capacity)	44
4-6	Distribution of Timber Rights and Manufacturing Capacity Among the Largest Firms	46
6-1	Relative Importance of the Main Types of Timber Sale Licences in Public Sustained Yield Units	74
7-1	Size and Authorized Harvests of Tree-farm Licences	86
8-1	Old Temporary Tenures in Good Standing (January, 1976)	98
13-1	Revenues from Forest Resources in 1974	159
13-2	Royalty Yields on Crown-granted Lands in 1975	159
13-3	Major Forest Land Classes Containing Taxable Forests in 1976	163
13-4	Property Taxes on Forest Lands, 1974	165
13-5	Rentals and Renewal Fees by Tenure	175
16-1	Recovery of Minor Forest Products in 1974	197
17-1	Forest Cover by District	220

Volume 1—*Continued*

TABLE		PAGE
17-2	Allowable Cuts, Harvesting Rights, and Harvests in Sustained Yield Units by Forest Districts	225
20-1	Inadequately Restocked Forest Lands in Public Sustained Yield Units	275
20-2	Distribution of Planting Activity	276
21-1	Markets for British Columbia Forest Products, 1972	291
23-1	Share of Consumption Accounted for by British Columbia Forest Products in Major Markets, 1974	318
24-1	Division of Responsibilities for Fish and Wildlife Resources	342

Volume 2

A-1	<i>1910 Fulton Report</i> Estimates of Alienated Land and Timber	A 6
A-2	Expiry Dates of Current Tree-farm Licences	A 12
A-3	"Quota" Volumes and Total Commitments in Public Sustained Yield Units, by Forest District	A 16
B-1	The Timber Harvest, 1966 to 1975	B 1
B-2	British Columbia Timber Harvest by Species, 1960, 1966, and 1975	B 2
B-3	The Harvest by Tenure of Origin, 1960, 1966, and 1975	B 2
B-4	Direct Forest Revenues, 1966 to 1975	B 3
B-5	Timber Consumption by Manufacturing Sector, 1973	B 4
B-6	Production of the British Columbia Forest Industry, 1966 to 1975	B 4
B-7	Destination of B.C. Forest Industry Shipments, 1972	B 5
B-8	Dimensions of the British Columbia Forest Industry, 1974	B 6
B-9	Distribution of Committed Harvesting Rights Among Controlling Companies in British Columbia	B 7
B-10	Committed Harvesting Rights Held by the Ten Largest Controlling Companies in Each Forest District, 1975	B 8
B-11	Concentration of Control over Timber Harvesting Rights in Public Sustained Yield Units, 1968 and 1975	B 9
B-12	Concentration of Control of Sawmill Capacity, 1975	B 11

Volume 2—*Continued*

TABLE	PAGE
B-13 Distribution of Sawmilling Capacity in British Columbia, 1975	B 11
B-14 Sawmill Numbers and Capacity, 1950 to 1974	B 12
B-15 Distribution of Sawmills, by Capacity, 1955, 1968, and 1975	B 12
B-16 Distribution of Pulp Capacity on the Coast, 1975	B 13
B-17 Distribution of Pulp Capacity in the Interior, 1975	B 13
B-18 Distribution of Pulp Capacity in British Columbia, 1975	B 14
B-19 Distribution of Paper Capacity in British Columbia, 1975	B 14
B-20 Distribution of Veneer and Plywood Capacity on the Coast, 1975	B 15
B-21 Distribution of Veneer and Plywood Capacity in the Interior, 1975	B 15
B-22 Distribution of Veneer and Plywood Capacity in British Columbia, 1975	B 16
B-23 Distribution of Timber Rights and Manufacturing Capacity among the Largest Controlling Companies	B 17
B-24 Control of Timber Rights and Manufacturing Capacity by the Major Controlling Companies	B 18
B-25 The Degree of Foreign Ownership of Companies not Entirely Owned by Residents of Canada	B 20
B-26 Holdings of Rights to Timber and Manufacturing Capacity of Companies with Majority Foreign Ownership	B 21
C-1 Summary of Taxable Values and Tax Rates for Provincial Property Tax	C 5
C-2 Property Taxes Levied on Lands and Improvements Valued Mainly for Forestry Purposes, 1975	C 9
C-3 Tax Burdens on Hypothetical Tree Farms Bearing a Single-aged Crop	C 19
D-1 Summary of Area Volume Allotment Check for the Quesnel Lake Public Sustained Yield Unit	D 10
D-2 Allowable Cuts, Committed Cutting Rights, and Harvests in Public Sustained Yield Units	D 12
D-3 Approved Allowable Cuts for Tree-farm Licences	D 16
E-1 Exports of Restricted Products, 1966 to 1975	E 7
G-1 Alphabetical List of Participants	G 1
G-2 List of Exhibits	G 9

* Figures and totals in some tables do not agree due to rounding.

FIGURES

Volume 1

FIGURE	PAGE
4-1 Timber Production by Species	37
4-2 Timber Utilization by Major Products	37
4-3 Growth in Total Timber Production and Share of the Largest 10 Controlling Companies, 1954-1974	43
19-1 Levels of Resource Planning	262
24-1 Organizational Structure of Provincial Resource Management Agencies	338
24-2 Organization of the B.C. Forest Service	340
24-3 British Columbia Resource Management Regions	348

Volume 2

A-1 Forest Management Units in British Columbia	(Inside back cover)
D-1 Administrative Organization for Calculating and Approving Allowable Cuts in Public Sustained Yield Units	D 6
D-2 Schema of Allowable Cut Calculation Procedure	D 8

PREFACE

This report contains the findings and recommendations of the Royal Commission on Forest Resources appointed by the Lieutenant-Governor in Council of the Province of British Columbia on June 12, 1975. The Order-in-Council establishing the Commission determined the Commission's basic structure and status, the scope of its inquiry, and provided it with general guidelines for formulating its recommendations. The salient parts of the Order, which have guided me in conducting the inquiry and in designing the recommendations in this report, are the following:

Pursuant to the Public Inquiries Act, and upon the recommendation of the undersigned, the Lieutenant-Governor, by and with the advice and consent of the Executive Council, orders that

WHEREAS it is desirable and in the public interest to cause an inquiry to be made into the management, regulation and use of the forest resources in British Columbia:

AND WHEREAS under section 3 of the "Public Inquiries Act", being chapter 315 of the "Revised Statutes of British Columbia, 1960", it is provided that whenever the Lieutenant-Governor in Council deems it expedient to cause inquiry to be made into and concerning any matter connected with the good government of the Province or the conduct of any part of the public business thereof, the Lieutenant-Governor in Council may, by Commission intituled in the matter of the said Act and issued under the Great Seal, appoint a sole Commissioner to inquire into such matter:

A COMMISSIONER IS HEREBY APPOINTED to inquire into, formulate recommendations, and report on all matters relating to the disposition of rights by the Crown to harvest timber and to occupy forested land in British Columbia, including the terms and conditions attached to the various forms of tenure, but excluding the royalties payable by the holders of Timber Leases and Licences, Pulp Leases and Licences, and Timber Berths, and excluding the general form of the stumpage appraisal system; and in particular, but without limiting the generality of the foregoing, to inquire into, formulate recommendations, and report on:

1. The extent to which the forest resources of the Province are committed to use and to users under all tenure arrangements, including Crown grants:
2. The procedures for allocating rights under these various arrangements:
3. The provisions for conservation, management, utilization, protection and development of the forest resources allocated:
4. The taxes, royalties, rentals and other charges levied upon forest land, timber and primary forest products, excepting the general form of the stumpage appraisal system:
5. The implications of these tenure arrangements for the structure of the forest industry, having regard to its pattern of integration, con-

centration, ownership and control; and for the structure of markets for forest products produced in the Province:

AND FURTHER ORDERS THAT the Commissioner shall formulate recommendations directed toward ensuring that the public interest is protected in the legislation, policies, procedures and practices affecting the allocation and use of forest resources of the Province, and in particular that:

1. The full contribution of the forest resources to the economic and social welfare of British Columbians is realized in terms of the diverse commercial and environmental benefits they potentially may generate:
2. The various public levies on, and the charges associated with the acquisition and retention of, Crown timber reflect the full value of the resources made available for harvesting, after fair and reasonable allowance for the costs, harvesting, forest development and profits; and that the various forms of public revenues derived from Crown granted and Crown forest resources are systematic, equitable and consistent with general taxation policy in the Province:
3. The marketing arrangements for timber products permit their full value to be realized and are consistent with an efficient economic structure:
4. The regulation of exports of forest products serves the best economic interest of the Province:
5. The efficiency and vigor of the forest industry is maintained, and that domestic participation in its ownership and control is adequate:
6. Proper provisions are made for the efficient management, protection and enhancement of the forest resources and for the regulation of harvesting and utilization practices:

The Public Inquiries Act provided me with broad powers and discretion in conducting the inquiry. Under that authority, I held public hearings in six cities—Prince George, Nelson, Prince Rupert, Kamloops, Victoria, and Vancouver—for the purpose of receiving and examining submissions from interested parties. These hearings elicited a considerable response: in total 194 written submissions were received, from a wide range of interested societies, firms, professional associations, local governments, labour groups, and other organizations, as well as many individuals. It is an indication of the current breadth of public interest in forest policy in the province that more than one-third of the presentations were made by groups or individuals that cannot be said to have a vested interest in the forest industry.

These submissions, and the discussion of them at the hearings, provided extensive and valuable information and opinion on the matters addressed in this report. The written submissions, the *verbatim* transcript of the hearings amounting to nearly 10,000 pages, and the participants' concluding statements have all been made available to the public. In the second volume of this report Appendix F describes the public hearings; the participants and exhibits are listed in Appendix G.

In addition to receiving information and advice through these hearings, the Commission undertook a considerable amount of research into problems germane to the inquiry. Some of this concerned specific points of law or involved gathering data required to describe or analyse particular problems. In other cases it involved substantial projects, undertaken by Commission staff or by consultants to the Commission, the results of which are apparent in the chapters and appendices of this report.

I can hardly begin to acknowledge the enormous number of individuals and organizations that contributed to this inquiry. All those who made formal submissions performed a valuable and often onerous public service; they deserve the gratitude of the government and public as well as my own thanks for providing the Commission with a broad base of information, experience, and advice. Many went to a good deal of personal trouble and expense to assist the Commission. The calibre of submissions was remarkably high, and participants at the hearings revealed an openness and enthusiasm for the inquiry that made the process both rewarding and congenial.

Although nearly all participants regarded this inquiry as timely, if not overdue, the latter half of 1975 (when these hearings were held) was in some respects an inauspicious time for an abjective examination of forest policy in a public forum. Recent changes in public policy had created anxieties in the forest industry, and it as well as the Forest Service were attempting to respond to new demands for protection of the forest environment. A few months previously lumber markets collapsed, and pulp and paper markets had also begun to decline. Then, while the hearings were in progress, the forest industry suffered one of the most complete breakdowns in industrial relations in its history, which ended only with unprecedented government intervention. There followed a vigorous provincial election campaign, resulting in a change of government. In spite of all these distractions, participants in the hearings showed commendable forbearance in directing their attention to the long-term policy issues in my terms of reference, and a good deal of patience in co-operating with my procedural strictures.

During the public hearings and afterward, the Commission enjoyed the full co-operation and assistance of the Deputy Minister of Forests, Mr. J. S. Stokes, the Chief Forester, Mr. E. L. Young, and officers of the Forest Service at all levels. Mr. D. R. Selkirk and Dr. H. V. Lewis made particularly heavy contributions to the Commission's work. Valuable information was provided by other branches of government as well, such as the Department of Finance, the British Columbia Assessment Authority, the Secretariat of the Environment and Land Use Committee, and other resource agencies.

Special studies were undertaken for the Commission by Dr. D. Haley, Mr. G. K. Bowden, and Dr. H. G. Baumann; and guidance on special problems was obtained from a number of external experts, particularly Mr. W. G. Hughes, Mr. W. G. Smith, and Mr. C. H. Gairns. My academic colleagues, Professors A. D. Scott and R. A. Shearer, also provided valuable criticism of some of my analysis. I called informally upon a large number of individuals for points of information and advice in preparing this report, and their willing assistance facilitated my task considerably.

A number of people and organizations in other provinces and countries responded generously to my requests for information, and in some cases I was able to benefit from visits with them. The distinguished Finnish forester Dr. Nils Osara, and Herr Rüdiger von Pezold of Austria both interrupted their domestic and business commitments for several days to acquaint me with conditions and public policies in their countries. Through the co-operation of Mr. G. V. Wellburn, I was also able to join, for a few days, a European tour organized by the Forest Engineering Research Institute of Canada.

The comprehensiveness of this report, and the speed with which it has been completed, owes much to the extraordinary effort of the Commission

staff—a small group who dedicated themselves to the success of the project. Miss S. Grauer, Messrs. C. W. Sanderson, E. J. Blewett, and D. K. Davies assisted in the preparation of material for specific parts of the report. Elizabeth Long and Colleen Robertson managed, somehow, to keep the Commission well organized throughout the hearings and subsequent work, and to prepare the typescript for this report. Mr. T. G. Wright and Mr. K. C. Murphy, Q.C., served respectively as my forestry and legal advisors during the hearings and provided valuable guidance in preparing my recommendations.

Two individuals assisted me closely and continuously throughout the inquiry. Mr. J. A. K. Reid, who was seconded to the Commission from the Forest Service, served as a source of information about policies and practices that was invaluable to me in gaining appreciation of the problems to be resolved, and his constant and patient advice assisted me immeasurably in formulating my recommendations. Mr. R. S. Campbell served as Secretary to the Commission, but his contribution extended well beyond that. He, as well as Messrs. Wright, Reid, and Murphy assisted me in examining witnesses at my public hearings; and the success of those hearings as well as the efficiency with which the Commission was able to carry out the rest of its work reflect his organizational skill. In addition, this report owes much to his perspicuous legal analysis and his incisive advice on nearly all the issues examined in this report.

In the course of this inquiry I have had an opportunity to visit most regions of the province and to travel by aircraft, automobile, and boat into remote areas to acquaint myself with the forests and forestry operations. Local chapters of the Canadian Institute of Forestry provided a valuable service in taking my advisors and me, with teams of experts, on extensive field trips in each of the regions we visited, and we made other tours as well. This was a unique experience, and valuable not only in helping me understand the specific problems I was shown on the ground, but also in a broader sense, in gaining a perspective of the magnitude and sweep of the province and its forest resources.

Most residents of British Columbia know that their province is a large and rugged land, but I venture to say that few, even among those of us who have called it home all our lives, have much sense of its enormity, its remarkable diversity, and its awesome wilderness. This is not surprising, because it is not an easy province to know beyond the few main highways, and not many have had even the opportunity I have had in recent months. It is probably safe to say that only a small fraction of the province's population has ever set foot in the northern half of British Columbia—that vast territory north of Prince George larger than the States of Washington and Oregon combined—or have more than a vague impression of what it contains. The same is true of the huge region west of the central Interior. This gives rise to difficulties in public policy formulation, because natural resource policies, particularly, must be sensitive to the full range of conditions they govern.

The experience of an investigation such as this forces one to reflect on the basic premises that govern our approach to natural resource development and use. Unlike those of more developed timber-producing countries, our forests are still mostly virgin—the legacy of natural processes virtually undisturbed by man through geological time. When one contemplates the rugged ex-

panse of this undeveloped land, the majesty of its mountains, the unspoiled beauty of its valleys and plateaus, one cannot escape some feeling of apprehension about the implications of our "progress". As we press further into this wilderness—building roads, logging timber, controlling fire and other natural forces, and managing the land to serve our needs—we must recognize that we are changing it permanently. In many respects we know we can make it more productive, but we nevertheless lack a full understanding of the impact of our activities on natural processes. More fundamentally, we must proceed on some assumptions about the needs and preferences of future generations, and these are uncertain.

Our range of choice is unusually wide. We are a sparse population of only 2.3 million people in an enormous province—more than twice the size of Sweden and seven times the size of England—with an endowment of natural resources unmatched in its variety and richness. And, being largely unencumbered by private property rights, the use of these resources is a matter of public choice.

We conduct our economic affairs within the framework of a mixed market system which will undoubtedly continue to shift and evolve; but no abrupt reorganization of the political economy is foreseeable. Our technology, particularly in the forest industry, is rapidly expanding our capacity to recover and utilize our bountiful stock of natural resources, which have already helped us become one of the most affluent regions of the globe. And we are in a position to make the irreversible choice, in specific situations, between wilderness preservation and resource development. All this means that we have an exceptionally wide range of options in our approaches to natural resource development.

The occasion of this inquiry has, I believe, already served a useful catalytic function in focusing public attention on these issues. The public hearings, particularly, provided a valuable medium for the interplay of different viewpoints and objectives. I hope that this report will further public discussion of these issues on which the future of the province rests so heavily, and that the recommendations herein will assist in the search for new policies to ensure that present and future generations can realize the full potential benefits of the province's forest resources.

Peter H. Pearse
September, 1976

CHAPTER 1

FOREST TENURE POLICY IN PERSPECTIVE

The landscape of British Columbia is dominated by vast, variegated forests, rich natural resources that play a role in economic life and in the natural environment unmatched elsewhere in the developed world. Thus the system of rules and procedures used to confer rights to forest land and timber—forest tenure policy—occupies an especially important place in the public affairs of this province. This forest tenure policy, with all its ramifications, is the subject of my report.

Under the constitutional arrangements governing British Columbia's entry into Confederation, the province was bestowed with ownership of nearly all of the land and forests then owned by the Crown, and with the jurisdiction to deal in these resources. Through most of British Columbia's short history successive provincial governments have refrained from alienating title to forest lands, and instead have devised methods for conveying rights to develop and use forest resources while retaining Crown ownership of them. As a result, only a small fraction of the forest endowment is privately owned, and most timber is harvested from public land under some form of contractual arrangements with the Crown.

For the most part, the initiative in developing and harvesting timber, manufacturing it into saleable products such as lumber and pulp and marketing them has been taken by private interests. Governmental authorities, who are charged with administering the Crown's resources on behalf of the public, provide these enterprises with access to timber through tenure arrangements: an aggregation of legislative provisions, regulations, contracts, and administrative practices. The forest tenure system is therefore the vital link between users of the province's forests and the public landlord which owns them. It determines the pattern of rights and responsibilities and shapes the form and pace of resource development.

Over more than a century, beginning with the early settlement of the province, innovations and evolution in tenure policy have accommodated industrial development and contemporary public objectives. As expanding world markets have increased demands for timber, as the technology for recovering and utilizing it has advanced, and as successive governments have redefined public goals, tenure policy has undergone continuous revision. Today, the arrangements that comprise forest tenure policy present a complicated panoply of legal provisions, procedures, and practices—considerably more complex, indeed, than is found in other Canadian jurisdictions. As instructed by my terms of reference, I attempt in this report to describe and dissect the main features of this policy, evaluate it in light of current circumstances and needs, and propose changes that will advance the broad public objectives that are also enumerated in my terms of reference.

The instruments of forest tenure policy have as their primary function the transfer of rights to resources, but they also provide the media for controlling forestry activities and for accomplishing a very wide range of other public objectives. Through the rights and responsibilities embodied in tenure arrangements, the Crown regulates not only the rate and pattern of timber harvesting but also such diverse matters as public resource revenues, the intensity of silviculture, the construction of roads and public works, provisions for the protection and enhancement of other forest values such as wildlife, recreation, and water supplies, certain manufacturing practices, export and marketing controls, and other matters that extend well beyond the conveyance of timber rights. Moreover, in indirect but important ways the forest tenure system moulds the structure of the forest industry, the broad pattern of economic and social development in the province, and the quality of the natural environment. In effect, the tenure system is the touchstone of the province's forest policy. A review of all its facets involves excursions into very disparate issues of resource management and industrial strategy which, because of the pervasive importance of forests in the economic and natural environment, profoundly influence the style and quality of life in the province.

It is also apparent that the design and implementation of forest tenure policy is an especially critical governmental responsibility in British Columbia. The high profile of the forest industry in the economy, the impact of timber production on the environment, and the predominance of the Crown as the forest landlord push forest policy to the forefront of public concern. At the centre of this are the tenure arrangements that provide the instruments of public control. The enormous impact of this policy not only imposes a special responsibility on the provincial government, but also provides it with unique economic power and the opportunity to shape the province's development and growth.

THE ROLE OF COMMISSIONS IN POLICY REFORM

In recognition of the importance and complexity that has traditionally characterized forest policy, provincial governments have, on three occasions in the past, initiated formal external reviews in the form of Commissions of Inquiry, and each of these has led to significant shifts in forest tenure arrangements.

By the turn of the century the government had ceased issuing Crown grants (that is, the fee simple interest in land) as a means of conveying rights over timberlands, and had embarked instead on a policy of issuing licences and leases over Crown lands to authorize timber extraction. Between 1905 and 1907 economic circumstances and attractive licensing arrangements combined to generate feverish timber staking, reminiscent of the gold rush that had precipitated profound political changes in the region half a century earlier. Alarmed by these developments, the government appointed its first Royal Commission of Inquiry into forest policy, which produced the *Fulton Report* of 1910.¹

With the meagre information available to them, the Commissioners estimated the province had already alienated two-thirds of its merchantable

¹ *Final Report of the Royal Commission of Inquiry on Timber and Forestry* (F. J. Fulton, Chairman), 1909-1910, King's Printer, Victoria, 1910 (hereinafter, *Fulton Report*).

timber, and after concluding that this would meet the needs of the industry for several decades they prudently recommended that the remainder be held in reserve. To meet minor and special needs, they proposed competitive, short-term timber sales, variants of which are among the most important tenure forms in use today. Many other significant changes resulted from the recommendations of this influential Commission, including the passing of the first Forest Act in 1912, which provided for a provincial Forest Service and embodied the first significant efforts toward forest protection and management.

Through two world wars and the Great Depression there was little change in forest tenure policy, although circumstances changed considerably. Timber production increased irregularly, mostly from the private lands that had been granted in aid of railway construction in the last century and the old leases and licences alienated prior to 1907. But most of these early alienations gradually reverted to the Crown as the valuable timber was removed, as their owners defaulted on taxes and rentals, or for other reasons. By the mid-1940's it was clear that new arrangements were necessary. The only significant method for obtaining new rights to timber was through short-term timber sales; and while this system was now widely used, the expanding industry considered it inadequate to provide the dependable raw material supplies needed to secure investments in new manufacturing enterprises. Moreover, timber exploitation was largely unplanned, and apprehensions were growing about the lack of management and the prospects for future continuity of supplies.

A second Royal Commission was appointed, and the *1945 Sloan Report*² ushered in another major shift in policy. The *leitmotif* of this report, and of the policy changes that it triggered, was sustained yield management of the forests of the province, following the principles of classical European forestry. The government began to parcel the forest lands of the province into large units, each to be managed for perpetual timber yields. Some of these would be licensed in entirety to private firms, integrating any tenures the licensee already held; others would be managed by the Forest Service, which would provide harvesting rights through timber sales. The province thus embarked on a program of controlled forest development under sustained yield plans that aimed at maximizing the yield of timber and ensuring a steady rate of harvesting.

The new policies were pursued vigorously but not without controversy, and a decade later the same Commissioner was appointed to assess developments. The *1956 Sloan Report*³ was less momentous than those of the earlier Commissions; with some qualifications, the Commissioner endorsed the tenure policies that had been adopted in the wake of his earlier inquiry.

It has been thus that major developments in forest policy have been given their direction: appointment of bodies of inquiry charged with examining them in the light of changing industrial conditions and newly defined public objectives. But while these Royal Commission reports provide landmarks in the development of forest policy, many important changes were introduced over

² *Report of the Commissioner Relating to the Forest Resources of British Columbia, 1945* (Honourable G. McG. Sloan, Commissioner), King's Printer, Victoria, 1945 (hereinafter *Sloan Report 1945*).

³ *Report of the Commissioner Relating to the Forest Resources of British Columbia, 1956* (Honourable G. McG. Sloan, Commissioner), Queen's Printer, Victoria, 1957 (2 volumes) (hereinafter *Sloan Report 1956*).

the years without reference to a formal inquiry.⁴ This has been especially pronounced during the twenty years that have elapsed since the last Commission reported in 1956. During this period the size and structure of the forest industry, its harvesting, transport, and manufacturing technology, and its impacts on other resource values have changed dramatically. So have public aspirations. Public policy has responded to and accommodated these changes through new innovations and modifications to established arrangements to an extent that has thoroughly altered the complexion of the forest tenure system in the province.

The present inquiry is therefore timely, if not overdue. The profound changes during the last twenty years in the circumstances surrounding forest policy, and in the policy itself, have not been subject to thorough public review or, indeed, to thorough documentation. Even those who closely follow forestry affairs often find present policies and procedures confusing or incoherent. Moreover, political changes, coupled with mounting pressures on the available timber supply and unprecedented demands for environmental protection, have created an atmosphere of growing apprehension about the capacity of forest tenure policy to meet its challenges.

RECENT DEVELOPMENTS

The circumstances confronted by the last Royal Commissioner contrast sharply with those of today. Two decades ago the framework for sustained yield forestry was established but only a modest fraction of the province's forests were so managed, while today most are subject to more or less intensive regulation. Through new inventory information and advanced utilization technology, estimates of merchantable timber have more than doubled. The forest industry has changed dramatically in size and structure; the yearly harvest has increased fourfold and rapid trends in industrial integration, consolidation, and concentration have increased the size of firms and manufacturing plants while reducing their number to a small fraction of their earlier levels. The industry of the south coastal region, which twenty years ago dominated the forest economy of the province, has grown; but that of the Interior has expanded so much faster that production there now exceeds that on the Coast. Moreover, the higher levels of processing are no longer confined to the Coast, as heavy investments in pulp, paper, and plywood manufacturing capacity have been made in other regions.

Thus not only the size, but also the geographical distribution and structure of the forest industry have changed markedly in the last two decades, broadening the range of processing and vastly increasing the scope for timber utilization. Significant also is the expansion that has occurred in forestry expertise, particularly in the professional staffs of private companies. The estimated limits to the yield capacity of forests have become critical in some regions, adding new strains on the processes for allocating timber rights. As operations have progressed into less attractive areas and stands, the quality of timber has steadily declined and harvesting has become more costly, posing new problems for the regulation of harvesting standards and for manufacturing and marketing.

⁴ A federal Commission of Inquiry investigated the forest resources of Canada in 1918, and while it provided much information about the forests of British Columbia, it apparently had little direct impact on provincial policy. See H. N. Whitford and Roland D. Craig, *Forests of British Columbia*, Committee on Forests of the Commission of Conservation of Canada (Sir Clifford Sifton, Chairman), Ottawa, 1918.

FORESTRY AND THE ENVIRONMENTAL PROBLEM

Perhaps the most conspicuous development has been the emergence of problems relating to protection of the natural environment. Industrial expansion during the last two decades has involved a massive assault on the province's forests; extensive road networks have been extended into hitherto wilderness areas, and up to 400 thousand acres of forest, previously undisturbed by man, is being logged each year. Its impact has increased not only because operations have expanded, but also because they increasingly take place on environmentally sensitive sites—on steeper terrain where soils are often unstable, at high elevations where regeneration and growth are slow, and on rugged ground where road-building leaves deep scars on the landscape.

Twenty years ago the environmental problem was not a major issue; partly because forest operations of the time did not, as a rule, cause much lasting ecological damage, and partly because of public indifference. But no longer; today the potential impact of industrial forestry can be enormous, and environmental protection has become one of the major concerns of our time. Strenuous efforts are being made to minimize the adverse effects of industrial activity on the natural environment, but this remains one of the most sensitive issues in forest policy today—an issue which, as will become clear, is not unrelated to tenure arrangements and the substance of this inquiry.

At the risk of some oversimplification it can be said that we have by and large succeeded in the great endeavour, begun after 1946, to establish the institutional framework and procedures for sustained yield forestry. In later chapters I criticize some of the criteria and techniques used in forest regulation, but the mechanisms now exist, the basic purpose is well accepted, and the directions of needed improvement are fairly clear. The new problem today is to rationalize "forestry", as it is traditionally understood in the context of timber production, with the protection of the environment and other social values. In this we have only begun to take the first, sometimes faltering, steps; and because there is little relevant experience elsewhere that can be transposed to conditions here, satisfactory solutions remain to be found.

The problem is not only that the efforts now being taken to provide for non-industrial values are insufficient (indeed, they often involve extremely high cost), but that they are unsuited to the task. Buffeted by new and conflicting pressures and lacking the resources to do otherwise, regulatory authorities have often responded by imposing new standards of harvesting and management to be applied indiscriminately over the diverse forest conditions in the province, and in spite of disparate regional needs. Aggravating this problem is a good deal of ignorance, both of the kind that requires expert research and the kind that calls for improved public understanding.

In short, while forest managers have by no means completed the task begun three decades ago of designing methods of managing the province's forest for continuous timber yields, their most pressing challenge today is to develop effective means of reconciling industrial forestry with other forest uses and social objectives to realize the full range of potential values.

The future of forestry hinges on our ability to meet this challenge, because we can no longer parcel out the forest land for separate uses as the demand for all of them grows. In the analogy of Aldo Leopold, "Harmony with land

is like harmony with a friend; you cannot cherish his right hand and chop off his left." We must deal with this problem while preserving and developing the great advances that have already been made in timber management. We must not reverse direction but rather alter course and take a wider road, and be guided by other signposts as well as industrial timber production.

FORESEEABLE TRENDS

In view of these rapidly changing circumstances and needs, prognostications about the future are tenuous, and later I emphasize the prudence of policies designed to accommodate the unpredictable future. Nevertheless, policies must be forward-looking, and in a review such as this it is necessary to anticipate likely trends that will bear on forest policy during the next decade or so at least. It may be useful to note here a few of those that have influenced my recommendations in this report.

First, the problem I have already referred to, that of harmonizing forest operations and silviculture with the integrity of the natural environment, will almost certainly grow. There is every reason to expect the demands for outdoor recreation, protection of fish and wildlife, and preservation of the æsthetic quality of the natural landscape to increase, and the processes of forest planning, regulation, and control will be forced to respond appropriately to these needs.

A second development that concerns many observers is the closing of the gap between the rate of harvesting and the sustainable timber supply in certain parts of the province. For reasons I explain later I believe that this prediction must be treated with caution. Certainly similar assumptions in the past have proven unjustified because improved information and advancing technology have vastly increased the estimates of available timber. But the scope for those dramatic increases has undoubtedly diminished, and there can be little doubt that at least until increased growth can be realized through intensive silviculture, there will be heavy strains on the available timber supply in the more developed parts of the province. This closing circle will accentuate many problems in tenure policy; problems that were more tractable when there was plenty of scope for expansion.

Third, timber production in British Columbia has hitherto been based almost entirely on the recovery of virgin "old-growth" timber, and the implications of the inevitable adjustment to "second-growth" timber will be profound. The old-growth timber on which our industry has been built was often of exceptionally high quality, capable of manufacture into products that command premium prices in world markets. As this stock is depleted (and it is appropriate to refer to it as a stock, since it is not reproducible within any meaningful planning horizon), much of the special advantage this province's timber has enjoyed will be lost. On the other hand, the old-growth stock poses many problems. Vast tracts are overmature, decadent, and so defective that they cannot be recovered except at a loss; yet they often occupy growing sites that are potentially very productive—a potential that can be realized only if present stands are removed.

Many of the most aggravating problems of forest management today arise from the process of opening up and extracting old-growth timber. The difficulties of reliably estimating the merchantable inventory, enforcing utilization

standards, slash disposal, controlling the size of cut-blocks and deferred patches, road construction with its immense environmental and financial implications—are all linked to the process of developing access into new territory and removing the original old-growth stands, and they will be substantially alleviated when the industry turns to the next crop. Although the transition to second-growth timber is not expected for several decades in many regions, it is planned to begin sooner in the most developed areas, and I suggest later that it may, or should, occur sooner than we now plan. It will pose quite different problems for both the industry and the government, and public policy must prepare for this change.

These trends should be viewed in the full context of the world forest economy. Huge investments in forest crops and in manufacturing plants have recently been made, and continue to be made in both advanced and developing countries. These, and the vast undeveloped softwood reserves remaining in some temperate regions (particularly the Soviet Union) are sufficient to significantly alter world patterns of supply of wood products in the coming decade or so. Other regions often enjoy considerable advantages over British Columbia in terms of rates of forest growth, production costs, and proximity to markets. Our own strength has been almost entirely in the quality of our virgin timber stock, an advantage which will inexorably decline as the stock is liquidated, as timber production increases elsewhere, and as technology broadens the raw material alternatives for final products.

Fourth, it seems likely that there will be increasing governmental and public interest in the pattern of development of the forest industry itself. The remarkable changes that have been taking place in industrial structure are not the result of any obvious governmental design, but public policy has been influential nevertheless. Hitherto, the consolidation of manufacturing and resource rights into fewer, larger enterprises has been regarded with acquiescence, if not approval, in the belief that this will enhance industrial efficiency and productivity. This is, in part, justified; but there is growing concern about the implications of this process for the viability of smaller firms, for opportunities for new enterprises, for competition for timber and intermediate products, for the geographic dispersion of economic activity, and for the stability of smaller communities. In this report I try to draw attention to elements in the forest tenure system that tend to distort the structure of the industry, and I conjecture that the influence of public policy on industrial development will be a matter of increasing concern in the future.

Finally, it can be safely predicted that there will be a growing need for an expert and efficient public forest administration. Over the years the provincial Forest Service has built up an impressive capability, but it has not been able to keep pace with its rapidly expanding responsibilities. As a result, means have been found to shift responsibilities for resource management from the public service to operating companies, so that today we depend on licensees to develop and manage the public forests to an extent that (as far as I am aware) is unique in public forest administration. The role of the Forest Service has perforce been relegated to administrative surveillance; and according to its critics it attempts even that from too great a distance. Nor have the province's other resource agencies been capable of providing adequate assistance in coping with the impacts of forestry on resource uses other than timber. Further, because forest operations are typically the vanguard of development,

the Forest Service has been compelled to accept responsibilities well beyond its special expertise in forest management—such as the development of roads and highways, product marketing, and decisions about the regional distribution and pace of industrial growth.

The appropriate division of responsibilities between the private and public sectors is a fundamental issue that should be resolved not by default or on purely philosophical grounds, but rather in terms of efficiency in achieving the desired results. Some of the trends I have already mentioned will undoubtedly put an increasing burden on public administrators. And if the public objectives as I perceive them are to be realized, I see no alternative to more active governmental participation in resource development—not so much in fastidious surveillance of responsible private operators as in direct management of the public forests.

By this I do not mean to imply a need for expanded governmental participation in entrepreneurial ventures. So long as government-controlled companies behave like, and are treated on the same terms as their private competitors, their ownership is a secondary and largely political issue which I do not consider necessary or appropriate to address directly in this report. Resolution of the matters within my terms of reference will not be greatly affected, as far as I can see, by possible shifts in the balance between public and private ownership of forest enterprises.

POLICY IMPLICATIONS OF UNPREDICTABLE CHANGE

These few broad trends seem likely enough to warrant an effort to anticipate them in designing our forest policy today. However, there will be changes that we cannot foresee, and in considering the issues addressed in this report I believe it is most important to acknowledge that forest policy must cope with an uncertain future.

The forest economy of this province has never been static, and there is no prospect of it becoming so in the foreseeable future. Many want public policy to be explicitly directed toward stabilizing forestry and the forest industry. However, notwithstanding the impact of provincial forest policy, it must be recognized that many of the forces at work in shaping the future are beyond the control of the provincial government. For example, the demand for timber and hence its value is determined largely in competitive world markets. The development of technology which has had such a profound impact on forestry and manufacturing is not subject to governmental control. Nor can the provincial government exercise much influence over matters such as capital markets, immigration, and public attitudes towards resource management and industrial development. Yet our opportunities and constraints in developing our natural resources are largely determined by these essentially external factors. It is within this constantly shifting context that provincial forest policy must be framed; and it follows that if the people of the province are to be assured of the full potential benefits from their forest endowment, our policies must be flexible enough to respond to unpredictable changes in external conditions. In spite of the arguments of modern millenarians, we do not face the task of administering a steady state.

I confess to some anxiety about our present policies in this respect. Many of the most intractable problems which I address in subsequent chapters relate

to policies that seem to have been based on the presumption of constancy, or at least certainty about the future. Certain policies and commitments, though refreshing and innovative when they were introduced, were adopted without leaving sufficient scope for accommodating changes in industrial needs, public objectives, and new approaches to forest management. There is a dangerous temptation to assume that good arrangements, once established, can endure forever—an attitude buttressed by some of the tenets of traditional forestry doctrine. The danger is that the advanced ideas of one period will take their place in conventional wisdom and be allowed to ossify public policies at a later time. “. . . in the field of economic and political philosophy”, warned the eminent Lord Keynes, “there are not many who are influenced by new theories after they are 25 or 30 years of age, so that the ideas which civil servants and politicians and even agitators apply to current events are not likely to be the newest.”.

These considerations suggest to me that we must be cautious and flexible in formulating the long-term objectives of forest policy. In particular, in designing a forest tenure system, a delicate balance must be struck between the need to maintain governmental flexibility for adapting to changing circumstances and the need to provide security and stability for efficient long-term resource management and use. The search for this fine balance underlies many of my recommendations in this report.

Prudence calls also for policies that will preserve options for the future. This does not imply that we must reduce our forest production (on the contrary I suggest later that there is scope for expansion), but rather that there is a strong argument for containing resource development rather than stimulating its spread unnecessarily. Our pioneering traditions were concerned with pushing back the frontier, taming nature, and converting the land to our use but there is already a distinct new public attitude that emphasizes the value of restraint, of reconciling our demands with nature rather than the reverse, and of protecting the integrity of the natural environment.

There is a great danger in assuming that future generations will have the same priorities that we have, and that our goal should therefore be to convert our forests as expeditiously as possible to crops that will yield the kind of products, decades hence, that we value most today. As we plan forest crops that will take a century to mature, we should recall that history contains many examples of technological and other changes that have undermined economic dependence on particular natural resources. Clearly, we should manage and use our forests to the best of our ability, but one of our concerns should be to leave as many options as we can to our successors who, with more knowledge than we, and in light of their priorities, will be better placed to determine how the forests of this province should be further developed.

ORGANIZATION OF THIS REPORT

The scope of this report is dictated by my terms of reference, but the emphasis and my proposals for policy changes are coloured by the circumstances and needs of today and the foreseeable future. I have sought to propose arrangements that will, beyond that, enable the government to accommodate the new and unforeseen circumstances that inevitably will arise in the more distant future.

Those who are familiar with the complicated interrelationships in forest policy will appreciate the difficulty of organizing the issues in this report in an orderly sequence. Their ramifications are so entwined that they fall into no neat order, and so I must call on the reader's indulgence in following the structure I have chosen. My attempt at brevity has been somewhat frustrated by the dearth of other documentation of many of the problems reviewed here. As a result, in order to put the arguments and recommendations in their needed context, I have often found it necessary to describe and explain at some length the current policies and practices, which are often quite complicated.

The report is divided into seven parts. The first provides descriptive background on the province's forests, the forest industry, and the prevailing pattern of resource rights, all of which are necessary for an understanding of the policy issues that follow. Some readers will already be familiar with much of this description, but the industrial structure described in Chapter 4 has not been documented elsewhere and is important to my later recommendations. The five chapters of Part II deal with the main elements of the forest tenure system. The major forms of rights to Crown timber are reviewed in turn and evaluated in terms of current priorities and problems, leading to my recommended changes. Part III deals with a variety of issues relating to tenure arrangements in general: policies aimed at allocating, terminating, and transferring rights; the division of responsibilities for resource management and development; and taxes and other public charges. Part IV considers some separable problems—provisions for small-scale forestry, special forms of rights, and policies affecting private lands.

Following this analysis of the tenure structure itself, the series of chapters in Part V deals with fundamental issues of resource management that bear directly on forest rights and govern the efficacy of the tenure system in serving economic needs and in protecting the public interest in harmonious natural resources development. Here I discuss the policies relating to regulation of the rate of harvesting, the design of standards of recovery and utilization, the processes of resource planning for integrated use, and related matters. I have found that these issues, which concern more the procedures and practices involved in public administration than the legal form of forest rights, nevertheless give rise to many of the most basic problems in the design of an appropriate forest tenure policy.

Part VI is concerned with markets and industrial development. It deals in separate chapters with controls on the marketing of intermediate forest products (mainly logs and pulp chips), export restrictions, and influences on the pattern of industrial growth; all of which find expression through the forest tenure system and warrant thorough re-evaluation. The concluding section, Part VII, contains a rather lengthy review of administrative arrangements and problems, and a chapter dealing with approaches to policy reform and future review. I have not attempted a detailed summary of all the recommendations in the report, but the final chapter provides a brief retrospective overview with reference to the priorities for reform as I have perceived them.

Throughout the main body of the report I have endeavoured to support my observations and conclusions with essential information and argument, but I have tried to avoid encumbering the text with lengthy detail. However, a thorough documentation of several of the policy issues considered is not elsewhere available, and so the second volume of the report contains a series

of appendices which present, among other things, more comprehensive reviews of the structure of the forest industry, the current forest tenure system, forest taxation and other levies on resources, the method of harvest regulation, and export control policy. I have also appended some comments on my public hearings.

Obviously, I have had to be somewhat selective in my choice of issues for detailed discussion and emphasis, a selection which, I fear, will disappoint some of those who participated in my public hearings. Thus, for example, because of the limitations of my own expertise, my terms of reference, and the feasible scope of my report, I have not dealt with many technical forestry and other environmental matters which some regard as the most urgent questions of public policy. Nor have I been able to investigate properly matters of forest research and education or detailed administrative organization in the public agencies. At several junctures, however, I recommend that other means be adopted to investigate problems which appear to call for expert review but fall outside the scope of this inquiry.

Certain other matters are currently being examined under other auspices. Another Commission of Inquiry has simultaneously investigated questions of property assessment and taxation. A task force report on range management has been submitted to the government, and a third group is currently examining the question of marine log salvage. In deference to these other investigations I have considered these problems in less detail than otherwise would be needed.

In drafting this report I have refrained from citing the testimony of individual participants at my public hearings who provided excellent arguments on most questions. Nevertheless they will, I trust, recognize the influence of their contribution on my conclusions, both where I have endorsed and rejected their arguments. Their written submissions to the Commission, and the transcripts of their oral evidence remain available and provide a valuable source of reference. In this report I have also avoided, for the most part at least, discussion of individual cases, in order to keep on the plane of general public policy.

The language of forestry is peppered with jargon—technical words, measures, abbreviations, and terms of the trade—which are rather bewildering to the uninitiated; and so (again at the expense of brevity), I have tried to avoid them. But certain esoteric terms are unavoidable or at least convenient, and to minimize the clutter of explanatory footnotes in the text I define those I have used in the glossary. There, also, all the statutes mentioned in the report are referenced.

I have already emphasized the enormity of a comprehensive review of the forest tenure policy of the province. Had I found existing policies and procedures generally satisfactory, the task of writing this report would have been considerably simpler; instead I have become convinced that rather substantial reforms are required over a wide range of policy. The result is a rather lengthier report than would otherwise have been necessary. I hope that, regardless of the acceptance of my specific recommendations, it will serve to stimulate informed debate on this important area of public policy.

PART I

THE RESOURCE AND THE INDUSTRY

Chapter 2. The Resource Base

Chapter 3. Rights to Forest Land and Timber

Chapter 4. The Industry

THE RESOURCE BASE

Forest policy must be moulded to accommodate both the characteristics of the resource base which it is meant to regulate and the demands that are put on it. In British Columbia these circumstances are, in important respects, unique. It follows that the forest policy suitable for Ontario, Sweden, Oregon, or Alabama is not likely to be suitable for this province. The resources of most other jurisdictions do not compare with ours in terms of their vastness, their diversity, their state of development, their ownership pattern, or the range of values that they produce. This chapter provides a sketch of the main features of the province's forest resources to set the context for the public policy reviewed in the remainder of this report.

THE LAND BASE

British Columbia is estimated to contain 22 per cent of the forest land in Canada but, being the most productive, it supports roughly 43 per cent of the volume of merchantable timber. One of the most notable features of this large province is its almost continuous covering of coniferous forest, extending into every region and nearly every valley. Of the 234 million acres within provincial boundaries, 11 million are water and swamp, 90 million are alpine rock, barren, or otherwise non-productive. Of the remainder—the “productive” land—97 per cent is forest land, according to its statutory definition. All but about five per cent of the forest land is in public ownership. The composition of these lands is indicated in more detail in Table 2-1.

Another conspicuous feature of the province is its extreme terrain. The full range of topographic conditions, from flat river deltas to rocky alpine peaks is found; but the land is dominated by a series of rugged mountain ranges aligned northwest-southeast. These bracket extensive Interior plateaux; major river systems bisect them; and in the west, sinuous fiords cut deep into the coastal mountains. This configuration of mountains and valleys has had a strong influence on the development of access routes which have shaped the geographic pattern of forest development and use. The mountains have posed the unique challenge of the region ever since Alexander Mackenzie first threaded his way to the Pacific; and our ability to cope with the engineering and environmental problems of steep slopes, high elevations, unstable soils, and rock will continue to govern the values we can realize from our forest resources.

The climatic patterns of the region combine with these extremes of topography to produce the most varied forest environment on the continent. In some places the forest changes over just a few miles from coastal rain forest to semi-desert conditions with completely different vegetation. Sequences of

Table 2-1

AREAS OF MAJOR LAND CATEGORIES IN THE PROVINCE

	millions of acres	per cent
forest land		
parks and reserves	4.5	2
other	124.2	53
	128.7	55
other productive land		
open range and meadow	2.1	1
agricultural, urban, cleared	2.0	1
	4.1	2
non-productive land		
alpine forest and scrub	31.0	13
alpine rock and barren	54.6	23
brush and lowland scrub	4.8	2
	90.4	38
other		
water	6.4	3
swamp	4.5	2
	10.9	5
total: all land and water	234.1	100

Source: B.C. Forest Service.

environments are ordered by latitude, elevation, aspect, and distance from the Pacific, which generates the weather systems that undulate eastward over the mountain ranges.

The community of flora and fauna in each forest type is in a constant state of change. The natural processes of change are sometimes extremely slow and subtle, as organisms grow and die. The life cycles of forest trees span centuries, and the soil itself is constantly evolving. Other processes are violent and spectacular, like the fires that produce the essential ecological conditions for some forest species. Such disturbances are typically followed by a succession of forest types, each taking hundreds of years until a climax community is reached or, more often, another devastation starts the process anew. Today, these dynamic processes have been significantly altered by human activities, especially logging, the control of fire, and artificial reforestation.

Together, these influences produce a rich mosaic of forest types and ecosystems, each of which calls for a different resource management strategy. In any resource policy for forests as diverse as this, uniformity of management procedures and practices must give way to flexibility in planning and administration if the full benefit of commercial and environmental values is to be realized.

FOREST VALUES

Over the province as a whole, the overwhelmingly important commercial value derived from forests is industrial timber. Of the twelve major "biogeoclimatic" zones that have been described in the province, ten are dominated by commercially important coniferous forest associations. Timber is recovered in a wide range of species, sizes, and qualities, reflecting the diversity in natural forest types; this in turn governs the way it is utilized in response to world demand for forest products.

The forests of British Columbia produce many products and services other than timber. In varying patterns and combinations the forest lands of the province support wildlife and livestock; they comprise watersheds that produce flows for hydroelectric power, industrial and domestic requirements, and dispersal of wastes; they provide vegetative cover essential for the protection of rich sports and commercial fisheries; and they represent a vast recreational resource. Forests, more than anything else, influence the aesthetic character of the province's landscape. Some of these values, like timber, are industrial and commercial. Others, like recreation, and the often ephemeral environmental benefits, are typically unmarketed and difficult to evaluate. Through the compounding influences of growing appreciation of non-commercial values and increasing industrial pressures, the demand for protection of recreational and environmental benefits of forests is burgeoning. The quest for the optimum balance in resource planning is the new challenge facing forest managers and policymakers.

In practice, the pressure for integrated planning of forest uses is manifested most pervasively in the overlapping interests of industrial forestry and fish and wildlife management. This is because fish and wildlife management involves the manipulation of natural habitats which can be significantly altered by industrial forestry. As a result of their concern for natural habitats as well as for the fauna and the recreational values they generate, fish and wildlife authorities in this province have assumed much of the responsibility for bringing environmental expertise to bear on forest development planning.

The fish and wildlife resources of British Columbia are among the most varied and prolific in the world. Their habitats are dependent on forest cover, so they are sensitive to changes in it through either natural processes or human activity. Forest watersheds provide the critical habitat and migration routes for Canada's most valuable commercial fishery as well as for varied sports species. Sudden alteration of the forest cover, through its effects on the hydrological regime and water quality, has often been detrimental to these fisheries. The works associated with industrial forestry, especially roads, are particularly important, and these impacts are probably the greatest concern of fisheries managers.¹

On the other hand, some forest operations and natural disturbances such as fire often benefit wildlife populations. Species such as deer, moose, and grouse are often enhanced by periodic removal or disturbance of the forest canopy. However, there are important exceptions in some species—such as caribou, Roosevelt elk, grizzly bears, and many smaller animals and birds—that rely seasonally on mature forest cover. The effects of forest disturbance

¹ For an excellent review of the impacts of forest operations on fisheries, see Department of Environment, Fisheries and Marine Service, brief submitted to this Commission, November, 1975.

on wildlife cannot be generalized as they depend heavily on the pattern and character of the change.

The concern of fish and wildlife managers with industrial forestry derives not only from its direct impact on the habitat of wildlife species but also from its effect on human access. Management of sports fish and game populations, like silviculture, involves regulation of both the natural habitat and the harvest. In this province the pressures on fish and game from fishermen and hunters are governed importantly by the pattern of access developed through timber extraction.

The extensive rangelands of the province are mostly forested lands. Only about 2 of the 18 million acres of natural forage land are open grasslands; the rest is pine savannah and drybelt fir forest range in the central Interior, seral aspen forests of the Bulkley and Peace River regions, and minor rangelands in most other districts. Most of the province's rangelands are thus jointly used for grazing and timber production, and they are, in addition, critically important in wildlife management. As a result, the management of these lands calls for particularly careful integration of uses.

British Columbia's prodigious endowment of forests is paralleled by its water resources, and the two are inextricably interdependent. While the province contains only four per cent of the water area in Canada, it has been estimated that the province's large and fast-flowing river systems constitute one-third of the annual water flow. Its uses vary widely over the province, serving the needs of industry, domestic and agricultural uses, and transportation in addition to supporting fisheries and nourishing the forests. The special value of the province's rivers in hydroelectric generation derives from their vertical fall from the mountains to the sea. Managing these water resources calls for regulation of forest watersheds; and disturbances to the forest cover can have important effects on the quantity of runoff, its flow regime, and its quality. Most sensitive are the drier areas of the Interior, where water management adds another dimension of integrated resource use to forestry, grazing, wildlife, and recreation.

The forest and water resources of the province provide an exceptional variety of outdoor recreational opportunities; and the trends in income, mobility, leisure time, and population are accelerating participation in these activities. The growth of many forms of recreation radiates from the major population centres and transportation routes, though some of the less intensive pursuits like mountaineering, that favour pure wilderness, also show extremely rapid growth. Both sorts of recreational activity bear on forest management; preservation of wilderness constrains the scope for industrial use of resources, and accommodation of compatible forms of recreation requires modification of operations to preserve æsthetic values and to provide suitable access and facilities.

DESIGNATION OF USES

A conspicuous feature of natural resource policy in British Columbia is the great variety of systems used for allocating rights to Crown property. Special licences, leases, permits, and area designations have been developed to make different values available to users, and these are administered by the separate resource agencies. As a result, a single tract of forest land may

simultaneously be covered by one or more forms of timber licence, water rights, grazing permits, guiding territories, trapline licences, and special use permits; and all may be within some form of reserve. These overlapping rights and designations over forest land, and the allocation of responsibilities for their administration, have extremely important consequences for the pattern of forest use.

Some provincial lands have been designated for special purposes other than timber production; these include Parks, Wilderness Areas, Recreation Areas, and Ecological Reserves. The numbers and estimated areas of each of these categories are indicated in Table 2-2. Timber operations, and other forms of industrial resource extraction, are permanently excluded from National Parks, Wilderness Areas, and Ecological Reserves, as well as from Provincial Parks, except for a few areas over which timber rights were granted before the park was created, or where timber in parks has been exchanged for other lands.

Table 2-2
PARKS AND RELATED RESERVED AREAS

	number	total area thousands of acres	forest land
National Parks	4	1,092.3	433.0
Provincial Parks	324	8,619.2	3,376.1
Wilderness Areas	2	2,335.0	506.1
Recreation Areas	20	562.6	224.7
Ecological Reserves	75	198.3	
total	425	12,807.4	4,539.9

Source: B.C. Forest Service and Department of Recreation and Conservation.

Identification and protection of sites of special æsthetic, recreational, and scientific value is continuing. Some 2,700 small areas of high recreational value have been identified by various agencies, approximately one hundred potential Ecological Reserves are being evaluated, and new Parks and Wilderness Areas are being considered. Expansion of these reserves inevitably reduces the resource base available for forestry, as does the accommodation of non-timber values in areas developed for forestry.

THE TIMBER INVENTORY

Unlike some other natural resources such as minerals, petroleum, and fisheries, forest resources are amenable to rather precise inventory. But, as with other resources, the portion of the inventory that is economically valuable is constantly changing. The forest stock itself is continuously being reduced by fire, insects, disease, and logging, and supplemented by regeneration and growth. Historically, however, the physical changes in the resource itself have been less important in altering the volume of commercial timber available than the changes in economic and technological conditions that determine the scope for economic recovery and utilization. And in recent years the reservation of forest for special non-industrial purposes has become a significant influence on the timber supply.

The continuous physical, economic, and technological changes frustrate precise measures of the merchantable timber inventory, and any such measure would be meaningful only at a particular moment in any event. Instead, recourse must be taken in physical measures of acres and cubic feet of standing timber, based on explicit assumptions about what is valuable or potentially so.

These forces of change are reflected in historical estimates of the forest inventory of the province. The *Fulton Report* of 1910, which contained the findings of the first Commission of Inquiry into the province's forest resources, refers to the classic study in 1907 by Dr. Bernhard E. Fernow in which he discounted earlier estimates of 182 million acres of forest in the province and conjectured that the true merchantable forest was "somewhere between 30 and 50 million", but the Commission considered even that excessive, and estimated only 15 million acres of merchantable timber outside the Dominion Railroad Belt. In 1918, Whitford and Craig, in their study for a federal inquiry into Canada's forest position, put the figure at 96 million acres, although they apparently did not attempt to distinguish merchantable and unmerchantable timber. The first detailed estimates of forest cover by Forest Districts were made by F. D. Mulholland in 1937, and although he excluded some northern regions of the province he found 64 million acres of productive forest.²

In 1958 the first of the present series of continuous inventory statistics based on aerial surveys and field sampling were published, and the sequence of reports every three years since then has shown greater consistency and comparability. The latest of these, published in 1975, indicates 129 million acres of productive forest land—down 5.4 million acres from the 1972 estimate.

From the point of view of timber supply, the area of forest land is less important than the volumes of standing timber, the types of forest cover, and the rates of forest growth. The major forms of forest cover and the estimated volumes of merchantable timber are summarized for each Forest District in Table 2-3.

It will be noted that although the coastal Districts contain only about one-seventh of the total area of forest land in the province, they support 41 per cent of the standing timber—reflecting the generally heavier stands on the Coast than in the Interior.

As I describe in the next chapter, most of the province's forest land is divided into large sustained yield units; for each, an allowable annual cut is calculated and harvesting rights are granted within those limits. Leaving aside certain unregulated lands and the harvesting on them, the total allowable annual cut in 1975 for the major sustained yield units (Tree-farm Licences and Public Sustained Yield Units) was approximately 29.7 million cunits. In 1975, outstanding harvesting rights in these two main tenure forms authorized cutting in the area of 21.4 million cunits, or 72 per cent of the allowable limit during that year. The actual harvest in 1975 of 15.2 million cunits was 51 per cent of the calculated allowable cut or slightly more than one-half of one per cent of the estimated volume of merchantable timber available in those land classes. However, as I will explain in subsequent chapters, these relationships vary widely from year to year and between different regions of the province.

² F. D. Mulholland, *The Forest Resources of British Columbia*, King's Printer, Victoria, 1937, 153 pp.

Table 2-3
MAJOR FORMS OF FOREST COVER BY FOREST DISTRICT

District	mature	immature	not satisfactorily restocked	non-commercial cover	residual stands ¹	total forest land	mature volume
	thousands of acres						million cunits ²
<i>Coast</i>							
Vancouver	7,464.7	4,275.6	734.5	216.6	25.7	12,717.0	727.1
Prince Rupert (Coast)	6,060.9	579.0	114.5	68.6	.5	6,823.6	456.9
total Coast	13,525.6	4,854.6	849.0	285.2	26.2	19,540.6	1,184.0
<i>Interior</i>							
Prince Rupert (Interior)	13,706.1	7,416.6	2,131.6	612.5	33.1	23,899.8	487.2
Prince George	18,595.7	20,866.5	2,048.5	3,355.2	61.4	44,927.3	591.1
Kamloops	5,972.5	5,940.6	548.9	121.9	244.6	12,828.5	216.5
Nelson	3,787.1	6,701.7	639.6	219.3	187.1	11,534.8	162.6
Cariboo	7,797.8	7,305.9	423.2	290.6	200.1	16,017.7	212.8
total Interior	49,859.2	48,231.3	5,791.8	4,599.5	726.3	109,208.1	1,670.2
total all Districts	63,384.8	53,085.8	6,640.8	4,884.7	752.6	128,748.6	2,854.2

¹ Areas within which 25 to 75 per cent of the stand has been disturbed or removed by logging, fire, or other causes.

² Estimated to "close utilization" standards, which include live stems over 7 inches d.b.h. between 1-foot stumps and 4-inch tops.

Source: B.C. Forest Service, *Forest Inventory Statistics of British Columbia*, Queen's Printer, Victoria, 1975.

CHAPTER 3

RIGHTS TO FOREST LAND AND TIMBER

Through its influence on development of the province's largest single industry, forest policy has been a major instrument in shaping the form and pace of British Columbia's economic growth. Undoubtedly the most critical aspect of this policy has been the means devised for conveying rights over Crown forest land and timber to industrial users. These arrangements not only provide the forest industry with its raw material supplies but also provide the media for regulating harvesting rates and methods, payments to the Crown, forest protection, and resource management. Public objectives have been pursued through a mixture of statute law, regulations, contracts, administrative practice, and governmental discretion which collectively comprise forest policy.

Tenure policy forges the essential links between the Crown as public landlord, the legislature as overseer of the public interest, and those who seek to develop and use forest resources. Historically it has reflected governments' attempts to accommodate the development of the forest industry while reconciling increased levels of economic activity with other policy objectives.

The industrial demand for timber has changed dramatically over the decades in response to trends in world markets for wood products, technological advances in logging and wood conversion processes, and other economic stimuli. Moreover, public policy objectives concerning forest-based activities have gradually been redefined under the stewardship of successive governments. Thus forest tenure policy has been subject to more or less continuous reform and frequent innovation, with new forms of rights being devised to meet fresh public and industrial challenges. Each time policies have taken new directions the government has recognized existing rights, and it has usually added new forms of tenure without significantly disturbing the old. The result is a somewhat bewildering mixture of rights, some of which have their roots in the province's colonial infancy.

The present complicated structure of forest tenures can be most readily understood by considering the origins of the various forms of rights in their historical context. Appendix A to this report traces the evolution of each of the major tenure forms, together with other relevant information concerning them. In this chapter I will attempt to sketch only their most conspicuous features and to indicate their relative importance as a prelude to the detailed examination of specific problems associated with each, and my proposals for reforms.

CROWN GRANTS

When the colony of British Columbia entered Confederation in 1871 the provincial Crown was vested with ownership of, and jurisdiction over, all

lands in the new province which had not already been granted to private interests. During most of the pre-Confederation period the only means available to colonial administrators for conveying timber rights from the Crown to private parties was through *Crown grants* of the fee simple interest in land, with the recipient being entitled to all rights incidental to land ownership, including forest growth, in perpetuity.

During the colonial period and early years of provincial status, grants of forested land were not restricted, and it was in this era when significant tracts of rich timberlands were alienated by the Crown, largely in aid of railway construction. The 1883-84 grant of 1.9 million acres on Vancouver Island in aid of the Esquimalt and Nanaimo Railway, containing some of the province's finest stands of virgin timber, is the dominant remaining example of these early grants, although its ownership has since become fragmented. A number of other large blocks of public lands were alienated in connection with railway projects, but most of these reverted to the Crown with the failure of these enterprises. The "Railway Belt" grant of 14.5 million acres to the Dominion government made at the same time as the Esquimalt and Nanaimo Railway transaction was intended to induce completion of the transcontinental railway through British Columbia, but it too was returned to the provincial Crown in 1930 after 50 years of federal control.

Over a period of several decades beginning in 1884, restrictions against granting the fee simple interest in forest land were gradually introduced and alternative methods for disposing of Crown timber evolved. As a result, today only about 6.5 million acres, or less than 5 per cent of the productive forest land in the province, remains in private title and only 2.1 million acres of this is used for forestry purposes. But, as a comparison of Tables 3-1 and 3-2 indicates, the production of timber from Crown-granted lands figures much more importantly in the provincial total than their area suggests; during the 3 years, 1972 to 1975, timber cut from private land accounted for an average of about 15 per cent of the total provincial harvest. Because they are located in more highly developed regions and comprise superior timberland, the value of the timber is generally higher than average.

Of all forms of tenure in the province the public's financial stake is generally the most modest, and the weight of public regulation the lightest, on Crown-granted land. Much of it was granted before timber royalties were introduced, and the Crown exacts nothing from the timber cut from these properties. Grants made during subsequent years have attracted various royalties depending on the policy in effect at the time of alienation and governments' royalty policies over the years. Similarly, the province's timber export restrictions apply only to the later grants.

As a general rule owners of Crown-granted forest lands may harvest their timber and manage their lands according to their own wishes. However, since the late 1940's the government has encouraged them to adopt sustained yield management techniques, through two forms of incentives. First, amendments to the Taxation Act passed in 1951 give preferential property tax treatment to owners who harvest and regenerate their lands according to approved sustained yield criteria, as *Taxation Tree Farms*. Second, through the Tree-farm Licence programme they have been offered harvesting rights over Crown land in return for committing their private holdings to sustained yield forestry in an integrated management unit. Some parcels of Crown-granted forest

land on Vancouver Island are subject to both forms of incentive, being Taxation Tree Farms included within Tree-farm Licences.

As the combination of more restrictive legislation and tighter enforcement gradually eliminated Crown-granting as a means of making timber available, the government introduced policies whereby rights to harvest timber could be conveyed while the Crown retained ownership of the land. Thus, tenures conceived in the early decades embodied two related themes which would thereafter govern British Columbia forest policy: an increasing reluctance to alienate the Crown's title to and financial interest in forest land and timber; and a growing effort to control and improve the use of the province's forest land endowment. The foundations of these strategies were first laid before Confederation, with the introduction of the old temporary tenures.

OLD TEMPORARY TENURES

The policy of granting rights to harvest timber without alienating title to the land originated in a Land Ordinance proclaimed by the Governor of Vancouver Island in 1865—one year before that colony united with its sister colony of British Columbia, on the mainland. The Ordinance conferred on colonial administrators the authority to grant rights to cut Crown timber in the form of *Timber Leases* to individuals or companies engaged in lumbering. Beyond this statutory qualification the form and extent of these early leases was left to official discretion. Initially the Crown retained no financial interest in the timber. The Timber Lease tenure continued to be used until 1905: first by the unified colonies and later by the province following its entry into Confederation in 1871. During the interval new legislation imposed ground rents, maximum terms, royalties, and, for a time, requirements that lessees own and operate sawmills. Significantly, a legislative amendment passed in 1891 introduced cash bonus bidding for leases, a thread of policy which was to be woven into later tenure arrangements.

Three other forms of provincial tenure followed quickly on the heels of Timber Leases. In 1888 *Timber Licences*, which were limited to 1,000 acres each and allocated on a first come, first served basis, were introduced to serve the needs of independent loggers, and eventually came to be the most ubiquitous form of old temporary tenure. Some of these were eventually converted into *Pulp Licences*, which gave their holders certain relief from Crown charges on low quality timber harvested from them. Then, between 1901 and 1903, the government granted a number of very large *Pulp Leases*, which were designed to accommodate the expected needs of the pulp industry the province was endeavouring to attract.

By 1907 an estimated 10 million acres of Crown forest land had become committed under these four types of tenure, 90 per cent under Timber Licences. The government of the day, realizing that the volume of timber on this vast area would satiate industry's appetite for timber for years to come, suspended further allocations.

In the meantime and for some years thereafter the Dominion government, in the course of administering the Railway Belt granted by the province in 1883-84, was pursuing a parallel course. Extensive *Timber Berths* were issued to sawmills, conveying rights to harvest standing timber in the Belt. Like the province, the Dominion retained ownership of the forest land itself.

When in 1930 the Dominion conveyed back to the province those portions of the Railway Belt which had not been granted outright, the province for its part agreed to honour the berths and has administered them as part of its own tenure system ever since.

All these forms of tenure—Timber and Pulp Leases, Timber and Pulp Licences, and Timber Berths—comprise the so-called *old temporary tenures*. Most of them have since expired, so that the total acreage now outstanding is less than one-fifth of that in 1910: some 1.7 million acres. They tend to be located in areas of high quality virgin timber close to low-cost water and rail transportation routes on Vancouver Island, the lower Coast, and along the C.P.R. mainline in the Interior. Owing to the relatively high cost of transporting bulky logs, early timber conversion plants—sawmills, pulp mills, and newsprint mills—most often were built close to these sources of wood supply; communities serving these localized ventures were born, and many matured into towns and cities in the southern part of the province.

Thus the remaining old temporary tenures, like the Crown-granted lands, are generally in relatively accessible locations and better timber, and the contrast between their contribution to the total harvest and the proportion of the forest area they cover is even more pronounced, as shown in Tables 3-1 and 3-2. The location of Crown-granted lands and old temporary tenures has had an important influence on the pattern of development of later forms of tenure.

Having been designed to meet particular needs perceived when it was originally introduced, each form of the old temporary tenures is unique in some respects, but they have several important features in common. First, they confer rights to harvest one crop of timber only, namely the original old-growth. As this crop is removed from the licensed areas, the tenures (or portions of them) are cancelled and the lands revert to Crown control. The duration of the different forms varies but in the past they have invariably been renewed as long as timber has remained on them. Thus Timber and Pulp Licences and Timber Berths carry 1-year terms which have been renewed until the timber has been removed. Timber and Pulp Leases carry 21-year terms, which have been renewed in similar fashion. This approach to renewals has given holders of those tenures rights for an indefinite duration—as much time as they choose to take to remove the standing timber.

Second, holders of old temporary tenures have certain common financial obligations to the Crown. In order to retain their rights they are required to pay annual rentals (in the case of the leases) or renewal fees (for licences and berths), which vary according to the tenure and the acreage covered. In addition the Crown has reserved to itself a financial interest in timber harvested from the old temporary tenures, in the form of royalties. These rates attach to the volume of timber removed, and have varied according to species, grade, and region. Since their inception in the nineteenth Century, royalties have been adjusted through statutory amendment from time to time.

Third, since 1907 timber cut from the old temporary tenures has been subject to provincial export restrictions. Without the consent of government it may not be shipped out of the province in an unmanufactured state. Finally, the old temporary tenures may not be transferred without Ministerial consent.

Table 3-1
TENURE STATUS OF FOREST LANDS, 1975

	in regulated sustained yield units				outside sustained yield units	total	per cent
	Public Sustained Yield Units	Tree-farm Licences	Taxation Tree Farms ¹	Farm Wood-lots			
	thousands of productive acres						
Provincial Crown land							
old temporary tenures	—	913.3	—	—	768.6	1,681.9	1.3
Tree-farm Licences "Schedule B" lands	—	9,085.1	—	—	—	9,085.1	7.1
christmas tree permits	87.7	—	—	—	—	87.7	.1
minor forms of licence	—	—	—	8.7	—	8.7	—
reserved lands ²	—	—	—	—	4,106.9	4,106.9	3.2
other forest land	79,474.0 ³	—	—	—	26,659.5 ⁴	106,133.5	82.4
total Provincial Crown	79,561.7	9,998.4	—	8.7	31,535.0	121,103.8	94.1
Crown-granted land	—	476.6	857.8	1.4	5,211.6	6,547.4	5.1
Federal land ⁵	—	—	—	—	1,097.4	1,097.4	.8
total forest land	79,561.7	10,475.0	857.8	10.1	37,844.0	128,748.6	100.0
per cent of total	61.8	8.1	.7	—	29.4	100.0	

¹ Excluding Taxation Tree Farms included in Tree-farm Licences.

² Includes Class "A" Provincial Parks and other reserved areas.

³ An unknown fraction—in the order of 5 per cent—of this area is authorized for harvesting under Timber Sale Licences and Cutting Permits at any particular time.

⁴ Includes special sale areas, proposed sustained yield units and unregulated units.

⁵ Includes Indian Reserves and National Parks.

Source: Compiled from B.C. Forest Service, *Annual Report Statistics, 1975*, Queen's Printer, Victoria, 1975, and Forest Inventory Statistics of British Columbia, Queen's Printer, Victoria, 1975.

Table 3-2
ORIGIN OF HARVEST BY TENURE¹

	in regulated sustained yield units				outside sustained yield units	total	per cent
	Public Sustained Yield Units	Tree-farm Licences	Taxation Tree Farms ²	Farm Wood-lots			
	thousands of cunits						
Provincial Crown land							
old temporary tenures	—	1,744.7	—	—	1,361.4	3,106.1	14.6
Timber Sale Harvesting Licences	6,699.9	—	—	—	—	6,699.9	31.6
Other Timber Sale Licences	3,746.8	111.2	—	—	354.4	4,212.4	19.8
Tree-farm Licences "Schedule B" lands	—	3,508.6	—	—	—	3,508.6	16.5
Farm Wood-lots	—	—	—	2.2	—	2.2	.1
beachcomb, trespass, miscellaneous	421.6	—	—	—	175.8	597.4	2.8
total Provincial Crown	10,868.3	5,364.5	—	2.2	1,891.6	18,126.6	85.4
Crown-granted land	—	254.6	456.9	.3	2,269.7	2,981.5	14.0
Federal land ³	—	—	—	—	116.0	116.0	.6
total harvest	10,868.3	5,619.1	456.9	2.5	4,277.3	21,224.1	100.0
per cent of total harvest	51.2	26.5	2.2	0	20.2	100.0	

¹ Three-year average of volumes scaled in 1973, 1974 and 1975.

² Excluding areas included in Tree-farm Licences.

³ Includes Indian Reserves.

Source: Compiled from data provided by the B.C. Forest Service.

These are the basic features of the old temporary tenures, but many have undergone a degree of refinement under the Tree-farm Licence programme, discussed in a later section of the chapter. The last of the old tenures was granted in 1907; but in 1912, following the Report of the Fulton Royal Commission, a new form of tenure over Crown timber—the Timber Sale Licence—was introduced.

TIMBER SALE LICENCES

The *1910 Fulton Report* marked a turning point in forest policy. Three years earlier, further alienations of old temporary tenures had been suspended. The Fulton Commission, with the crude information available at that time, estimated that there were 240 million Mfbm of merchantable timber in the province and about two-thirds of it had already been alienated in Crown grants and old temporary tenures. With a current harvest of less than one million Mfbm the Commissioners concluded that enough had been taken up to meet the industry's need for several decades, and so the rest should be held in reserve. However, the Commissioners recognized that it might be expedient to make small parcels of Crown timber available to supply the needs of some localities where old temporary tenures had not been staked, to rationalize operations, or to forestall monopolistic tendencies, and for these purposes they proposed sales by competitive auctions.

ORDINARY TIMBER SALE LICENCES

The Commission's proposals were embodied in the first Forest Act, passed in 1912, which provided that anyone could initiate a sale of timber on a defined tract of Crown land. The timber was cruised and put up to public auction, where it was open to all comers to bid bonus prices in excess of a floor (or "upset") price determined under the Forest Service's stumpage appraisal procedures. The criteria used to determine this upset price were designed to yield a more discriminating estimate of the value of Crown timber than the royalties applicable to the old temporary tenures and some Crown grants. Rights carried a definite term, after which they would expire absolutely. This was the origin of the *Timber Sale Licence* which, although greatly modified over the decades, remains one of the principal instruments for granting rights to Crown timber today.

The 1912 Act made two further innovations in forest policy. It authorized establishment of the Forest Service and the designation of Forest Reserves which comprise areas of Crown land under exclusive Forest Service jurisdiction. The number of Forest Reserves has since grown to 94, and they cover some 75 million acres.

MODIFICATIONS UNDER SUSTAINED YIELD POLICY

Because Timber Sale Licences were the only means available for making Crown timber available after 1907 (with the minor exception of Handloggers Licences), this form of tenure became increasingly important as the demand for timber grew. By 1945 Timber Sale Licences accounted for 25 per cent of the total provincial harvest and half the cut in the Interior.

But by that time apprehensions had arisen over the unbalanced pattern of timber harvesting in the province, the lack of secure timber supplies for new

industrial ventures, and the inadequate provisions for future forest crops. The old temporary tenures still accounted for most of the harvest, concentrating cutting in the best stands and in accessible parts of the lower Coast. Timber Sale Licences, too, were generally clustered around the more developed areas. Meanwhile, vast regions of more remote mature and over-mature timber were untouched. These and other circumstances raised concern that the manufacturing establishments and communities which had grown to depend on them would become isolated from their fibre supply, so in 1943 the second Royal Commission of Inquiry was appointed to find solutions.

The 1945 *Sloan Report* proved to be another turning point in provincial forest policy, because the government adopted the Commissioner's central recommendation—namely that the province embark on a policy of sustained yield harvesting and management of forests. This would be accomplished by designating sustained yield units over large tracts of forest land: some, which later became known as Tree-farm Licences, would be managed by forest companies; others, which eventually became Public Sustained Yield Units, would be managed by the Forest Service, and regulated harvesting would be authorized under Timber Sale Licences. There are now 81 Public Sustained Yield Units in the province, covering nearly 80 million acres, or nearly 60 per cent of all forest lands.

The government's efforts to regulate harvesting within the constraints of the calculated allowable annual cut for each Public Sustained Yield Unit led to profound changes in the Timber Sale Licence system. For the most part, licences ceased to authorize harvesting of all the timber on a specified tract of land, and instead conveyed a right to an annual volume, to be cut within a Public Sustained Yield Unit in places to be designated by the Forest Service at intervals during the term of the licence. More important, new policies were introduced that had the effect of virtually eliminating competition for rights to Crown timber; licensees gradually assumed informal "quota positions" which implied that their licences would be replaced as they expired without competition and more or less indefinitely. This oblique arrangement rests mainly on Ministerial and administrative practice rather than statutory rights and contracts, but it has far-reaching implications for tenure policy, as I explain in a later chapter. Finally, efforts to achieve closer harvesting control and improved standards of timber utilization led to the introduction of new types of Timber Sale Licences which have since largely replaced the traditional or "ordinary" type.

TIMBER SALE HARVESTING LICENCES

The Public Sustained Yield Units were initially to be managed directly by the Forest Service, with respect to planning, reforestation, protection, and so on. But as the industry consolidated and demands for more sophisticated resource management increased, the government sought means of involving licensees to a greater extent in management functions. The upshot in the late 1960's was a new variant of Timber Sale Licence, called the *Timber Sale Harvesting Licence*. Each licensee was encouraged to consolidate the rights he held under Timber Sale Licences in any Public Sustained Yield Unit into one of these larger and longer-term tenures. The new system was adopted quickly, and Timber Sale Harvesting Licences became the chief vehicle for

maintaining "quota positions". Today, over 60 per cent of the timber harvested in Public Sustained Yield Units is cut under this form of licence.

Timber Sale Harvesting Licences typically carry terms of 10 years, although some are longer. They convey a right to an annual cut in a given Public Sustained Yield Unit without specifying the areas to be logged, but the Forest Service recognizes informal *chart areas* for planning purposes within which short-term Cutting Permits are issued to authorize harvesting of specific stands.

Another important development during the last decade was spurred by advances in technology that enabled sawmills to manufacture lumber and pulp chips from timber that was previously regarded as waste and from stands that had been regarded as unmerchantable. This led to closer standards of utilization, and when new inventories were compiled to the new standards the calculated allowable annual cuts in the Public Sustained Yield Units indicated that a considerably larger harvest could be taken each year. The "quota" arrangement provided the mechanism for allocating much of this additional volume to established licensees whose mills were equipped to utilize this marginal timber. "Quotas" were increased across the board, in the Interior by one-third, and on the Coast by one-half. For the most part these increases were embodied in the new Timber Sale Harvesting Licences.

"THIRD BAND" TIMBER SALE LICENCES

The distribution of additional harvesting rights through the "quota" system did not exhaust all the increases in allowable cuts that resulted from closer utilization standards, particularly in the Interior, where timber stands contain a large volume of small diameter and defective wood. These surplus volumes were not directly allocated through the "quota" system, but were made available to operators who could show a "need" for additional timber to meet the capacity requirements of their mills and who had the facilities (that is, log barkers and chippers) to utilize this timber. To convey these rights, a special form of tenure was introduced, called (for obscure reasons) the "*third band*" *Timber Sale Licence*.

A hybrid of the traditional Timber Sale Licence and the new Timber Sale Harvesting Licence, this new variant carries short terms of one to five years, exacts some management responsibilities, and allocates an annual volume in a Public Sustained Yield Unit. As a rule Cutting Permits setting out areas to be harvested are required. Most Timber Sale Licences are now of the "third band" variety; they account for about 20 per cent of the current harvest, and up to 55 per cent in some Interior Forest Districts.

TREE-FARM LICENCES

The sustained yield policy adopted in the late 1940's consisted of two main facets: one involved the structuring of Public Sustained Yield Units; the other was the *Tree-farm Licence* system. Tree-farm Licences were designed to enable owners of Crown-granted forest lands and old temporary tenures to combine these with enough unencumbered Crown land to form self-contained sustained yield management units. These licences commit the licensee to manage the entire area for their duration, according to sustained yield principles and under the general supervision of the Forest Service. In return for tempering their cutting rates on their own holdings, licensees

obtained rights to harvest additional timber included in the licence area, without competition.

After the enabling legislation was passed in 1948 the response of the industry was enthusiastic. Since then 41 Tree-farm Licences have been issued; but because several have been amalgamated their number today stands at 34. This programme has been successful in bringing large areas of unregulated forest land under sustained yield management. In 1975, about 54 per cent of the area covered by old temporary tenures and 7 per cent of Crown-granted forest lands were incorporated into these licences, designated "Schedule A" lands. In total, they account for 13 per cent of the productive lands under Tree-farm Licences, but the proportion varies widely among licences. The remaining 87 per cent consists of the Crown's contribution to these units, called "Schedule B" lands.

Licensees' management responsibilities are extensive. They are obliged to compile inventories, conduct reforestation programmes, and assume other obligations including road construction and fire suppression. On timber cut from the "Schedule A" lands the same royalty rates are payable as on old temporary tenures and Crown-granted land lying outside Tree-farm Licences. The harvest from the remaining "Schedule B" lands attracts appraised stumpage calculated using the same formula that applies to Timber Sale Licences. From these latter levies are subtracted many of the costs associated with the licensees' management responsibilities, so that they receive some measure of financial compensation for assuming these extra obligations.

By the time the third Royal Commission on forest policy was appointed in 1955, the Tree-farm Licence system had become the subject of vigorous public debate. The licences issued to date had carried perpetual terms and an important recommendation in the *1956 Sloan Report* was that they should no longer be issued in perpetuity, but instead should bear renewable terms of 21 years. This recommendation was adopted in subsequent legislation.

The dramatic increases in the allowable annual cuts in Public Sustained Yield Units during the past decade were matched and sometimes even surpassed in the Tree-farm Licences. As new inventories were compiled, taking into account smaller and more defective wood under closer recovery standards, licensees' allowable annual cuts were boosted by up to several hundred per cent.

The last Tree-farm Licence was granted in 1966, the government apparently having found the new forms of Timber Sale Licences more suitable for further allocations of Crown timber. Of the 34 licences currently in force one is held by a municipality—the City of Mission—and the remaining 33 rest with forest products companies. As Tables 3-1 and 3-2 portray, Tree-farm Licences cover 10.5 million acres of productive forest land—8 per cent of the provincial total—but they contribute more than a quarter of the total harvest. They are particularly important on the Coast, where Crown-granted forest land and the old temporary tenures are concentrated, although there are several large licences in the Interior comprised mostly of "Schedule B" lands.

FARM WOOD-LOT LICENCES

Closely akin to Tree-farm Licences, but on a relatively minute scale, are *Farm Wood-lot Licences*. A 1948 amendment to the Forest Act empowered the Minister to issue rights over very small tracts of Crown forest to farmers,

to supplement the timber production from their own holdings of Crown-granted lands. The combined acreage is to be managed on a sustained yield basis by the farmer subject to Forest Service supervision.

Use of this tenure has not been widespread, and participation in the programme has fluctuated, principally in response to changing patterns of rural land use. There are now 36 Farm Wood-lots, comprising a modest 8,700 acres of Crown land. As Table 3-2 illustrates, their contribution to the provincial timber harvest is insignificant.

PULPWOOD HARVESTING AREA AGREEMENTS

The trend toward close utilization of timber in the Interior has been closely linked to the development of the pulp industry in that region. In the early 1960's the Interior sawmilling industry, through "quota" arrangements, had to a large extent pre-empted the annual allowable harvest available in the more accessible Public Sustained Yield Units, but only as it was then calculated, to standards of utilization based strictly on lumber recovery. Timber falling below this standard, as well as chips that could be produced from sawmill residues, offered a potential source of wood fibre for pulping; and *Pulpwood Harvesting Area Agreements* were devised to provide proposed pulp mills with assured supplies of this material. These contracts confer options on pulp companies to obtain Timber Sale Licences over Crown timber falling below sawmilling standards, usually up to a stated maximum annual volume; and they impose obligations to construct pulp mills and to utilize logging and sawmilling residues in the manufacture of pulp.

There are now five Pulpwood Harvesting Area Agreements in force—all in the Interior. Each designates a number of Public Sustained Yield Units as the object of the option, and four of the agreements grant rights over timber in the unregulated Prince George Special Sale Area as well. Shortly after these contracts were executed the Interior sawmill industry, as it moved to close utilization standards, began to produce enough residual chips to meet the requirements of the pulp mills, with the result that the latter have generally found it unnecessary to exercise their options for standing timber.

THE CURRENT PATTERN OF RIGHTS

Since introduction of sustained yield policies in 1947, more than 92 million acres—more than two-thirds of the total forest land in the province—have been incorporated into one of the forms of sustained yield management units, mainly Public Sustained Yield Units and Tree-farm Licences. Several new Public Sustained Yield Units are planned. Table 3-1 summarizes the status of forest land in the province, but it must be read with caution. In particular, the large area shown as "other forest land" should not be regarded as totally uncommitted, because most Timber Sale Licences and Timber Sale Harvesting Licences—both extremely important tenure forms—cover timber in this category which is not excluded because they license a volume to be harvested rather than a geographical area.

In any event, as far as the timber resource commitment is concerned, areas are less relevant than volumes. Table 3-2 summarizes the contribution of each tenure category to the total provincial harvest during 1973 to 1975. It should be emphasized that these figures show the harvest, not the volume

that is authorized for harvest, (which is significantly larger as I explain in a later chapter). Comparison of Tables 3-1 and 3-2 shows that the share of the harvest originating from Crown-granted lands and old temporary tenures, in particular, considerably exceeds the proportion of forest land area that they represent. The same is true for Tree-farm Licences which, as Table 3-1 shows, include many of these older tenures. Timber Sale Licences and their variant, Timber Sale Harvesting Licences, together account for more than half the total harvest, but for reasons mentioned above it is not appropriate to compare this with any particular area shown in Table 3-1.

As the forest economy of the province developed and spread outward from the early centres of commerce, the innovations in forest tenure arrangements that were introduced from time to time tended to be applied to progressively more remote areas and to stands of lower quality. There are many exceptions to this generalization, but it is evidenced in the pattern of rights that prevails today. The Crown-granted timberlands are heavily concentrated in the rich forest areas on southern Vancouver Island, along the first railroad routes, and near the early agricultural and mining centres of the southern Interior. The old leases and licences are found mostly on readily accessible coastal areas and near Interior rail routes, and cover relatively choice forest land. In contrast, the newer forms, such as Pulpwood Harvesting Area Agreements and many of the Timber Sale Licences, are more often found in the more remote stands of marginal timber. This broad pattern can be seen in the map included with this report, but it has little to do with the relative importance of different tenure forms today.

CONTROL MECHANISMS

An important part of tenure policy is the form and method of public control over the exercising of rights to timber and forest land. Many of these controls and regulations are the subject of detailed discussion and recommendations in subsequent chapters; here, to complete this brief sketch of the tenure system, the most important regulatory procedures governing the major tenure arrangements are outlined.

Crown-granted lands not included in either Tree-farm Licences or Taxation Tree Farms are subject to very little regulation. The Forest Act provides that owners take precautions against fire, and the Minister may require them to dispose of slash and snags and to reforest denuded areas (although the latter has never been enforced). Such lands comprise about 43 per cent of all Crown-granted forest land and apart from several large holdings on Vancouver Island consist mostly of relatively small parcels in the more developed regions of the south Coast and farming districts of the Interior.

The management of private lands included in Taxation Tree Farms is controlled through a sustained yield management plan that must be approved by the Forest Service. That plan prescribes not only the rate and pattern of timber harvesting but also such things as road development, fire protection, and reforestation. The owner of the Taxation Tree Farm must submit an annual report to the British Columbia Assessment Authority and the property is inspected periodically by the local assessor.

The licence documents pertaining to the old temporary tenures (except Pulp Leases) contain provisions that require the licensee to submit logging

plans for the approval of the Forest Service. Generally these plans are approved only if they conform to currently acceptable practices, such as environmental guidelines established by the Forest Service for the region.

Tree-farm Licences are subject to much more rigorous and continuous control. They oblige the licensee to submit for Forest Service approval a *management working plan* for the entire licence area, covering any Crown-granted land and old temporary tenures as well as all "Schedule B" lands. These plans include a complete forest inventory and an allowable annual cut calculation, and describe in general terms protection and reforestation methods as well as the intended pattern of development and harvesting, over a 5-year period. More detailed *development plans*, also covering 5-year periods but updated annually, describe proposed cutting patterns and access routes with much greater precision.

The management working plan and development plan thus embody statements of the licensee's management responsibilities over his licence area and his plan for its development; and these documents represent the principal means available to the Forest Service for supervising his stewardship. Beyond approval of these general plans, the licensee is required to obtain specific authority to actually harvest the timber from any of the public or private lands within a Tree-farm Licence, in the form of *Cutting Permits*. These supplementary authorizations define specific geographical areas to be harvested over one to five-year periods in conformity with the plans already sanctioned by the Forest Service; and, as the final and most detailed approval given by the Forest Service before logging begins, they play an important role as instruments of public control over forest land practices.

Before he may obtain a Cutting Permit the licensee must first compile a detailed inventory of the proposed area by means of a timber cruise which meets Forest Service standards, and submit detailed plans and reports dealing with such matters as areas proposed for logging and the location of roads, landings and other installations, silvicultural treatment, slash disposal, and the information needed by the Forest Service to appraise the stumpage values of the timber. Once the terms of the permit have been settled the licensee may begin his harvesting activities.

Timber Sale Harvesting Licences do not call for an overall management working plan, but in other respects the requirements are much like those of Tree-farm Licences. The licensee must submit 5-year development plans, normally within his chart area, and obtain Cutting Permits for specific operations. The arrangements for other Timber Sale Licences are extremely variable, ranging from requirements similar to Timber Sale Harvesting Licences to cases where the licence itself serves the purposes of a Cutting Permit.

THE INDUSTRY

The forest industry constitutes the largest and most important segment of British Columbia's industrial economy. Throughout most of the province's history economic growth and rising standards of living have been attributable in large part to the developing forest-based industries, and from all appearances future prosperity, also, will depend heavily on the forestry sector.

Forest policy must explicitly recognize the importance of this industry to the provincial economy. More specifically, forest tenure policy must be designed to meet the raw material needs of the forest industry while at the same time reconciling the industry's demands on the resource with the broader public interest. The policies chosen provide the instruments for shaping the industry's geographical and structural development as well as its rate of growth, and they must, therefore, be carefully chosen to ensure an industrial structure consistent with public objectives regarding resource use and economic development.

This Commission is charged to concern itself with both the structure of the forest industry and its ownership and control in designing recommendations relating to tenure policy. Accordingly, in order to provide essential background information, the Commission attempted a rather comprehensive examination of the province's forest industry. This chapter provides a summary of the findings and is supplemented by additional information in Appendix B. Marketing structures and patterns for final and intermediate products are examined later, in Chapter 21.

The task of assembling the information about the industry that I considered important to this inquiry has proven surprisingly difficult. Such data as are available have been collected in different ways for a variety of purposes, and are not always consistent. They are also often out of date. As a result, some of the findings reported here and in Appendix B are estimates or approximations, and while I feel confident that they are as accurate as the best available information permits, the statistics relating to such matters as the position of individual companies cannot be regarded as precise.

An attempt to depict the structure of the forest industry is hampered not only by the limitations of reliable data but also by the fact that statistics relating to one year may not be entirely representative of the normal or average picture, because of the cyclical nature of industrial activity. To overcome this, the analysis in this chapter has not concentrated on the production of the industry or individual firms but rather on measures of resource control and production capacity. Thus I try to show the distribution of harvesting rights, the holdings of unregulated stocks of timber, and the ownership of manufacturing capacity. This is supplemented, however, with some information about aggregate industrial production.

DIMENSIONS OF THE INDUSTRY

Timber production and manufacturing in British Columbia have maintained long-term secular growth throughout this century. During the five years from 1970 to 1975 the industry produced an average of 20 million cunits of timber annually (a cunit being 100 cubic feet of wood; about the volume in a large telephone pole). This timber is almost all coniferous softwoods—spruce, hemlock, lodgepole pine, Douglas fir, the true firs and cedar in that order, as illustrated in Figure 4-1. Until about five years ago, the largest part of the provincial timber harvest was produced on the Coast but, as a result of rapid industrial expansion in the Interior, that region now produces more than half of the total provincial harvest.

Nearly all the timber harvested in British Columbia is manufactured in the province, log exports averaging only about one per cent of total production. By far the most important product in terms of the volume of timber consumed is lumber. The pulp and paper industry is the next largest wood user, with approximately two-thirds of its raw material in the form of chips produced as a by-product of sawmilling. The third major manufacturing process, considerably smaller than the other two, as illustrated in Figure 4-2, is the veneer and plywood industry.

Table 4-1 shows the value of the products produced and the labour employed in each of these divisions of the forest industry in 1974. The \$3.5 billion in total shipments of forest products in 1974 represents about half of the province's total manufactured shipments, and the 85 thousand people directly employed in the forest products industry amounts to about 9 per cent of the labour employed in the province in that year.

Table 4-1

DIMENSIONS OF THE FOREST INDUSTRY, 1974

	value of shipments	employment	
		in production	total ¹
	(millions of dollars)	(thousands of employed)	
logging	1,557.6	18.1	21.7
lumber manufacture	1,536.3	27.3	31.6
pulp and paper	1,418.8	13.2	18.4
plywood and veneer	307.6	7.0	7.8
other wood products	226.3	4.5	5.5
total	3,489.0 ²	70.1	85.0

¹ Includes those employed in both production and administration.

² Excludes the value of logging production, which is reflected in the value of the manufactured products (except for logs exported).

Source: Statistics Canada, Forestry Division.

DEPICTING OWNERSHIP AND CONTROL

In the following pages I attempt to portray, in broad terms, the pattern of timber holdings and log production and the industrial structure of each of the three main manufacturing sectors. It is important to bear in mind that each of these segments of the production process are closely linked, both in physical terms and in terms of ownership and control.

FIGURE 4-1 Timber Production by Species

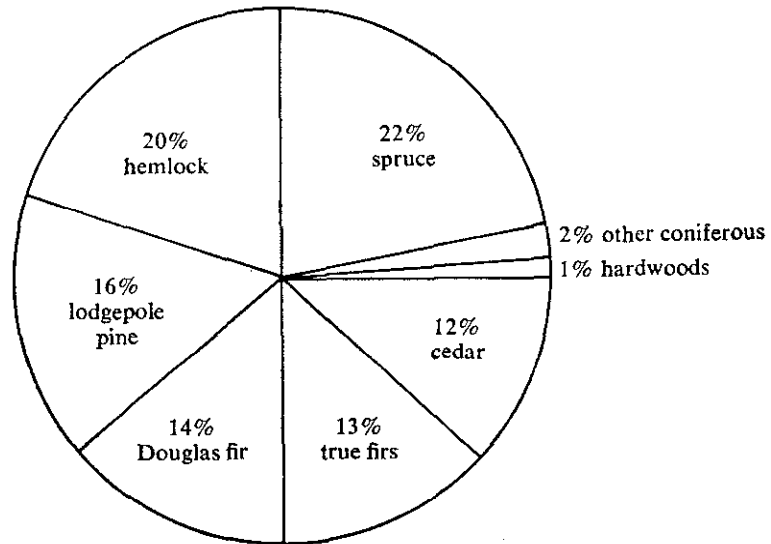
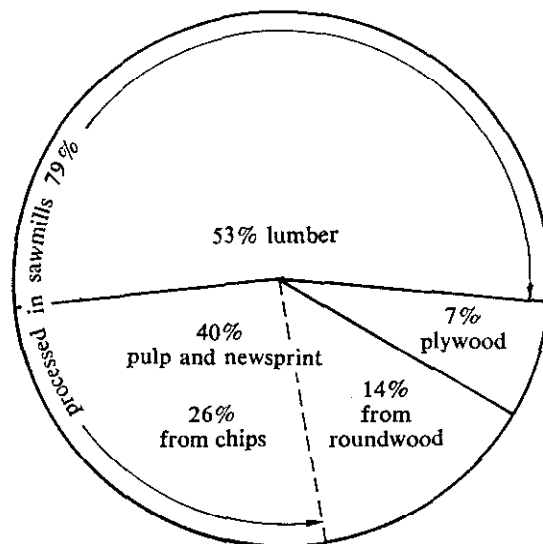


FIGURE 4-2 Timber Utilization by Major Products



Source: B.C. Forest Service.

The pattern of ownership and control—one aspect of industrial structure—is important for the purposes of this inquiry. During my public hearings it became apparent that the growing concentration of timber holdings and manufacturing capacity in the hands of a diminishing number of large corporations is giving rise to concern in several quarters, including some sectors of the industry itself. Unfortunately, these trends have not attracted much empirical analysis, and as a result I encountered considerable difficulty in obtaining the data necessary to show the degree of concentration in the different sectors. Nevertheless, a special effort has been made to analyse industrial structure because of its importance to my recommendations.

Examination of the ownership of companies involves an investigation of shareholdings. The concept of corporate control (as distinct from ownership) is somewhat more evasive and to deal statistically with it involves a certain degree of arbitrariness. In this review, I have assumed that a shareholder controls a company if he holds 50 per cent or more of that company's outstanding voting stock. This is, admittedly, a conservative assumption insofar as effective control can often be exercised through a smaller proportion of shares when the remainder is widely distributed among other shareholders; but any other assumption would misrepresent the seat of control of at least some firms. Accordingly, for purposes of portraying corporate control in the following discussion, holdings have been compiled by what I refer to as *controlling companies*. The holdings attributed to each controlling company include both those held directly by that company as well as those of other companies in which it owns a majority of voting shares.¹

TIMBER RIGHTS AND TIMBER PRODUCTION

As explained in the previous chapter, most of the forest lands in the province are divided into sustained yield units, mainly Public Sustained Yield Units and Tree-farm Licences, and for each there is an allowable annual cut approved by the Forest Service. Various kinds of licences convey rights to harvest timber within the limits of the allowable cut in each unit: in the case of Tree-farm Licences the right to the entire allowable cut is held by the licensee; in Public Sustained Yield Units several companies typically hold rights under the different forms of Timber Sale Licences. In this review, I refer to the annual rate of harvesting authorized under current licences as the *committed* allowable cut; and I have summarized each controlling company's timber supply position in terms of the allowable cut committed to it under all its licences in sustained yield units. Some rights are not subject to regulated harvest rates however, and for these the best measure is either acreage or the volume of timber actually harvested from them.

Tables 4-2 and 4-3 summarize the distribution of annual cutting rights and actual harvests from all holdings for the Coast and Interior respectively.² In each case, the holdings of the 10 largest controlling companies, in terms

¹ Exceptions have been made in the cases of Canadian Forest Products and B.C. Cellulose. The companies affiliated with Canadian Forest Products in the Prince George area are included under the name of that company in the compilations that follow even though it owns less than half of their voting shares, because they are all controlled by nearly the same Directors. B.C. Cellulose is not a shareholder in two of the companies included under that name, but in all of them the provincial government is either the sole or majority shareholder.

² It is important to note that all figures represent the distribution of cutting rights as of July 2, 1975. The distribution will have changed since that time as new allocations are made, transfers and withdrawals take effect, and so forth.

TABLE 4-2

DISTRIBUTION OF COMMITTED HARVESTING RIGHTS AND TIMBER HARVE
AMONG CONTROLLING COMPANIES ON THE COAST

controlling company	committed allowable cut in 1975 ¹				harvest in 1		
	Public Sustained Yield Units	Tree-farm Licences	total	share of Coast total	Public Sustained Yield Units	Tree-farm Licences	unregula
	thousands of cunits			per cent	thousands of cunits		
MacMillan Bloedel	93.3	2,686.4	2,779.7	32.0	62.1	2,106.4	878.
B.C. Forest Products	490.7	508.1	998.8	11.5	300.4	465.6	174.
Rayonier	44.1	859.4	903.5	10.4	34.3	710.0	44.
Crown Zellerbach	115.4	485.7	601.1	6.9	63.8	239.7	488.
Canadian Forest Products	138.8	404.0	542.8	6.2	105.7	348.8	67.
Tahsis	216.0	302.0	518.0	6.0	126.0	286.2	133.
Weldwood	233.4	157.0	390.4	4.5	212.8	85.1	94.
Eurocan	—	312.0	312.0	3.6	—	140.6	—
Bay Forest Products	246.4	—	246.4	2.8	211.0	—	2.
B.C. Cellulose	82.2	72.0	154.2	1.8	24.4	110.7	—
total above 10	1,660.3	5,786.6	7,446.9	85.7	1,140.5	4,493.1	1,882.
next 10 largest	717.9	—	717.9	8.3	595.0	—	460.
remaining 10 ³	187.4	—	187.4	2.2	99.2	—	36.
total: 30 companies	2,565.6	5,786.6	8,352.2	96.2	1,834.7	4,493.1	2,379.
Coast total	2,893.1	5,798.0	8,691.1	100.0	2,118.5	4,505.7	3,220.
% of above 30 companies in Coast total	88.7	99.8	96.2		86.6	99.7	73.

¹ The harvest from Taxation Tree Farms outside Tree-farm Licences is included in the "unregulated" cut.

² Volume scaled and billed in 1974.

³ Includes all others with allowable annual cut of 25,000 cunits or more.

Source: Compiled from various data provided by the B.C. Forest Service.

Table 4-3
DISTRIBUTION OF COMMITTED HARVESTING RIGHTS AND TIMBER HARVESTED
AMONG CONTROLLING COMPANIES IN THE INTERIOR

controlling company	committed allowable cut in 1975 ¹				harvest in 1974 ²				
	Public Sustained Yield Units	Tree-farm Licences	total	share of Interior total	Public Sustained Yield Units	Tree-farm Licences	unregulated ¹	total	share of Interior total
	thousands of cunits			per cent	thousands of cunits				per cent
B.C. Cellulose	534.4	1,063.0	1,597.4	12.4	333.4	1,014.9	29.3	1,377.6	12.1
Northwood	958.7	178.3	1,137.0	8.8	698.7	172.1	5.1	875.9	7.7
B.C. Forest Products	902.7	—	902.7	7.0	577.0	—	1.6	578.6	5.1
Canadian Forest Products	698.6	—	698.6	5.4	498.9	—	3.7	502.6	4.4
Netherlands	436.5	—	436.5	3.4	313.9	—	—	313.9	2.8
Evans Products	428.3	—	428.3	3.3	222.6	—	63.9	286.5	2.5
West Fraser	422.7	—	422.7	3.3	389.5	—	.8	390.3	3.4
Eurocan	404.2	—	404.2	3.1	243.7	—	—	243.7	2.1
Cattermole/Finlay	400.0	—	400.0	3.1	125.6	—	—	125.6	1.1
Weldwood	341.3	44.0	385.3	3.0	355.2	39.8	18.7	413.7	3.6
total above 10	5,527.4	1,285.3	6,812.7	52.7	3,758.5	1,226.8	123.1	5,108.4	44.7
next 10 largest	2,150.6	356.8	2,507.4	19.4	1,712.8	362.9	54.2	2,129.9	18.7
remaining 39 ³	2,973.9	22.7	2,996.6	23.2	2,152.6	17.2	132.7	2,302.5	20.2
total: 59 companies	10,651.9	1,664.8	12,316.7	95.2	7,623.9	1,606.9	310.0	9,540.8	83.9
Interior total	11,267.6	1,664.8	12,932.4	100.0	8,609.6	1,606.9	1,158.3	11,374.8	100.0
% of above 59 companies in Interior total	94.5	100.0	95.2		88.6	100.0	26.8	83.9	

¹ The harvest from Taxation Tree Farms outside Tree-farm Licences is included in the "unregulated" cut.

² Volume scaled and billed in 1974.

³ Includes all others with allowable annual cut of 25,000 cunits or more.

Source: Compiled from various data provided by the B.C. Forest Service.

of their allowable annual cut, are shown individually (these are not quite the same as the top 10 producers of timber). The tables also show the aggregate holdings of all controlling companies that have rights to an allowable annual cut of at least 25 thousand cunits (roughly the minimum volume required to maintain a normal full-time logging enterprise) which cover some 95 per cent of all timber holdings in the province.

On the Coast, there are only 30 controlling companies with significant timber holdings.³ But even within this 30, control is heavily concentrated. The largest 10 controlling companies hold rights to 85.7 per cent of the committed allowable annual cut on the Coast, including virtually all of that under Tree-farm Licences and 57.4 per cent of that in the Public Sustained Yield Units. They also hold a majority of the unregulated rights. Their production in 1974 represented 76.3 per cent of the total coastal harvest.

In the Interior, holdings are somewhat more widely dispersed, with 59 controlling companies holding significant cutting rights. Of these, the largest 10 control 52.7 per cent of the committed allowable annual cut and in 1974 produced 44.9 per cent of the total harvest.

It should be noted that several of the largest companies have timber holdings in both regions: B.C. Forest Products, B.C. Cellulose, Canadian Forest Products, Eurocan, Cattermole, Weldwood, Crown Zellerbach and Triangle Pacific all have significant timber rights both on the Coast and in the Interior. When the data for the two regions are combined (as in Appendix B) it emerges that there are 75 controlling companies with significant timber holdings in the province. The largest 10 account for 58.6 per cent of the committed allowable cut with the largest 25 accounting for nearly 79 per cent.

Only 4.7 per cent of the committed harvesting rights are held by firms with rights to less than 25 thousand cunits per year. There are 280 such small licensees in the province: 185 of them with an allowable annual cut of less than one thousand cunits.

The unregulated rights are held in the form of Crown-granted lands and old temporary tenures outside of Tree-farm Licences and Timber Sale Licences on Crown land not included in Public Sustained Yield Units. The latter are small, short-term rights of minor importance. Table 4-4 shows the major controlling companies' holdings of Crown-granted land and old temporary tenures outside Tree-farm Licences. Available information suggests that unregulated private forest lands not in Taxation Tree Farms but used for timber production amount to about one million acres, and that the 167 thousand acres unaccounted for are found mostly in small holdings. The 86 thousand acres in old temporary tenures not identified by controlling company are held by licensees with less than 10 thousand acres each. Again, holdings are concentrated in a relatively few large firms, most of which are also among the largest holders of regulated cutting rights.

The concentration of timber holdings has been increasing for many years. The bulk of the Crown-granted forest lands has always been held by a few companies, because of their origin in railroad land grants. In contrast, the old temporary tenures were originally widely held. Even by 1940, of the four million acres outstanding in Timber Licences, 52 per cent was held by 58

³ Tables 4-2 and 4-3 include holdings of some companies with less than 25 thousand cunits of allowable cut in the relevant region, where they control that much or more in both regions combined.

Table 4-4

**HOLDINGS OF PRIVATE FOREST LAND AND OLD TEMPORARY
TENURES OUTSIDE TREE-FARM LICENCES**

controlling company	Crown-granted land		old temporary tenures outside
	unregulated ¹	in Taxation	Tree-farm
		Tree Farms	Licences
	thousands of acres		
Pacific Logging	300.4	—	25.4
MacMillan Bloedel	150.0	337.0	178.0
Crown Zellerbach ²	158.2	—	206.0
B.C. Forest Products	65.3	22.2	46.2
Scott Paper ³	84.7	—	—
Crestbrook	16.2	19.4	—
Rayonier	14.3	33.5	28.7
Crows Nest Industries	9.3	236.1	—
Weldwood	9.2	33.5	32.8
Northwood	7.8	—	10.5
Weyerhaeuser	4.6	—	28.6
B.C. Cellulose	4.2	—	—
Pope & Talbot	3.4	—	—
Clearwater Timber	3.0	—	—
Canadian Forest Products	.9	2.6	52.3
Triangle Pacific	.7	—	—
Tahsis	.3	—	27.5
Evans Products	—	—	28.6
Federated Co-Op	—	—	16.2
Darkwoods Forestry	—	139.3	—
Other	167.0 (approx.)	143.5	86.0 ⁴
total	1,000 (approx.)	967.1	768.1

¹ Includes some small holdings of Crown-granted lands held as regulated "Schedule A" lands in Tree-farm Licences.

² Includes one-third of the holdings of Elk River Timber.

³ Includes two-thirds of the holdings of Elk River Timber and all of the holdings of Northern Developments.

⁴ Includes small holdings of B.C. Cellulose, Crestbrook, and Triangle Pacific.

Source: Compiled from various data provided by the B.C. Forest Service.

licensees, and the rest by 2,800 others.⁴ Just 14 years later, more than half the acreage was held by only four licensees, and nine held two-thirds of the total. By 1965, four firms held two-thirds and eight controlled 82 per cent.⁵ Unpublished data collected by the Task Force on Crown Timber Disposal indicate that in 1974 one firm held nearly half of the 1.1 million acres outstanding in Timber Licences. For all forms of old temporary tenures approximately 80 per cent of the total acreage was held by only five firms and their subsidiaries in that year.⁶

The introduction of the Tree-farm Licence system provided an opportunity for those holding Crown-granted forest land and old temporary tenures to add to these holdings substantial tracts of additional Crown land. As a result,

⁴ D. M. Carey, "Forest Tenure in British Columbia" in *Transactions of the Ninth British Columbia Natural Resources Conference*, Colonist Printers, Victoria, 1956, p. 271.

⁵ M. R. McLeod, *The Degree of Economic Concentration in the British Columbia Forest Industry*, unpublished B.S.F. Thesis, The University of British Columbia, 1971, p. 116.

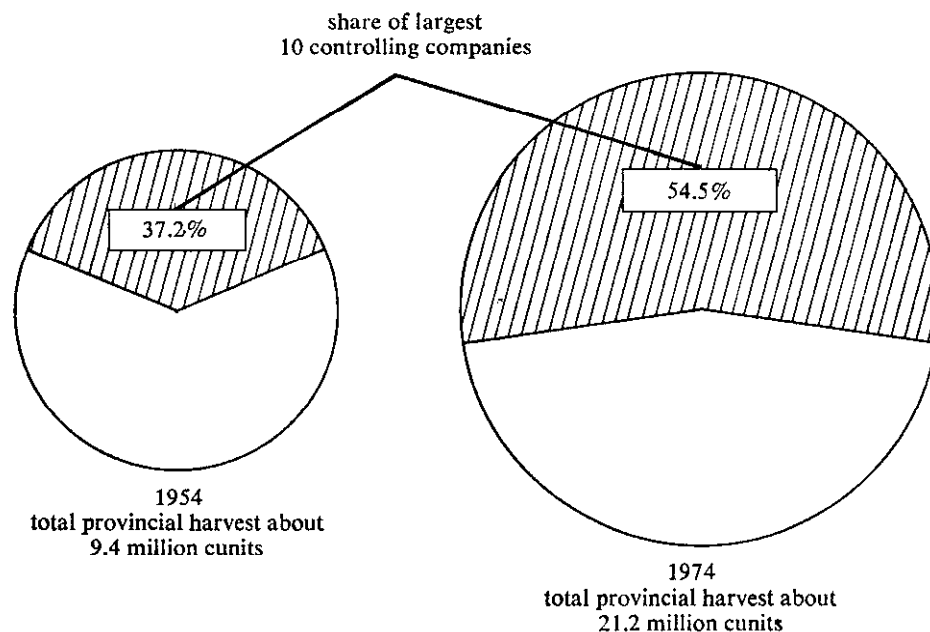
⁶ Task Force on Crown Timber Disposal, *Crown Charges for Early Timber Rights*, Victoria, February 1974, p. 66 (hereinafter, *Task Force 1st Report*, 1974).

some 913,272 acres of old temporary tenures and 476,600 acres of Crown-granted land have been placed within Tree-farm Licences and their contribution to allocated allowable annual harvests is incorporated in the data in Tables 4-2 and 4-3.

Control over timber rights has become increasingly concentrated in the hands of a few large corporations in spite of the dramatic growth of the forest industry over the last twenty years. For example, data presented in Appendix B indicate that, while the committed allowable annual cut in Public Sustained Yield Units more than doubled between 1968 and 1975, the distribution of control over harvesting rights in these units narrowed substantially.⁷

Figure 4-3 depicts the trend in concentration in total provincial timber production. In subsequent chapters of this report I describe several features of forest tenure policy that appear to have supplemented economic forces in generating this concentrated pattern of timber rights and production.

FIGURE 4-3 Growth in Total Timber Production and Share of the Largest 10 Controlling Companies 1954-1974



LUMBER MANUFACTURING

The bulk of the provincial timber harvest is manufactured into lumber, which makes British Columbia one of the world's greatest lumber-producing centres. This province has consistently accounted for at least two-thirds of Canadian lumber production. In 1975, 7.5 billion board feet were manufactured in the province, two-thirds of it in the Interior. Most of this lumber is produced in 344 sawmills which, in the aggregate, have a production capacity of 30 million fbm per shift.⁸ Of these mills, 72 per cent of the number, and 63 per cent of the productive capacity is located in the Interior.

⁷ It should be noted that the degree of concentration indicated by the kind of measures used here depends critically on the size of the area covered in the compilations. Analysis by Forest District or by individual Public Sustained Yield Unit often reveals a much greater dominance of a few firms, and in some regions of the province a single firm controls an overwhelming share of the timber rights.

⁸ Another 456 small mills operate irregularly, and contribute an insignificant share of total production.

The structure of the lumber industry has changed dramatically during the last three decades; aggregate manufacturing capacity has tripled, although the number of mills has steadily decreased since 1951. Table 4-5 ranks the largest controlling companies in terms of their control of lumber manufacturing capacity. The lumber manufacturing sector appears the least concentrated, although approximately the same group of large companies heads the list in each of the other sectors. In the province as a whole, a quarter of the lumber manufacturing capacity is owned by 5 controlling companies; half is owned by 18; and three quarters by 57 controlling companies. Statistical measures of concentration of control are roughly the same in the Interior and Coast regions.

PULP AND PAPER

There are now 22 pulp mills in British Columbia, with a total productive capacity of 18,300 tons per day. Two-thirds of this capacity is located on the Coast, where the MacMillan Bloedel company is by far the largest owner. In the Interior, the Canadian Forest Products group of companies at Prince George occupies the dominant position. Table 4-5 shows the distribution of capacity among controlling companies for the province as a whole. Half the provincial capacity is controlled by three controlling companies—MacMillan Bloedel, B.C. Forest Products and Canadian Forest Products—who operate 8 of the 22 mills.

Table 4-5

DISTRIBUTION OF MANUFACTURING CAPACITY AMONG LARGEST CONTROLLING COMPANIES (RANKED BY CONTROL OF LUMBER MANUFACTURING CAPACITY)

controlling company	lumber	pulp	paper	veneer and plywood
per cent of total manufacturing capacity				
MacMillan Bloedel	7.2	28.4	56.6	11.8
B.C. Forest Products	6.4	11.5	12.2	6.1
Northwood	4.3	4.4	—	—
Canadian Forest Products	3.6	10.9	5.1	14.4
Weldwood	3.4	4.1	—	19.7
Crown Zellerbach	3.4	5.5	15.2	9.0
B.C. Cellulose	3.1	10.4	4.9	2.2
Weyerhaeuser	2.2	6.8	—	—
West Fraser	2.2	—	—	—
Triangle Pacific	1.9	—	—	—
Netherlands	1.9	—	—	—
Evans Products	1.9	—	—	5.3
Rayonier	1.8	5.5	—	—
C. Itoh	1.6	—	—	—
Crestbrook	1.6	2.2	—	2.6
Doman	1.4	—	—	—
Tahsis	1.3	4.1	—	—
Whonnock	1.3	—	—	—
Cattermole/Finlay	1.1	.8	—	—
Integrated Wood Products	.8	—	—	4.6
Merrill & Wagner	.5	—	—	6.6
Eurocan	.3	5.0	—	—
total of above 22 companies	53.2	99.6	94.0	82.3

Source: Appendix B.

Paper is produced in nine mills, six of which are integrated with pulp plants. The total productive capacity in the province is now 6,180 tons per day, of which nearly all—96 per cent—is in the Vancouver Forest District. Well over half of this is controlled by MacMillan Bloedel; and this company, Crown Zellerbach and B.C. Forest Products together control 84 per cent of the paper capacity.

The most conspicuous development in this sector in recent years has been the expansion of the pulp industry into the Interior. Within the decade preceding 1972, nine mills were constructed in the region, and this had a profound impact on both the structure of the forest economy and on forest tenure policy, as described in later chapters.

VENEER AND PLYWOOD

Production of veneer and plywood began on the Coast early in this century while the Interior industry has developed more recently, following important technological developments. There are currently 28 veneer and plywood mills in British Columbia and their total input capacity of some 3,000 cunits per shift is roughly equally divided between the Coast and Interior. Over half of the total capacity is controlled by the largest four controlling companies, as shown in Table 4-5; and the largest eight control 80 per cent.

CONCENTRATION AND INTEGRATION

I should emphasize that the criterion of control used throughout this chapter probably underestimates the degree of concentration because some companies control others through less than 50 per cent of their voting shares. Moreover, two of the largest firms, B.C. Forest Products and Northwood, are treated as separate controlling companies here, although they are controlled by the same corporate shareholders located outside the province.

These compilations also help to reveal the pattern of integration across these various sectors, insofar as the same large firms tend to be dominant in each sector. Table 4-6 draws together some of the preceding statistics to illustrate this inter-sectoral integration of the major controlling companies, which are ranked in order of their shares of regulated cutting rights in the province as a whole. In preparing this table the initial aim was to portray those companies which controlled 80 per cent of the committed allowable cut, and this involved some 27 controlling companies. To these, two companies have been added: Scott Paper, to incorporate important holdings of Crown-granted land and paper production capacity; and Pacific Logging to reflect substantial holdings of Crown-granted land.

The companies listed in Table 4-6 represent a very large portion of the province's forest industry. They control over 80 per cent of the committed allowable cut and a roughly similar proportion of the Crown-granted lands and old temporary tenures outside Tree-farm Licences. In terms of manufacturing control, the controlling companies shown account for 56 per cent of the total capacity to produce lumber, 100 per cent of pulp, 96 per cent of paper, and 90 per cent of the plywood and veneer production capacity.

The participation of these companies in the several sectors of the industry varies considerably. The first eight firms listed stand out by virtue of their

Table 4-6

DISTRIBUTION OF TIMBER RIGHTS AND MANUFACTURING CAPACITY AMONG THE LARGEST FIRMS

controlling company	share of rights to timber and forest land				share of manufacturing capacity			
	committed allowable cut ¹	acreage of Crown-granted lands outside Tree-farm Licences		acreage of old temporary tenures outside Tree-farm Licences	lumber	pulp	paper	plywood & veneer
		unregulated	Taxation Tree Farms					
per cent of provincial total				per cent of provincial total				
MacMillan Bloedel	12.8	15.0	34.8	23.2	7.2	28.4	56.6	11.8
B.C. Forest Products	8.8	6.5	2.3	6.0	6.4	11.5	12.2	6.1
B.C. Cellulose	8.1	.4	—	—	3.1	10.4	4.9	2.2
Canadian Forest Products	5.7	.1	2.7	6.8	3.6	10.9	5.1	14.4
Northwood	5.2	.8	—	1.4	4.3	4.4	—	—
Crown Zellerbach	4.5	15.8	—	26.8	3.4	5.5	15.2	9.0
Rayonier	4.2	1.4	3.5	3.7	1.8	5.5	—	—
Weldwood	3.6	.9	3.5	4.3	3.4	4.1	—	19.7
Eurocan	3.3	—	—	—	.3	5.0	—	—
Tahsis	2.4	—	—	3.6	1.3	4.1	—	—
Cattermole/Finlay	2.2	—	—	—	1.1	.8	—	—
West Fraser	2.0	—	—	—	2.2	—	—	—
Netherlands	2.0	—	—	—	1.9	—	—	—
Evans Products	2.0	—	—	3.7	1.9	—	—	5.3
Weyerhaeuser	1.6	.5	—	3.6	2.2	6.8	—	—
Triangle Pacific	1.4	.1	—	—	1.9	—	—	—
Crestbrook	1.4	1.6	2.0	.1	1.6	2.2	—	2.6
Bay Forest Products	1.1	—	—	—	.9	—	—	—
Integrated Wood Products	1.1	—	—	—	.8	—	—	4.6
The Pas Lumber	1.1	—	—	—	.5	—	—	—
Pope & Talbot	1.0	.3	—	—	1.1	—	—	—
Merrill & Wagner	.9	—	—	—	.5	—	—	6.6
Whonnock	.9	—	—	—	1.3	—	—	—
Carrier Lumber	.8	—	—	—	1.0	—	—	—
Clearwater Timber	.8	.3	—	—	.8	—	—	—
North Central Plywood	.7	—	—	—	—	—	—	7.3
Babine Forest Products	.7	—	—	—	.9	—	—	—
Scott Paper	—	8.5	—	—	—	.4	2.4	—
Pacific Logging	.4	30.0	—	3.3	.4	—	—	—
	80.7	82.2	48.8	86.5	55.8	100.0	96.4 ²	89.6

¹ Includes Tree-farm Licences and rights in Public Sustained Yield Units.

² Remaining 3.6 per cent held by Belkin Packaging.

Source: Compiled from various data supplied by the B.C. Forest Service, and from information presented in Appendix B.

size, and their breadth of integration across the various sectors. Four other firms also control significant pulp capacity and are broadly integrated—Eurocan, Tahsis, Weyerhaeuser and Crestbrook. Together, these dozen large integrated controlling companies clearly dominate the entire industry.

DOMESTIC AND FOREIGN OWNERSHIP

The Commission's terms of reference with respect to the forest industry include an instruction to formulate recommendations ensuring "that domestic participation in its ownership and control is adequate". I have accordingly attempted to throw some light on this question in analysing the composition of ownership of forest industry companies. Although this is an issue that has attracted increasing public interest in recent years, there have been no investigations of foreign ownership of the provincial forest industry, and so the Commission has had to investigate the nationality of shareholders of companies. I have already noted the difficulties of data and the lack of a consistently reliable definition of corporate control. Nevertheless, some broad indications of the extent of foreign participation are possible.

In my review of the industry's structure, I identified all companies with regulated harvesting rights of 25 thousand cunits or more, with significant unregulated Crown-granted land or old temporary tenures, or with significant manufacturing capacity. Altogether, 250 controlling companies were thus identified and analysed. This is not exhaustive, but those companies omitted are very small and account for an almost insignificant share of timber rights and manufacturing capacity. For this discussion it can reasonably be assumed that this residual group is domestically owned and controlled.

Of the 250 controlling companies analysed, four include firms in which the degree of foreign ownership differs; and so these were separated out for purposes of classifying companies by nationality of ownership. Thus 255 separate entities were examined, and the nationality of their share ownership is as follows:

all Canadian	213
majority Canadian	13
majority foreign	14
all foreign	15
	255

Those companies that are entirely foreign owned are almost all subsidiaries of foreign corporations, which obviously implies foreign corporate control. For reasons mentioned already, it is somewhat tenuous to assume that all those with majority foreign ownership are foreign controlled (as some are managed and "controlled" by British Columbia residents) or, indeed, that all those with minority foreign ownership are domestically controlled. However, bearing this in mind, it is informative to examine the share of the industry accounted for by the 29 controlling companies in which all or a majority of the equity is owned by foreigners. In terms of the measures used earlier in this chapter these 29 controlling companies control the following proportions of the industrial totals:

committed allowable annual cut	35%
acreage in Crown-granted lands and old temporary tenures outside Tree-farm Licences	41%
sawmill capacity	29%
pulp capacity	37%
paper capacity	18%
veneer and plywood capacity	43%

Thus, while the companies with all or majority foreign ownership comprise only 11 per cent of the total number of companies, they control between 30 and 40 per cent of the timber rights and manufacturing capacity (except for paper where control is less than 20 per cent). They tend to be among the larger firms in the industry, and do not show the same diversity of size as domestically-owned companies. None are among the five controlling companies with the largest shares of allowable annual cut, although four of those have a minority foreign ownership. However, 14 of the next 17 largest controlling companies in this ranking have a majority foreign interest. Thus they dominate the top twenty in terms of timber holdings.

Several of the controlling companies with all or majority foreign ownership are specialized in the production of lumber, pulp, paper or plywood, and only one firm with majority foreign ownership is in all of these manufacturing processes. A review of the data indicates little apparent structural difference between the firms with majority foreign ownership and others of comparable size.

It is almost impossible, with available data, to draw many conclusions about the trends in foreign investment and control. Undoubtedly the size and capitalization of foreign-owned companies have increased, but interest in this question usually focuses on the *proportion* of foreign ownership or control, and the trend in this respect is much less clear. First, it should be noted that foreign interests have figured importantly in the province's forest industry since the earliest days: British, American and European capital having initiated many, if not most, of the larger pioneering ventures.⁹ Although several new multinational corporations have become established in the province in the last decade or so, other trends have had an offsetting impact on the balance between domestic and foreign participation. Some of the large corporations with majority Canadian ownership have purchased the timber and manufacturing assets of foreign companies in the province. And in the last few years the provincial government has acquired, in its own right, significant corporate assets previously owned by foreign interests. In view of this it seems unlikely that there has been any expansion in the proportion of foreign ownership over the long-term.

FINANCIAL PERFORMANCE

In the course of my public hearings, many spokesmen for the forest industry and the financial community expressed alarm over the forest industry's poor financial performance in recent years, and the serious implications

⁹ See D. G. Paterson, "European Financial Capital and British Columbia: An Essay on the Role of the Regional Entrepreneur", *B.C. Studies*, Spring 1974, pp. 33-47.

of this for the future health and vigour of the industry. A good deal of evidence was presented on this question and the Commission has examined other information as well, the general implications of which warrant some comment here.

At the outset, it must be said that although statistical information on rates of return in the forest industry is profuse, interpretation of it is often difficult. Accounting criteria vary, aggregate data often omit smaller firms and some of the large closely-held corporations, and comparisons with the forest industry elsewhere and with other industries are confused by varying tax arrangements. I do not intend to try to summarize these numerical calculations which are readily available elsewhere, but rather to indicate the general conclusions that I think can be drawn from them. I consider that the most important question from the point of view of public policy is whether the industry as a whole, and the separate sectors that comprise it, are sufficiently profitable to be able to attract the capital necessary to maintain investment at a level adequate to ensure the most beneficial use of the province's timber resources. And the measure of profitability I find most relevant is the return on invested capital.

First, there can be no doubt that the rate of return on capital invested in the forest industry has, in the aggregate, been low in recent years. Since the industry must compete for capital with other industries in the economy, the most relevant comparison is with other industrial sectors, and most analyses show the after-tax return on invested capital in the British Columbia forest industry ranks among the lowest of all Canadian industries. The persistence of rates of return that are low in both absolute and relative terms, in an industry that is also characterized by instability, undoubtedly portends increasing difficulty in attracting new capital.

Second, this poor financial performance of the industry is not unique to British Columbia; it is observable in the forest industry throughout Canada over the past decade. If anything, rates of return in the forest industry in this province have been lower than in the rest of Canada, but nowhere has the forest industry shown returns equal to those in industries like mining, petroleum or general manufacturing. The performance of comparable firms in the United States also appears to have been better.

Third, meagre returns have been earned in all sectors of the industry. Some individual sawmilling firms appear to have fared reasonably well, and better than many pulp and paper operations. But the aggregate performance of the sawmilling sector has not been appreciably different than that of the pulp and paper sector, and the sawmilling sector has also been less stable.

Finally, it is relevant to note with reference to the earlier discussion of industrial concentration that there is no consistent evidence to indicate that large companies in the British Columbia forest industry are more profitable than small firms. The rates of return in both categories vary widely and permit no generalization about relative performance; and in any event any observed difference would have to be interpreted in light of the more diversified manufacturing activities of the large companies.

The cause of this poor financial performance is a matter of some debate. Some industrial spokesmen attribute it to excessive charges for public timber in British Columbia, but this is, at best, an oversimplification. One cause, at

least, was periodic over-expansion, particularly in the pulp and paper industry, during the last 15 years, which resulted in excess capacity. This over-expansion can, in turn, be attributed to a number of factors: over-optimism on the part of investors, fostered by some prosperous years in the late 1950's; unexpected expansion in competing countries; and, in this province, government policies that required mill construction as a condition of timber rights.

It must also be acknowledged that investment planning in the industry itself has not been faultless. According to last year's President of the Canadian Pulp and Paper Association, ". . . strategic planning of the industry has been singularly inept . . ." ¹⁰. This is not inconsistent with the findings of an independent study of general investment behavior which reported ". . . a striking (and, to me surprising) difference between the strenuous efforts to forecast capital expenditures correctly and the rather careless methods used to forecast the cost and revenue consequences of the same projects." ¹¹ Certainly some large forest products ventures in this province appear to have been poorly planned or poorly managed.

At the beginning of this discussion I suggested that governments should be concerned that the profitability of the industry is sufficient to attract the desired amounts of new capital. In this light, the behavior of the industry appears as something of a paradox, insofar as it has continued to expand and make massive capital investments in the face of low rates of return. As one investment analyst put it:

The historical record of the forest industry in Canada would indicate that it has not provided an attractive level or consistency of profitability compared to many other Canadian industries. At the same time it is a *still expanding* industry . . . ¹²

This is a difficult phenomenon to explain. It probably has its roots in the pervasive optimism which is so often reported to be a trait of those engaged in the forest industry, coupled with the availability of funds generated internally or supplied by parent companies and not subject to the screening processes of the capital market. But there have undoubtedly been other causes, having to do with market cycles, the timing of new capacity, and the environment encouraged by government:

Expectations have not always been realized and most of the mills established in British Columbia in the 1960's have faced depressed markets soon after start-up resulting in negative profits, delays in expansion plans and cut-backs. The large size of the pulp increments, the upward revisions in capacity, the impossibility of predicting the extent of fluctuations in consumption patterns, Government deadlines, the competition among firms and the close reinforcing association between go-ahead decision-making and market cycles have contributed to this situation. ¹³

While these observations refer mainly to the pulp and paper sector, they apply also to sawmilling, particularly stud mills.

In a stable economic climate, the continuation of poor financial performance can be expected to produce a period of consolidation in the industry,

¹⁰ Address to the annual convention of the Canadian Pulp and Paper Association, 1975.

¹¹ J. D. Helliwell, *Public Policies and Private Investment*, Clarendon Press, Oxford, 1968, p. 68.

¹² Dominion Securities Corporation Harris & Partners Limited, brief submitted to this Commission, Vancouver, 1975 p. 2 (Emphasis added).

¹³ R. Hayter, *An Examination of Growth Patterns and Locational Behavior of Multi-Plant Forest Product Corporations in British Columbia*, Ph.D. dissertation, University of Washington, 1973, p. 224.

with phasing out of the less efficient operations until capacity is more consistent with profitable market opportunities. But the inflation of the last few years has raised a new spectre for the industry, because of its heavy dependence on capital not only for expansion but simply to maintain its assets.

These serious financial problems arising from inflation can ultimately be resolved only by controlling inflation itself or by adapting to it, such as through replacement cost accounting. The former is, of course, a happier solution, but both go well beyond forest policy. In terms of provincial forest policy, these industrial circumstances add to the importance of ensuring that public forest administration does not impose unnecessary expenditures in resource development, burdensome capital requirements and carrying costs, or impediments to efficient resource recovery and manufacture beyond those necessary for proper resource management. In these respects the financial condition of the industry is relevant to the substance of this report.

PART II

BASIC TENURE FORMS ON CROWN LAND

Chapter 5. Priorities for Tenure Policy

Chapter 6. Rights in the Public Sustained Yield Units

Chapter 7. The Tree-farm Licence System

Chapter 8. Old Temporary Tenures

Chapter 9. Pulpwood Agreements

PRIORITIES FOR TENURE POLICY

In order to deal with the complex issues before this Commission in a coherent way, it is necessary to begin from some basic premises that should govern the future direction of forest tenure policy in British Columbia. Before turning to specific forms of rights, therefore, this chapter sets out some initial starting points and identifies some priorities for redirecting tenure policy toward the general objectives indicated in my terms of reference. My specific recommendations, in subsequent chapters, are based on the precepts in this chapter, which is therefore essential for an understanding of direction taken in the remainder of this report.

In the preceding introductory chapters I have already alluded to some of the constraints on reform. First, the Crown has entered into many and varied legal commitments; rights to substantial proportions of the most valuable forest resources of the province are now held, in one form or another and under varying terms, by private parties, and these existing rights and obligations constrain the scope and pace of feasible reform. Governments can, of course, seek relief from existing obligations through legislation, but if this procedure is used excessively it will result in an economic climate that is not conducive to needed investment and entrepreneurial activity. To bring about desired changes we should therefore seek means that do not involve abrogation of rights, except as a last resort to meet some compelling need.

Second, new policies must acknowledge not only these legal constraints but also the established industrial structure. Heavy capital investments—in total by far the largest of any industrial sector in the province—have been made by the forest industry in infrastructure, manufacturing plant and distribution facilities. Many, if not most, of the province's cities and towns depend on the pattern of forestry-related activity, and their future, as well as that of the companies and their employees, is at stake. The rapid evolution in the size and structure of the industry in recent years has shown that the province has a high resilience to change, but new forest policies must nevertheless be designed to make the best of existing economic and social structures, and to mould them in deliberate directions.

Finally, it is important in considering the recommendations of a Commission such as this one that we are concerned with policy directions for the immediate future. The successes and failures of the past cannot be undone, and their relevance is restricted to the legacy of past policies we must deal with today and the experience we have gained from them. Nor are we setting policy for all time. There is a dangerous temptation to assume that we know what will be best for future generations, or that their objectives will be the same as ours. We must constrain our ambitions, acknowledge the limits of

our ability to predict technological, economic, and social conditions, and design policies that appear to be best for the time being. In the interest of future generations we should try to avoid foreclosing other options, which may be more suitable for them in the context of unforeseen and probably quite different economic circumstances and social aspirations.

One of the legacies of past policies is the predominance of public ownership of the province's forest land and timber. Whether the Crown should continue to retain title to forest resources is undoubtedly the most fundamental question in tenure policy, and so I turn to this first.

PUBLIC VERSUS PRIVATE OWNERSHIP

Public debate on the relative advantages of public and private ownership of forest land has been recurrent and often heated throughout the history of the province. It raises basic issues of political philosophy, but it has important economic and resource management implications as well. The three previous Commissions of Inquiry into forest policy all strongly endorsed public ownership, and the second recommended that it be expanded, by government purchase of substantial tracts of private land on Vancouver Island. The question today is whether continued restriction of private ownership to the relatively small remaining areas of early Crown grants is consistent with general policy objectives, or whether some modification of the balance between private and Crown ownership is called for.

The original motives of the policymakers in the last century, in rejecting western traditions of private ownership and devising leasing and licensing arrangements as an alternative to Crown grants, are not well documented, but available evidence suggests that they were mixed. Concerns to stimulate development, to prevent speculative acquisition and holding of resources, and to secure continuing public revenue were undoubtedly involved. Nowadays, these arguments are less compelling. Modern taxation, royalty and other revenue arrangements are capable of exacting any desired public share in the value of alienated resources, and it is by no means clear that the financial return to the Crown would be lower if it sold title to land and timber at its full value instead of alienating only the rights to harvest timber. Speculative acquisition of resources, although it commonly engenders popular disapproval, is not necessarily contrary to the public interest as long as it is for the purpose of obtaining a higher value for resources conserved for future harvesting. And the government now has much more direct and efficient means of stimulating the desired pattern and rate of industrial development if it wishes to exercise them.

Three general points deserve mention before pursuing this issue further. First, there is no consistent evidence that the standards of forest management on private lands is worse, or can be expected to be worse, than on Crown lands. In this province, there are examples of both poor and exemplary resource management on private lands. But it should be noted that in the United States, Europe, and elsewhere much of the most sophisticated forest management is found on private lands, and in regions such as Scandinavia and the southern United States this is the foundation for a vigorous and highly competitive forest industry. Second, the sale of forest land to private parties is not irrevocable. The Crown can purchase land, and as long as it is from a

willing seller at a price acceptable to him, no one can be said to suffer as a result (although if compulsory sale became common, the security afforded by private ownership would be undermined). Finally, we are not considering the all-or-nothing question of whether the forest lands of British Columbia should be public or private. Wholesale alienation of all the forest land in the province is at present—if for political reasons alone—out of the question. Rather, we must consider whether the present policy of non-alienation of title under any circumstances is in the public interest, or whether there are circumstances in which the public interest would be enhanced by extension of private ownership.

The advantages of private ownership lie in the security it affords to entrepreneurs in their manufacturing and forestry ventures. A free market in timberland enables an investor to secure a raw material supply base, and from a broader economic perspective its price will guide him in making efficient investment decisions. Ownership also means that the benefits stemming from silviculture will accrue to the landlord, in the form of higher yields or sale values, and this provides appropriate economic incentives for his management practices. A less frequently acknowledged feature of private markets in forest land is its potential responsiveness to efficient allocation among users. Where the forest values are all commercial and competition is vigorous, the market will permit constant reallocation of land among users and tend to ensure that it is held by those who can generate the highest return from it. Thus, while the market in private forest land in this province is far from perfect, it has clearly enabled more flexible redistribution of rights to forest resources than certain forms of rights to Crown timber.

But retention of Crown title offers advantages as well. From the industry's point of view Crown ownership, and sale of timber as it is harvested, means that the public bears the enormous cost of carrying the forest inventory, so that the capital required to enter and operate in the industry is substantially reduced, as are the financial risks involved. The risk is absorbed by the government to this extent, but it permits a continuing public financial equity in forest resources.

In my judgment, however, the most important benefits of public ownership of forest resources are twofold. First, it enables the Crown to protect and enhance the values of forest land that do not produce financial gains to private owners. Environmental values such as public recreation, fisheries, wildlife, water regulation, aesthetics, and so on can be protected through legislated controls on private landowners, but this affords a much less tractable and sensitive means than a public landlord's right to regulate resource use. As the demands on forest resources increase from all users, some of whom have conflicting interests, the value of retaining the right to determine the compromises to be made in specific circumstances will grow correspondingly. Second, public ownership provides the government with powerful means of shaping the pattern and pace of economic development in the province. Whether this power is well used is, of course, a separate question; but with growing public interest in deliberate policies for directing the geographic and structural patterns of growth, this too is an increasingly important consideration. These two benefits of public ownership are particularly significant in British Columbia because of this province's extreme dependence on forests for both its economic welfare and the quality of its natural environment.

It is primarily for these two reasons that I recommend no change in the general policy of retaining Crown title to unalienated forest land. Moreover, judging from the evidence presented at my public hearings, the forest industry is content to rely primarily on well-designed contractual rights to Crown timber, and the public at large favours Crown ownership. Finally, the growing competence of the public agencies responsible for management of Crown resources, and the evidence of good management on many licensed lands, demonstrate that effective resource management does not require private ownership.

Nor do I see a compelling need, at this time, for radical measures to alter the relatively small amounts of private forest land ownership in the province. This does not imply that the present standard of management on private lands is always satisfactory, or that its ownership pattern is optimal. Later in this report I consider measures to ensure that the management of private lands will conform to the public interest.

This whole question should not be viewed in terms of only two alternatives in any event, but rather as a spectrum of choices ranging from unconstrained private property to unencumbered Crown title. Today, there are few cases where the fee simple conveys all the traditional common law rights to land; in varying degrees the Crown has severed rights to the sub-surface and surface resources, levied taxes, claimed royalties, restricted uses, and regulated the owners' activities. Certain leasing arrangements convey rights to Crown land under terms almost akin to private property rights, licences are used to convey rights in varying degrees, and some permits convey only passing authority for activities on Crown property. The problem is therefore to select the most appropriate balance between Crown and private rights for any particular purpose; and for forestry purposes this balance can, in my judgment, be struck without alienation of title.

Where title has already been alienated, the public interest can be protected through an appropriate framework of incentives and controls. Where the Crown retains title, the government must accept more direct responsibility for proper use and management of the resources. But this responsibility can be delegated to licensees under tenure contracts, and a major policy question is the appropriate extent of such delegation. During the last three decades, mainly as a result of growing demands for improved resource management and strain on the resources of the Forest Service, developments in tenure arrangements have been characterized by increasing reliance on licensees to develop and manage Crown forests under the surveillance of the Forest Service. There are strong differences of opinion about the desirability of this trend. Many companies, particularly the larger corporations that have the breadth of professional expertise, would welcome increased responsibilities in the interests of efficiency and administrative simplicity, providing they are reimbursed for their costs. Other licensees would prefer that the government assume more of the direct development and management responsibility, providing that the resources required to carry out the work effectively and without interruptions to industrial operations were ensured.

In my judgment policymakers should decide this issue pragmatically. The governing criterion should be the most effective way of accomplishing the desired results for each task, as long as other objectives are not obstructed. Moreover, certain kinds of firms are better placed to carry out management

tasks than others, and so some variation is called for. In my later recommendations I have therefore been concerned to improve arrangements for allocating responsibilities to licensees in some circumstances, and to provide for more governmental responsibility in others.

FIVE PRIORITIES

As long as most forest resources are to remain in Crown title, the central problem of tenure policy is to design methods of providing rights to forests that will meet the needs of users while at the same time permitting the benefits of public ownership to be fully realized. This calls for a system with certain basic characteristics. In the remainder of this chapter I discuss five general issues which, in the course of this inquiry, I have concluded are in most urgent need of public attention. These are the needs for clear resource management goals; for explicit industrial objectives on the part of government; for security of raw material supplies available to the forest industry; for flexibility in the Crown's allocation of resource rights; and for coherent and efficient public administrative arrangements.

These five priorities are not the basis for all my recommendations in subsequent chapters, for I have discovered a wide variety of problems demanding attention. But they are, in my judgment, the issues of greatest urgency, and my concern for them underlies my major proposals for reform in forest tenure policy.

RESOURCE MANAGEMENT GOALS

To efficiently manage and allocate the forest resources of the province, public agencies and industrial users must be able to plan forest development and operations well into the future. A first requirement for this purpose is a realistic working assessment of the amount of timber that can be economically recovered in each region, and sound criteria for determining the rate of harvesting it that will best serve the public interest. The importance of these two needs—one a matter of data, the other a problem in analysis—cannot be over-emphasized because they determine, in large part, the size and rate of growth of the forest industry which, because of its proportions in this province, governs the pattern of provincial economic development.

Yet neither the forest inventory nor the criteria for regulating its rate of depletion and enhancement is adequate today. The Forest Service has evolved a sophisticated inventory program to provide data on the physical occurrence of timber, but the ambiguity about what can be feasibly recovered within economic and environmental constraints has become critical. Partly for this reason, and partly because of inadequacies in the procedures used to fix harvesting rates which I examine in a later chapter, the parameters governing harvesting objectives are not reliable. With today's pressures on the province's forest resources, these deficiencies must be rectified as a prerequisite to orderly allocation of timber rights.

These new pressures on forest resources are not only in the form of demands for timber, but also in increasing public demands for environmental protection and enhancement—for outdoor recreation, fish and wildlife needs, watershed management, æsthetic values, and so on—which often impinge on industrial timber production. In recent years these other demands have been thrust on

both public and private forest managers with considerable force, and while efforts have been made to accommodate them our present institutional arrangements and procedures for resolving conflicts are inadequate. One result is that both the Forest Service and the industry are uncertain about how much timber can be harvested, the constraints that will be imposed on logging methods and timing, and which forest lands should be managed for subsequent crops.

Progress toward a more coherent forest policy, one that can more systematically be aimed at achieving the public objectives specified in my terms of reference, calls for urgent attention to these problems. The long-term future of forestry in the province hinges on our success in rationalizing multiple demands on the resource base. It requires, basically, the specification of resource management goals and plans in terms of the rate and pattern of timber production and other values to be served. It is my impression that the prevailing confusion about such objectives is the major impediment to effective field management, and a major source of friction and frustration between public and private resource managers. But the specification of goals must be based on sound criteria, and appropriate institutional arrangements must be found to facilitate their achievement. These matters are considered in detail below, especially in Chapters 17 and 19.

INDUSTRIAL POLICY

One of the advantages of public ownership of resources mentioned earlier is that it enables the government to mould the pattern of industrial development to best serve broad economic and social objectives, and in British Columbia this provides a particularly powerful means of economic control. This power can be exercised for various purposes. One that has obviously been important in the past, and undoubtedly will be in the future, is to influence the geographic pattern of economic development in the province, by offering attractive raw material arrangements for pioneer ventures, assurances for new forms of activities in established areas, and so forth. Another is to influence the structure of the industry itself, and it is in this respect that I perceive a most urgent need for an explicit public policy.

More specifically, I am concerned about maintaining the best balance between large and small firms, integrated and unintegrated companies, opportunities for the entry of new firms, and maintenance of a healthy competitive climate for the disposition of Crown timber. Hitherto, public policy has not been clear on these matters: the government has taken a passive stance to the rapid evolution in the structure of our largest industrial sector. To the extent that attitudes have been stated, they typically involve recognition of the important role of large, integrated enterprises, but at the same time support for the smaller, independent logging and milling sector that offers scope for new entrepreneurial opportunities, new innovations and skills, and competitive vigour. The forest policies we have pursued have not, however, been neutral; while they have not been deliberately biased to the disadvantage of smaller, non-integrated firms and potential new firms, there can be little doubt that they have nevertheless accelerated the consolidation of the industry into fewer, larger, and more integrated enterprises.

In subsequent chapters I point to a number of features of forest tenure policy that have put smaller enterprises at a relative disadvantage. Some

important forms of rights are designed to meet the needs only of large companies, and these have been awarded over the best Crown timber in some regions; whereas all of the significant licensing arrangements depended on by small firms are held by large corporations as well. Informal "quota positions" in Crown timber were awarded in relation to pre-existing size of licensees' operations, and substantial increases were also allocated in proportion to size; so that privileges even beyond contractual rights have been conferred more generously on larger enterprises, increasing the absolute size difference between large and small and securing their relative positions. Other features of the system have worked in the same direction, including the increasing financial and management obligations that have been shifted to licensees, which are most burdensome to the smaller enterprises.

Other arrangements have promoted integration within firms. Construction and operation of a pulp mill or sawmill has often been made a requirement for obtaining rights to Crown timber. Some licences have been granted only to licensees who could demonstrate a "need" for their manufacturing plant, and certain milling facilities have been a condition also. Separate logging and milling enterprises have become rare and precarious as these policies, and the decline of competitive log trading, truncate their product markets or raw material supply.

It is not the integration of the industry that is of concern here, for that has obvious benefits for fuller utilization of timber, but rather the policy-induced integration within individual firms. Nor, I want to emphasize, is my anxiety about the size, *per se*, of our large forest companies; it is the erosion of opportunities for others to play a constructive role in the industry, and the growth of regional monopolies as large corporations assimilate small firms with their resource rights.

The rapid consolidation of the industry in recent years has been driven, in large part, by technological and economic changes that have expanded economies of scale in manufacturing. But economies of scale in manufacturing is a limited explanation; many mills of large corporations, both sawmills and pulp mills, are well beyond the size that most experts consider to be necessary to achieve production efficiencies. Moreover, this cannot explain the expansion of firms beyond one optimum sized plant. There may be other economies related to firm size rather than to plant size; but beyond a fairly common firm size, efficiencies that derive from larger corporate size, particularly of the kind that yield benefits beyond the firm itself, are by no means obvious.

On the contrary, there are indications that relatively small firms are often more efficient than large. Economies of scale in logging do not extend much beyond a single operation, and the efficiency of small enterprises is reflected in the extensive use of independent logging contractors by large firms. In sawmilling, most observers agree that some of the most advanced, innovative, and efficient mills have been built by small companies. Moreover, I have found no evidence to suggest that, even among the large integrated corporations themselves, either technical or economic efficiency is correlated with corporate size.

In short, the extent of industrial consolidation has proceeded well beyond what can be considered to have been necessary to keep pace with technological change and efficiencies of scale. I have taken the position in this report that

in the absence of clear evidence that larger, more integrated corporations are substantially more efficient, forest policy should not be biased in their favour. This implies a more neutral tenure policy; and in view of existing biases, it leads me to some of my most substantive recommendations for change.

Most natural resource-based industries lend themselves to a diversity of sizes and types of productive enterprises, and there is widespread agreement that the smaller and more specialized firms have an important role to play in this province's forest industry. Not only can a diversity of entrepreneurial activity accommodate better the wide range of logging and manufacturing conditions, but variety and numbers add resilience and vigour to the industry. Moreover, continuing opportunities for new ventures to compete for inputs and markets spur production efficiency. Finally, the more closed and monopolistic the industry becomes, the more necessary it is for governmental regulation to extend beyond resource management to the regulation of investment decisions, prices, and marketing of individual firms. In many of these matters the public interest can adequately be protected through the normal market incentives and disciplines without extensive governmental intervention, but only if the industrial environment is balanced, competitive, and free of monopolistic distortions.

In my opinion the continuing consolidation of the industry, and especially the rights to Crown timber, into a handful of large corporations is a matter of urgent public concern. Its causes and implications warrant the most careful analysis and evaluation. On the Coast, particularly, consolidation of timber rights by a few integrated companies has proceeded to such a point that no decision is tantamount to a decision to phase out the remainder of the industry. Nor can it be assumed that even the present number of large firms will survive, for the possibility of failures and mergers among them must be recognized. In the past, amalgamations of large firms have been common; today a merger could extend effective monopoly control over huge regions—a prospect which would not, as far as I can see, advance the public interest in any way.

The impressive strength that the industry now has in its large corporations must be recognized and built upon. Their future should not be prejudiced by policies that would put them at a disadvantage. My concern here is that the rest of the industry—the smaller firms, the unintegrated operations, and potential new entrants—have not been given the same encouragement in the last few decades. In this report I therefore devote considerable attention to the needs of smaller enterprises because for them more fundamental changes are required.

Some have argued that the process of consolidation has proceeded so far, and has such momentum, that it cannot be arrested. I believe this view underestimates the competitive strength and initiative of existing and potential smaller independent enterprises and the extent to which the present pattern of industrial development has been shaped by public policy. The desired balance and diversity in the industry can be maintained, I suspect, with policies that provide ready opportunities for all kinds of firms. This is the objective of many of my proposals, although the present distribution of rights and commitments necessarily leaves some unequal advantage. Nevertheless, I believe that if some of the present obstacles are removed the smaller independent

logging and manufacturing firms will be able to compete very successfully in markets for inputs and final products, that they will thereby maintain an important position in the industry, and that this is a most desirable outcome as a matter of industrial policy.

SECURITY OF TIMBER SUPPLIES

If alienation of title is eschewed as a means of conveying timber to the forest industry, the Crown must ensure that other means of obtaining timber supplies are available and adequate to provide firms with the necessary assurance of raw material to justify their capital investments. Probably the most pervasive concern of the forest industry today is the uncertainty surrounding their rights for Crown timber and the provisions for continuing supplies. This prevailing uncertainty inevitably impedes efficient investment planning and aggravates the difficulties of public administration.

This problem has emerged in a wide variety of ways, from basic uncertainties about the policy objectives of government, to ambiguities in contractual rights, through to confusion about field administration. It has come to a head through recent political events, experimental innovations in tenure policy to meet new conditions, and changed patterns in log and chip markets as a result of responses to new pressures on the resource base and other circumstances. The aggregate result is an atmosphere of confusion and apprehension, and while the industry must inevitably cope with inherent market uncertainties much can be done to improve the security and clarity of arrangements with the Crown.

The need for security and clarity of rights is exacerbated in this province by the fact that one government is almost the sole purveyor of timber to a very large industry. With enterprises totally dependent on contracts with one supplier (particularly a political one) without the checks and balances of alternatives that are more common elsewhere, the legal precision of rights takes on extra importance. It also adds, incidentally, to the importance of ensuring that this single supplier provides the diversity of rights needed to accommodate the full range of needs in the industry.

The argument for secure commitments from the Crown typically centres on the need to provide investors with the assurance of timber supply required to maintain and expand the industry's capital base. There are several fundamental policy issues involved in this argument. One is the desired level of investment. Through its generosity or meanness in granting rights to timber, the government can influence the profitability of investment in the forest industry, and so the desired level of investment at any time is a critical policy decision. It must be decided at the political level in light of provincial and regional economic objectives and of alternatives for economic and social development.

Whatever the desired level of investment, the required assurance of raw material supplies can be provided in various ways. The raw material for logging companies is standing timber, and hence they require rights over harvestable trees. Manufacturing plants, however, require wood in various forms; and although the manufacturing sector in this province has tended to look for raw material security in the form of timber rights, it is also important to recognize

that there are alternatives. Thus a traditional supply source for mills on the Coast has been the log market, and it is within the power of government to control the size and reliability of that market and hence the security of that supply source. Recent policies have been directed toward providing secure raw material supplies for pulp mills in the form of by-product chips from sawmills, and through option arrangements in the event that those sources fail. In short, to provide the necessary raw material security for the forest products industry, the Crown has proven alternatives to the granting of rights to standing timber, and the most satisfactory means will vary in different circumstances. Thus, while I devote particular attention to rights over forest land and standing timber, I have also sought ways of improving the security of raw material supplies through markets and other means.

Where rights to standing timber are at issue, security has several dimensions. Probably the most obvious is the duration of the right conveyed. As long as the purpose is to support private capital investment, the term must be related to the period required for capital recovery. This obviously varies: a logging company with portable equipment does not require the same term as a pulp or paper plant, for example; and the requirements perceived by investors in an entirely new venture are likely to be greater than are necessary to ensure continuance of an established operation. But perpetual terms are neither necessary nor desirable, and terms as limited as one year are rarely adequate, although both these extremes exist under current policy. I have endeavoured to identify terms that strike a more appropriate balance between entrepreneurs' need for security on the one hand and the Crown's need for flexibility on the other. I also propose arrangements for minimizing the inevitable uncertainty associated with finite terms as they approach expiry.

Another dimension of security is the amount of raw material conveyed in relation to the capacity of the enterprise. Obviously, an operator's sensitivity to the security of a particular right depends on the extent that his operation relies on it. If he has access to other rights, or other sources of supply, the risk is lessened. For this (and other) reasons I propose measures that will enhance operators' security by reducing their dependence on individual licences.

Finally, security is dependent upon the degree to which the rights are definitive. Contractual ambiguities, scope for unilateral interpretation by either party, and discretionary terms and conditions all impinge on the certainty of rights and obligations. The frequency of such features in current tenure arrangements is alarming, and they have serious consequences for licensees' security. Some can be justified by the need to meet unforeseeable circumstances or variable field conditions, but many cannot. This, in my opinion, is one of the most urgent needs in the reform of forest tenure policy: in almost every chapter that follows I find it necessary to deal with ambiguities, or other deficiencies in statutes, contracts, and administrative procedures. I have given high priority to proposals for clarifying rights and obligations, for putting them on a more secure legal footing with more judicious use of discretionary authority, and for ensuring that they provide the maximum security consistent with other objectives.

FLEXIBILITY

Since a major purpose in public ownership is to provide opportunity for the government to adapt patterns of resource use to changing needs and cir-

cumstances, scope for altering uses must be preserved. This means that the foregoing priority of security to industrial users must be tempered by the need to maintain opportunities to reallocate resources among uses and among users. These two objectives are not incompatible, however, and my recommendations are designed to achieve both. But one of the central problems facing any reform in tenure policy is that of reconciling the need for secure timber rights to support investment and efficient resource management with the fundamental responsibility of the Crown to preserve sufficient flexibility to meet changing needs and industrial conditions.

To be able to respond to changing circumstances the Crown must limit its commitments, in order to provide explicit opportunities to reorder them without abrogating contractual rights. This raises two general aspects of commitments entered into; the scope of the rights extended under contracts (that is, the extent to which the rights conveyed override or exclude other uses and users) and the duration of the contracts. It is essential that both are finite and clear to all parties.

This issue is a matter of priority because some features of present tenure policy unduly restrict the Crown's flexibility in determining forest uses and reallocating rights. Obviously, contracts with perpetual terms severely restrict scope for accommodating changing needs over time; indeed the resulting rigidity is even greater than with Crown grants, insofar as private landowners are not normally under binding contractual commitments to a prescribed use forever. Some contracts, such as old temporary tenures, convey rights that can be exercised at the licensees' discretion and are renewable at their discretion (or at least are understood to be so). Such contracts also leave the Crown almost powerless to decide when uses or users may be altered. Informal, open-ended commitments like the "quota" system, though not legally binding, are nevertheless regarded as akin to rights, with the result that the Crown can reallocate resources only by breaching an "understanding" with licensees. Rights that are linked to specific manufacturing plants add further rigidity to the pattern of allocation. Market transactions in rights to Crown timber have overcome some of these rigidities, but that must be regarded as a poor substitute for systematic redesign of the pattern of allocations and periodic changes in rights and responsibilities to meet new circumstances. The public has an interest not only in maintaining scope for altering the form of forest use but also, as explained earlier, in maintaining an efficient industrial structure, and this calls for a system of industrial rights that provides opportunities for deliberate and orderly change.

The necessary degree of flexibility can be accommodated under a variety of methods for allocating and reallocating rights. Even before the Timber Sale Licence system was introduced in 1912 the Crown had sold licences through competitive auction, and for many years thereafter open auctions provided the basic procedure for disposing of Crown timber. After World War II, however, extensive rights were allocated without competition under the Tree-farm Licence system, and modifications to Timber Sale Licence procedures led to the "quota" arrangement that has virtually eliminated competition for these rights also. Today, while detailed arrangements for competitive sales of licences are provided in legislation, administrative practices have effectively substituted other, more discretionary criteria for determining the recipients of timber rights.

A policy that involves disposing of at least some timber on a continuing, competitive basis has many advantages. Such sales, by definition, release the Crown from any implied commitments to particular firms, beyond the rights explicitly conveyed in licence contracts. I consider this most important; implied rights and understandings have no place in the Crown's dealings with private parties. Sales to the highest bidder also offer one of the few equitable means of distributing rights to public resources at arm's length, which must also be considered a desirable attribute in governmental relations with industrial interests. Indeed, the public interest demands assurance that the allocation is to the party that will put it to its most productive use, and it is not realistic to assume that this can be determined by public agencies without some recourse to a market test.

Further, disposal of rights by competition allows the market to reallocate raw material supplies among users who can use them most efficiently, and the size distribution of firms is thereby permitted to adjust appropriately. Private firms can, by means of such sales, expand by dealing directly with the government rather than having to engage in transactions in Crown timber with a third party. Finally, the public can be assured that competitive sales will return the full public equity in timber, relieving the burden on administrative evaluation.

These advantages are substantial, and must be carefully weighed against the arguments of established licensees that their Crown timber needs should be provided without competition. The common argument that competition for timber serves no important economic function because competition prevails in product markets is quite spurious; the efficiency of private enterprise depends on competition not only in product markets but also in the markets for inputs of capital, labour, and raw materials. The argument that competitive sales are disruptive is only partly true, and disruption is often confused with the sometimes painful adjustments in an industry that are necessary to maintain its vigour and efficiency. In any event this argument tends to be confused with inadequate security and duration of rights. Finally, many firms fear that competitive sales will produce a recurrence of "spite" bidding, extortion, and blackmail that have been experienced in the past. These dangers are real, but they were manifested in the past in connection with sales of rights that were essential to secure a position in the regional timber supply and that carried the implication of continuing "quota" for the indefinite future, which generated a desperate attitude among bidders and a fertile ground for extortionists. This, coupled with auction procedures that lent themselves to abuse, led to unhappy experiences, but these conditions need not be allowed to recur.

It is normal and understandable for companies to seek means of avoiding or minimizing competition, and established firms can be expected to pressure the government for protection against competition in obtaining rights to Crown timber. But in this matter the private interest of individual firms and the public interest conflict, as recognized by laws against attempts to restrict trade and competition in all western countries. In the present case, the provincial government should be vigilant in resisting pressures to abolish competition for rights to Crown timber. Much improvement is needed in the terms and other conditions of timber contracts as I describe later; but with appropriate changes in the form of licences, competitive allocation should

remain (or more accurately should be restored) as a mechanism for distributing Crown timber.

It should be noted that open auctions are the normal means for disposing of public timber by all the major governmental forest agencies in the United States. Competition is typically vigorous and the process seems to work smoothly, efficiently, and generally to the satisfaction of both the industry and the government. Here, with the provincial government virtually the only supplier of timber, some such sales at least appear especially necessary to introduce some market flexibility and to provide a check on appraisals of timber values. In later chapters I therefore propose specific circumstances in which competition should be invoked to promote industrial efficiency, to protect the public financial interest in timber, and to enhance the flexibility in commitments of Crown resources.

PUBLIC ADMINISTRATION

At the outset of this inquiry I did not interpret my terms of reference to include detailed investigation of governmental administrative arrangements. In the course of my public hearings, however, it became clear that administrative structures, organization, procedures, and practices involved in public regulation of forest activities cannot be separated from a review of forest rights and responsibilities, for they have profound consequences for the success of any tenure system. Moreover, it has emerged that present administrative arrangements suffer serious shortcomings. Some licensees, indeed, hold that these deficiencies significantly impede orderly and efficient industrial operations; and that they, rather than the tenure system itself, have become the most serious obstacle to improved resource management. Related, though somewhat different concerns have been expressed by non-industrial groups and by the administrative agencies themselves. I have received a good deal of testimony and many suggestions on this matter, and it is clear that the efficacy of reforms in forest tenure policy will depend critically on the resolution of existing administrative problems.

In recent years the resource management agencies have been inundated with new demands on forest resources from both industrial and non-industrial users, and public expectations for forest management have changed radically. Much effort (and much frustration) has centred on the need for realignment of priorities, long-term planning for integrated resource use, inter-agency consultation, liaison among user groups, and public education. The public funds and personnel available to meet these challenges have been undeniably inadequate. But that is not the only problem: the organization of administrative agencies does not always provide the most appropriate distribution of responsibilities and decision-making authority; the relationships between agencies does not ensure the best form and degree of co-ordination; management objectives are not always clear; and in important respects the tenure system does not lend itself to efficient public administration.

In some parts of the province there is now a hodge-podge of rights—private lands subject to varying rules, leases, licences, permits, and agreements—all differing in terms, rights, responsibilities, and sometimes overlapping. I have already emphasized the need for purposeful diversity in the tenure system, but much of the present diversity serves no useful function.

Differences are often attributable only to the accidents of history and to early policies that have long since become anachronisms, so that today they only complicate and obstruct resource administration and management. In the interests of more efficient administration and consistently high standards of forest management these anomalies should be rationalized to the extent that legal constraints allow.

But it is to be emphasized that a consistent standard of achievement does not imply uniformity. Forest conditions and needs in this province vary so markedly that controls must be adapted to the specific circumstances of each site. Hitherto, the Forest Service and other agencies, strained by inadequacies of staff and resources and having to cope with pressing needs, have often taken recourse in blanket rules and regulations respecting such things as logging practices, utilization standards, and reforestation. It cannot be denied that increasingly rigorous rules have significantly advanced the standards of forest use and conservation in the province, but modern needs call for a more discriminating approach. Uniform rules can only prescribe a minimum, or an acceptable average level of performance, and applied in varying circumstances they will inevitably be too lax or too stringent in any particular case. As forest operations have progressed into more difficult sites and poorer stands, and as non-industrial values have increased elsewhere, the specification of standard rules is no longer adequate.

A major shift in emphasis is now required, from enforcement of increasingly stringent uniform forest practices to specifications designed to suit the needs of local conditions and requirements. This is a most difficult task, but there is no satisfactory alternative in circumstances where the government retains responsibility for managing forest land that varies enormously in its composition, value, productivity, and use.

The full potential benefits of the province's forest resources can be realized only if reforms in tenure policy are augmented by substantial changes in public administration, and in the following chapters of this report I make a variety of proposals to this end. A whole chapter is devoted to the problem of resource planning and the specification of objectives. Another deals with the structure of administrative agencies, the relationships among them, their internal organization with respect to lines of responsibility, delegation of authority, and financing problems. And throughout I have been concerned to provide an environment in which entrepreneurial incentives in the forest industry can be harmonized with the public interest to facilitate public administration and control.

CHAPTER 6

RIGHTS IN THE PUBLIC SUSTAINED YIELD UNITS

The century of evolution in tenure policy sketched in Chapter 3 has left a collage of rights over the province's forest resources. Over the decades the methods devised to convey rights to timber have been innovative, often ingenious, and demonstrably successful in accommodating the development of one of the world's most prominent forest industries. In this and the subsequent five chapters of Part II, I examine the basic structure of each of the major forms of contractual rights to Crown timber, identify their shortcomings in light of current circumstances and needs, and propose what I consider to be required changes in them. In these initial chapters I confine the discussion to the distinctive characteristics of each tenure form which, taken together, enable me to present a picture of a coherent set of arrangements for conveying rights to Crown timber. Then in Part III, I return to consider matters of general relevance to all forms of tenure, such as methods of allocating rights, provisions for transfers, cancellation and suspension of contracts, public levies, and responsibilities for forest development and management.

This chapter deals mainly with Timber Sale Licences, including Timber Sale Harvesting Licences and the several other variants of this general tenure form. These are the most important devices for providing rights to timber today, being the usual means of allocating Crown timber outside Tree-farm Licences. Table 3-2 shows that these licences account for about half of the Crown timber harvested in the province. In spite of this chapter's title, Timber Sale Licences are used not only in Public Sustained Yield Units but also in unregulated areas; and there are other contractual arrangements such as Pulpwood Harvesting Area Agreements that also confer rights in Public Sustained Yield Units which I postpone for later consideration.

Beginning with the Timber Sale Licence system involves tackling first not only the most important part of the present tenure system but also the most difficult to grapple with. As the following discussion will reveal, the evolution of tenure policy as it applies to Public Sustained Yield Units has produced a set of arrangements with extremely complicated and far-reaching ramifications, yet some of its most important elements are not enunciated or well grounded in either legislation or contracts. Administrative practices and understandings with licensees have been introduced to accommodate rapidly changing events often without explicit changes to legal provisions, with the result that the intricacies of existing commitments are exceedingly difficult to unravel. For these reasons, it is also an area of tenure policy which I have found in need of substantial reform.

EVOLUTION OF THE TIMBER SALE LICENCE SYSTEM

Of the many forms of tenure devised to dispose of Crown timber in British Columbia, none is more concise in original concept than Timber Sale Licences; yet that original elegant simplicity does not extend to the several variations of this form of tenure in use today. To properly comprehend the role these licences play in forest policy and the problems surrounding them it is necessary to trace their historical development, which I shall attempt here in a few paragraphs.

The Timber Sale Licence was introduced in the first Forest Act in 1912 as a means of enabling forest operators to compete for rights to harvest the timber on designated tracts of Crown land. For decades it was used in this way: individuals or firms would apply for sales on defined areas, the Forest Service would conduct an auction, and the successful bidder would obtain the right to log the timber within a specified period of a few years, subject to stumpage charges and other terms and conditions specified in the contract. The auctions were oral, anyone could submit a bid, and the highest bid was accepted. The issuance of old temporary tenures having ceased in 1907, and outright grants of title to forest land having been abandoned long since, Timber Sale Licences were the only significant vehicle for making Crown timber available to the forest industry until Tree-farm Licences were introduced in 1948. At that time, the government began to control harvesting rates in accord with its new sustained yield policy, but until then the Forest Service routinely put these licences up for sale whenever applications were received.

The sustained yield policy involved designating tracts of Crown timberlands as management units, now called Public Sustained Yield Units, and fixing an allowable annual cut for each according to its timber inventory and productive capacity (the technique for this is examined at length in Chapter 17 and Appendix D). With these new arrangements, the Forest Service could no longer passively process all applications for new sales, since the total harvest in each unit had to be constrained to its allowable annual cut. Indeed, in some of the more developed areas, the allowable cut was already being exceeded, and the measures adopted to cope with this difficulty profoundly affected the Timber Sale Licence system.

The problem was one of finding equitable means of reconciling the harvest with the limits of the allowable cut where it was insufficient to sustain the existing cut of *established operators* (a term that has since assumed considerable importance). The solution was the "quota" system, an informal administrative device that has developed into one of the basic elements of the tenure structure.

THE "QUOTA" SYSTEM

After some experimentation, the Forest Service evolved a procedure for apportioning the allowable cut among the established operators in Public Sustained Yield Units. Where the allowable cut was already exceeded in newly established units, the established operators were awarded new, reduced harvesting rights proportionate to their rates of harvesting in Crown timber in the unit prior to its regulation, which in total were within the allowable cut. In some units this meant severe cutbacks on the part of licensees, but it dealt with the transitional problem of achieving a conformance with the allowable cut.

These arrangements, however, became more than transitional measures. The rights allocated to established operators became recognized as their continuing *licensee priority*, which implied that whenever one of their licences expired the Forest Service would make another available for an equal volume of timber. Subsequently, after some licensees amalgamated the rights they held under different licences, the ongoing annual volumes that they were authorized to cut became known as their "quota position" in a Public Sustained Yield Unit. Moreover, operators in units that were not overcut in relation to the allowable cut assumed "quota positions" as well.

The original implication of a "quota" was that it constituted a *share* of the allowable cut in the relevant unit. Over the years, as allowable cuts were revised upward and other innovations introduced, this changed; today "quota" relates to a specific allowable annual cut expressed in cunits. The original concept has nevertheless had a lasting effect on harvesting rights, which I examine later in connection with utilization standards and cut controls. It undoubtedly influenced also the shift from licences that convey a right to all the timber on a prescribed area to those that authorize an annual volume without designating any particular timber.

The critical (and most intriguing) element in the "quota" system is the way in which the timber rights of licensees are maintained and protected under the Timber Sale Licensing system, which notionally calls for competitive allocation of rights with limited terms. Neither the licence contracts (with a few exceptions) nor the Forest Act give the licensees a right to renewal; indeed the latter provides that each right take the form of a new licence to be allocated by competitive bidding. So, to protect the "quota position" of established operators wherever the available timber in a Public Sustained Yield Unit is heavily committed, a combination of administrative discretion and statutory privileges has evolved, following recommendations tendered to the legislature by the Select Standing Committee on Forestry and Fisheries in 1960.

These procedures give "quota" holders distinct advantages over others, when they wish to replace a licence which is about to expire. Under the Regulations the Minister has unqualified power to refuse any application for a licence, and this is generally exercised to disqualify applications for timber in heavily committed Public Sustained Yield Units, except those submitted by "quota" holders who wish to replace their expiring licences. Thus only a "quota" holder, and no one else, is officially recognized as an applicant for a licence in such circumstances. Then under the Forest Act the "quota" holder, being the *recognized applicant* for the licence, is given special status in the subsequent bidding procedures, in which anyone may participate. First, he may elect that bidding be conducted through sealed tenders instead of at an oral auction, and thereupon gain the privilege of simply matching any tender higher than his own to obtain the licence. He invariably exercises this option. If no one else bids against him he will, of course, be issued the licence at the price he bids, usually the "upset stumpage" rate appraised by the Forest Service.

Second, the "quota" holder, again by virtue of his status as the applicant, enjoys a further advantage under the Act through its bidding fee provisions. Anyone else who tenders a bid for the licence is required to pay to the Crown a non-refundable bidding fee, now fixed at 50 cents for each cunit of total volume being sold over the duration of the licence. For example, a typical 10-year Timber Sale Harvesting Licence might authorize a cut of 30,000 cunits

per year, for which the bidding fee would be \$150,000. If the bidder is unsuccessful in winning the sale (because the applicant matches his bid) he forfeits this fee. The applicant is not required to submit a bidding fee.

The sealed tender and matching bid privileges accorded the "quota" holder as the recognized applicant, combined with the bidding fee penalty, have left others at such a disadvantage that competitive bidding for these licences never occurs. Thus established operators maintain their "quota positions" by replacing expiring licences with new ones without competition.

It is important to note that designation as a recognized applicant, which is fundamental to the "quota" system, is not a legal right of licensees. On the contrary, it is left entirely to the discretion of the Minister, who has the unqualified power to disallow any applications.

Over half of the volume in the Public Sustained Yield Units covered by Timber Sale Licences is thus committed to established licensees under the "quota" arrangement, although there is considerable regional variation in this fraction (see Appendix A). A licensee may (and often does) have separate "quota positions" in several Public Sustained Yield Units.

TIMBER SALE HARVESTING LICENCES

By the late 1960's, as a result of rapid consolidation and expansion of the industry, most licensees in Public Sustained Yield Units held "quotas" in the form of several Timber Sale Licences. With industrial activity increasing and under growing demands for improved resource management, the Forest Service sought means of shifting more responsibilities onto licensees. The upshot was the introduction in 1967 of the Timber Sale Harvesting Licence. Established licensees were offered the option of consolidating their "quota" in a Public Sustained Yield Unit under one of these new licences in order to rationalize operations. They carry longer terms, usually 10 years, and although they are now the main embodiment of "quota" they provide no contractual right of renewal; but as usual, there are exceptions, described in Appendix A.

The Timber Sale Harvesting Licence was quickly and widely adopted; it is now the most important form of tenure in the province, accounting for more than 39 per cent of the timber harvested from Crown lands and some 60 per cent of the cut from Public Sustained Yield Units. These licences have proven highly successful both in meeting the needs of the industry and in promoting a higher standard of forest management.

CHANGED UTILIZATION STANDARDS AND "THIRD BAND" SALES

Prior to the expansion of the pulp industry into the Central Interior in the 1960's, much of the timber being logged could not be manufactured into lumber in the established sawmilling industry; substantial quantities of waste residues were left in the forest or burned at the sawmills. Moreover, there were extensive tracts of small and defective timber that were not merchantable. The industry had adapted to a standard of timber recovery suitable for lumber manufacturing alone, known as the *intermediate utilization standard*.

The new pulp industry offered an opportunity to use much of the wood hitherto unusable and so a revised "close utilization" standard of recovery

was initiated in 1966.¹ Within six years the new standard was established throughout the Interior and gradually it was introduced on the Coast as well. The volume of timber in forest stands, measured to this closer standard of utilization, was considerably greater, and so revised calculations of allowable annual cuts for Public Sustained Yield Units indicated scope for increasing the harvest.

Licensees who could demonstrate their ability to process the material that comprised this extra inventory (in effect, those who equipped their sawmills with barkers and chippers to make pulp chips from material unusable for lumber) were given proportionate increases in their "quota positions"—originally by one-third throughout the province, later increased to one-half on the Coast.² But in Interior Public Sustained Yield Units especially, where small timber comprises a large component of the forest inventory, even these increases left scope for additional harvesting within the new allowable cuts. So, wherever 80 per cent of the harvesting rights in a unit were held by licensees who adopted "close utilization" standards, the Forest Service made further timber available to utilize some of the extra allowable cut. This was done through short-term Timber Sale Licences that became known as "third band" sales.

Such was the impact of "close utilization" in the Interior that "third band" Timber Sale Licences rapidly gained significance and today they account for 40 per cent of the total harvest of that region. On the Coast, where the shift in utilization standards had a much lighter impact on the measured inventory and more of the increased available cut was added to established operators' "quotas", the scope for these new sales was much narrower. Only a few were issued, and they account for an almost negligible fraction of the coastal harvest.

"Third band" licences were distributed in two stages, beginning about 1969. Initially, the Forest Service allowed applications from established licensees with sawmills, according to a criterion of "need". They were awarded "third band" sales to the extent that they required additional timber to permit continuous mill operations at a rate of 440 shifts per year in the case of sawmills and 660 shifts for plywood and veneer plants. Thus many "quota" holders came to obtain "third band" licences as well. Then once the "needs" of these mills had been met, applications were considered from new milling enterprises and from others that had been depending on timber from private lands. Where the timber available was insufficient to meet the "needs" of operations without "quota positions" up to the 440-shift rate of operation, their eligibility to apply for the available timber was proportionally determined.

The first "third band" sales were designed as an experiment to test the ability of operators to use the timber to "close utilization" standards. They carried very short terms, all to expire in the third year after the first was issued in any Public Sustained Yield Unit, to permit a complete assessment of performance and possible redistribution of rights. Renewals have usually carried from one to five-year terms.

¹ See Glossary for definition of these standards.

² The shift to "close utilization" standards had less impact on allowable cuts on the Coast because of generally larger timber, but a greater increase in cut was granted to coastal licensees who adopted this standard, apparently to provide a stronger incentive where attainment of closer utilization was considered to be more difficult.

These licences do not (normally) constitute part of a licensee's "quota position" and they extend none of the bidding privileges associated with the "quota" system, but competition for them is nevertheless restricted. First, eligibility for them was restricted to applicants who had actually installed or had undertaken to install pulp chip manufacturing facilities in their mills; and second to those who could demonstrate a "need" for the timber to permit their mills to operate at their rated capacity.

The "need" criterion provides a strong deterrent to competition. If a licensee who can demonstrate "need" competes for and obtains a sale initiated by someone else, he will, by thus accommodating his "need", lose his eligibility to initiate a sale himself. And if he should attempt to bid for such a sale when he already has sufficient timber, he would not be deemed to qualify as an eligible bidder and his bid would be disallowed. Thus, competition for replacement "third band" licences has been almost eliminated.

OTHER FORMS OF LICENCES

The "quota position" of licensees in Public Sustained Yield Units is held mostly in the form of Timber Sale Harvesting Licences, although some are held in "ordinary" Timber Sale Licences as well. The latter are (with some exceptions) sales of the traditional kind: short-term contracts conveying the right to the timber on a designated tract of land. "Third band" Timber Sale Licences are especially important in the Interior Public Sustained Yield Units, and are separate from the "quota" arrangements. The relative importance of each of these major forms of Timber Sale Licences employed in the Public Sustained Yield Units is indicated in Table 6-1, by Forest District.

TABLE 6-1
RELATIVE IMPORTANCE OF THE MAIN TYPES OF TIMBER SALE
LICENCES IN PUBLIC SUSTAINED YIELD UNITS¹

Forest District	Timber Sale Harvesting Licences	"ordinary" Timber Sale Licences	"third band" Timber Sale Licences
per cent of total harvest			
Vancouver	88.1	10.7	1.2
Prince Rupert (Coast)	73.1	26.9	-----
Prince Rupert (Interior)	50.4	7.8	41.8
Prince George	44.4	.8	54.8
Cariboo	55.0	1.0	44.0
Kamloops	62.1	3.5	34.4
Nelson	63.2	4.3	32.5
All Districts	58.9	4.9	36.2

¹ Percentages calculated according to the 1974 billed cut under the various forms of Timber Sale Licences that were in existence on July 2, 1975.

Source: Compiled from data provided by the B.C. Forest Service.

In addition to these, there are other variants of Timber Sale Licences that convey rights to harvest pulpwood, salvage timber, and special products, which I discuss later in Chapter 16. Timber Sale Harvesting Licences and

"third band" licences are confined to the regulated Public Sustained Yield Units; in unregulated areas "ordinary" and special forms of Timber Sale Licences are used.

FROM AREA RIGHTS TO VOLUME RIGHTS

As already mentioned, the traditional Timber Sale Licence conveys a right to harvest the timber on a designated tract of land. Today, all Timber Sale Harvesting Licences and most Timber Sale Licences grant rights to a volume of timber to be cut at a specified annual rate, but the licence itself does not identify the timber. Instead, the exact location of the authorized logging—and many other important matters such as the controls on harvesting practices, utilization requirements, and stumpage charges—is specified in short-term Cutting Permits issued to the licensee as his harvesting progresses.

The licence itself carries two implications for the location of Cutting Permit authorizations, however. One is that it specifies the Public Sustained Yield Unit in which the right is to be exercised; the other is that the Forest Service has adopted the practice of recognizing a so-called *chart area* within which each licence will be exercised.

Chart areas are informal designations for administrative and planning convenience. They are usually proposed by the licensees, and are often the result of negotiations among the licensees in a Public Sustained Yield Unit with a view toward co-ordinating development planning and minimizing interference with each other's operations. In some units licensees have formed associations that concern themselves with these problems (and in one or two instances in the past these organizations have been used as vehicles for established licensees to form a united front against outside competitors for timber in the unit). The Forest Service has encouraged licensees to reconcile their respective areas of operations through their associations, and except where there is some compelling reason to do otherwise chart areas proposed in this manner are usually accepted. The Forest Service checks the ownership and status of the land in chart areas to forestall any potential conflicts with other rights or uses in preparation for development planning under Timber Sale Harvesting Licences or Timber Sale Licences. It should be emphasized that while these area designations imply some administrative priority to the licensees, they are not binding; the timber on a licensee's chart area is not formally reserved for him, and the Forest Service technically may provide him with Cutting Permits anywhere within the Public Sustained Yield Unit.

The shift to licensing volumes rather than areas in recent years is closely linked to the effort to regulate harvesting within the constraints of the allowable annual cut. Undependable cruise estimates of the volume of timber on former area-based Timber Sale Licences, and the difficulty licensees faced in adhering to the allowable annual cut authorized in each of their separate licences, led to the licensing of volumes and regulation of licensees' cutting rates under all of their "quota" licences in a unit taken together.

SHORTCOMINGS OF CURRENT POLICIES

The Timber Sale Licence has proven to be an extremely versatile instrument for allocating timber rights, and the government has adapted it with considerable imagination to meet changed circumstances and new objectives. But during the last two decades, as a result of a succession of expedients that have been introduced to accommodate new pressures, the system has strayed from its original firm statutory and contractual foundation. Moreover, in some respects it does not serve well either the needs of the forest industry or the goals of modern resource management. Some of the weaknesses of the system of greatest concern to licensees, such as harvesting controls, operational planning, and administration are dealt with in later chapters. Here my intention is to point out some of its basic structural deficiencies which call for policy change.

A matter of fundamental importance is the precarious nature of the "quota" arrangements. From the point of view of licensees, the security of timber supply afforded by their "quota" rests on a very weak footing. The advantages enjoyed by a "quota" holder hinge on a Minister's recognition of him as the applicant, triggering the sealed tender—matching bid privileges and bidding fee protection when he applies for a new licence. But he has no contractual right to this protection; the Minister has completely unfettered discretion to determine who among competitors for a licence shall be recognized as applicants, and therefore the government is not bound to honour any "quota position". The Minister is free to designate someone other than the established licensee as the applicant, or even to abandon the "quota" system altogether. As a means for renewing tenure, then, the security offered through the "quota" system is extremely fragile.

Moreover, the "understanding" that evidently has developed over the years between government and industry that "quota positions" will be honoured indefinitely is a patently unsatisfactory means for dealing with the public's property. The extent of rights conveyed to private parties over Crown resources clearly calls for a sounder statutory and contractual foundation.

I am also concerned that the special bidding arrangements comprising the "quota" system have been improperly invoked: that bidding protection has been extended to established licensees in cases where it should not have been. Under the Forest Act the bidding privileges are available to applicants only where the relevant Public Sustained Yield Unit is fully committed; that is, when its "prospective harvest" under licences for the next year is equal to its "allowable annual harvest". In recent years the allowable cut for each unit was increased substantially with adoption of new utilization standards, and it is obvious that, when that occurred, the prospective harvest was less than the allowable cut, at least to the extent of the increase. There should have been a period of time in each unit when no bidding protection was available, when all sales were sold through unrestricted competitive auctions until this increment was absorbed in new licences. This did not occur, however, despite the clear provisions of the Forest Act to the contrary.

Not only was the "quota" system not suspended during this period, it was actually used to allocate much of the increased allowable cut among the established operators in each unit. In Interior Public Sustained Yield Units,

their "quota positions" were increased by one-third across the board, and those on the Coast by one-half, without any competition as prescribed in the Forest Act.

Further, data supplied to me by the Forest Service that permits a comparison of allocated cutting rights and allowable cut in the various Public Sustained Yield Units (see Appendix D) indicates that considerably less than the total allowable cut has been committed. Thus, according to my interpretation of the legislation, the "quota" system, as it is currently administered in such units, contravenes the Forest Act.

These problems could be alleviated by legislative and contractual changes that would legitimize and secure "quota" rights—a solution that established licensees would undoubtedly favour—but the public interest would not be well served by such a measure. In the first place, for reasons I have already explained, it is imprudent for the Crown to extend indefinite rights, and it is unnecessary to do so to provide for industrial stability. In the second place, fixed "quotas" among enterprises do not permit the desired flexibility within the industry itself. The "quota" system has largely eliminated healthy competition for timber rights, and quite apart from the implications of this for the price of timber and Crown revenues, it precludes opportunities for invigorating market reallocations of raw material supplies among firms. It has also virtually eliminated opportunities for new firms to gain a foothold where "quota" privileges are well established. As matters now stand, anyone wishing either to enter the industry or to expand his timber production in developed regions of the province is forced to buy a "quota position" from an established licensee. And because of the dearth of alternative means of obtaining secure rights to Crown timber and the open-endedness of a "quota position", they have taken on substantial value in private transactions, especially during periods of strong markets.

In the third place, the present system is inequitable even among licensees, insofar as the portion of their rights that is secured under the "quota" system varies widely from one licensee to another. Finally, the trend toward concentration of cutting rights in the hands of a diminishing number of large firms has been accommodated, if not stimulated, by the tenure policies in the Public Sustained Yield Units. By allocating relatively large volumes in individual licences, restricting subdivisions of "quota positions" (see Chapter 10), and promoting the more onerous Timber Sale Harvesting Licence, government policy has undoubtedly aggravated the competitive disadvantages faced by the technically less sophisticated small mill owners and logging operators.

The "third band" licensing policy is open to some of the same criticisms. The practice of basing eligibility for these licences on the Forest Service's perception of the timber requirements of mills imposes structural rigidity and involves a degree of arbitrariness. It also discourages the marketing of logs, which can improve utilization and provide valuable resilience to the industry. This arrangement strongly favours sawmills and plywood and veneer manufacturing firms, leaving little scope for independent logging enterprises. Moreover, the "third band" licences, in contrast to "quota" privileges, have too short a term for systematic industrial operations.

TOWARD AN IMPROVED LICENSING SYSTEM

These shortcomings are serious, and my analysis of them in light of the objectives set out in my terms of reference and the needs I have emphasized in Chapter 5 leads me to conclude that the complicated package of rights that has emerged under timber sale policy is in urgent need of streamlining and reform. In the remainder of this chapter I therefore propose measures to reshape the Timber Sale Licence system, preserving and building on its desirable elements while eliminating those features that are inimical to the public interest and impede industrial efficiency.

My specific objectives are, first, to put the licensing arrangements on a solid and unambiguous legal footing, so that a licensee's rights and the Crown's obligations are securely set out in contracts, thus minimizing reliance on discretionary solicitude and eliminating open-ended, indeterminate, and informal assurances. Second, I have sought to propose terms and renewal arrangements that will provide the stability of timber supplies needed for smooth industrial operations without the rigidifying features of the present system. Third, my proposals are designed to provide some scope for competition in the allocation of timber rights, in order to introduce more flexibility and equity in their distribution: to provide wider opportunity for access to Crown timber, to reduce the current pressure on private transactions in timber positions, and to minimize reliance on administrative criteria.

Fourth, I attempt to provide more diversity in the form of rights and responsibilities in order to accommodate better the full range of forest enterprises and thereby promote a balanced industrial structure. Toward this same end I have sought to eliminate some of the existing biases in the form of eligibility based on "needs" of manufacturing plants, appurtenancy conditions, and the size of rights. I have also been concerned to propose revisions to the tenure framework that will help resolve some of the problems of resource management and development discussed in later chapters.

The specific proposals which follow are directed toward these ends. As much as possible I have attempted to take into account the existing licence and "quota" arrangements and trace a path toward reform in an effort to anticipate inevitable transitional adjustments. In brief, I propose that the oblique "quota" arrangements be abandoned in favour of appropriate terms of tenure and explicit renewal provisions embodied in licence contracts. I suggest that Timber Sale Licences be retained, but modified considerably in their terms and scope of licensees' responsibilities, to provide much of the desired flexibility and diversity in the system.

Many features of the Timber Sale Harvesting Licence should be preserved, but I propose certain important changes to its structure and form. Since this tenure involves much more in the way of forest management than my revised Timber Sale Licences it deserves a more appropriate designation, so for this reason, and to avoid confusion, I call it the *Forest Licence*. This is intended to provide the core of the tenure system for most industrial operations (as the Timber Sale Harvesting Licence already does) and so I turn to it first.

FOREST LICENCES

As current Timber Sale Harvesting Licences expire, they should be replaced with a modified tenure, in the form of Forest Licences. These

licences should not be designed to provide a particular plant with all its expected timber needs, but should be based instead on manageable units of Crown forest land which are capable of yielding enough timber to supply a significant portion of a typical mill's requirements. In other words, no attempt should be made to try to tailor the size of licences, in terms of the annual harvest they authorize, to the current plant capacities of individual licensees; my proposals are aimed at obviating the Forest Service's involvement in estimating the "needs" of each manufacturing plant and basing rights on it. I suggest that 50,000 cunits of allowable annual cut would be a suitable maximum size for these licences in most circumstances.

Under normal circumstances, Forest Licences should convey terms of 10 years, although initial terms as long as 15 years might be granted to support entirely new enterprises in undeveloped areas that require heavy investments in infrastructural development and new plant. In Chapter 10 I discuss procedures for totally new allocations; here I will propose a policy for renewal, when a Forest Licence is meant to replace an expiring Timber Sale Harvesting Licence or another Forest Licence.

Renewal privileges. My recommendations regarding renewal of licences are designed to reconcile two conflicting policy objectives: the need to provide licensees with the security they require to plan their operations beyond the term of individual licences, and the need to protect the public interest in flexibility of timber supply arrangements. I have no doubt that the latter can best be served by providing scope for competition in the distribution of rights to Crown timber, but the former probably calls for some advantage to licensees whose rights are expiring. I therefore propose that competitive bidding procedures be retained for allocating Forest Licences, but with significant modifications to the present arrangements.

A licensee seeking a Forest Licence to replace an expiring one should be given the contractual right to determine that bidding be conducted through sealed tenders and to match any bid higher than his own. This is consistent with present practice, but under my proposal the licensee's advantage will be a contractual right rather than merely a discretionary privilege as at present.

The extent of licensees' renewal privileges should be specified in contracts, and in providing these rights the Crown should retain a degree of flexibility to adjust the size distribution of licences over time. I propose that the renewal provisions in licence contracts provide that the licensee has the right to initiate a new licence or licences, with matching bid privileges, that will authorize an allowable annual cut of at least 80 per cent of that authorized in the expiring licence. Further, this minimum volume should be adjusted upwards to the extent that approved silvicultural efforts undertaken by the licensee voluntarily and without other compensation increase forest productivity and yields. This innovation will give licensees an incentive which parallels my proposals regarding Tree-farm Licences in the following chapter.

I see no need for further protection in the form of bidding fees. These amount to penalties on others who may wish to compete for the licence. The objective should not be to penalize competitors but rather to provide the holders of expiring licences with a margin of preference, and beyond that to discourage *male fide* bidding. With respect to the latter, some have argued

that bidding fees are necessary to deter malicious bidders—opportunists who extort money or other consideration from a licence applicant under the threat of bidding up the stumpage on his sale, or those who would bid spitefully. In the past, an obvious inducement to these practices has been the extremely high stakes associated with competition for “quota” sales; if an established operator were to lose a sale he would forfeit not only the licence but also any “quota” privileges attached to it, and he would usually find it extremely difficult and costly to re-establish a “quota position” or, indeed, to obtain any timber at all. Moreover, oral auctions appear to have lent themselves to abuses. This fertile environment for abuse will largely disappear if, as I later propose, licensees are given a fair opportunity to bid openly on other sales, and if, to discourage triflers, the Crown demands hefty deposits that will not be refunded until all contractual requirements have been met.

The Forest Act already prohibits persons from limiting competition through “intimidation, combination or unfair management”, but fails to offer unequivocal protection to licensees who are pressured by extortionists. Thus, carefully drafted legislation aimed at *male fide* bidders, the prospect of stiff penalties and vigorous prosecution of offenders will further buttress the security of established operators.

In the northwest American states, open auctions of rights to public timber are the rule, and appear to work well, even without the privileges to established operators that I propose here. The advantages enjoyed by a licensee who seeks replacement of an expiring right under my proposals are substantial: first, he will have a contractual right to match any other bids; second, by initiating the sale he will have the advantage of its timing; third, he will usually enjoy the geographical advantage of being already established in the area.

Advanced replacement. I propose also that the Forest Licence system provide licensees with further certainty about the continuity of their timber supply through contractual rights to initiate new sales well before their current rights expire. Without such a provision, the uncertainty faced by licensees as the expiry date of their rights approaches is a serious obstacle to effective operational planning. Moreover, at least a year is usually required to build roads before harvesting can begin. Specifically, the licence contract should provide that the licensee has a right to apply for a replacement sale any time within three years before the date of expiry of the licence, and to elect that the new licence be offered for sale within a year of his application. Legislation should require that the Forest Service issue the new licence forthwith upon consummation of the sale. This will provide up to two years for the successful bidder to plan his operations and undertake any advance development, and for any unsuccessful bidder to secure other rights.

The government has assigned certain resource management responsibilities to licensees under Timber Sale Harvesting Licences, and this should be continued in the Forest Licence programme. In Chapter 11, which is devoted to the division of management responsibilities and risks between the Crown and licensees, I make a number of specific recommendations in this regard, relating to such matters as reforestation, fire protection, and roads.

TIMBER SALE LICENCES

To complement the new Forest Licence there is a need for smaller licences with shorter terms, to lubricate the tenure system, accommodate industrial diversity, and provide flexibility both to the government and to forest enterprises. For these purposes, I recommend that the traditional Timber Sale Licence be retained, with a number of important modifications. Initially, these should be used to convey rights to the timber now being allocated under "third band" and other Timber Sale Licences outside the "quota" structure, as current licences expire.

Size and term. It will be important to maintain a variety of sizes and terms for these new licences, in order to meet the full range of needs and circumstances. There are few instances where planning, road building, and harvesting can be done in less than three years, so as a rule terms should be at least of this duration. Forest Licences will serve the purposes of rights needed for 10 years or more, and so Timber Sale Licences should not normally exceed this. Within that range, terms should be flexible, and I expect that in usual circumstances about five years will prove suitable. To provide resilience and flexibility to the tenure system, and to ensure opportunities for licensees to acquire timber, emphasis should be put on maintaining a large number of relatively small licences, turning over continuously in each region. I suggest that individual licences should not normally authorize an annual harvest of more than 10,000 cunits, and many should be smaller.

These licences should not contain contractual renewal privileges. The objective should be to ensure that all operators will have a frequent opportunity to bid for sales. I expect that typical operators will supplement their Forest Licence or Licences with one or more of these smaller sales. The terms of all their licences will become staggered, so that operators will be competing to replace licences on a regular basis in response to their perceived timber requirements, and at no time will their entire timber supply be at stake.

Responsibilities. The obligations imposed by Timber Sale Licences should be more flexible, and generally not as onerous as in the case of Forest Licences. To a greater degree than at present the Forest Service should shoulder responsibility for resource management on Timber Sale Licences, including preliminary cruising, planning and surveying of cut-blocks. Major roads, other than those on the site itself, should be constructed by the Crown. Responsibility for most forestry measures should also be assumed by the Forest Service, including such things as reforestation and site treatment measures other than slash disposal.

Assumption of these responsibilities directly by the Crown is appropriate in light of the relatively short term of these licences, but it will also permit the tenure system to accommodate independent logging companies and small milling firms much better than at present. It will relieve them of the burden of carrying large sums expended in forestry and in building public roads over long periods until it is written off through the stumpage system. Stumpage revenues can be expected to increase substantially without these offsets, but there will have to be a corresponding increase in government expenditures. Indeed, it must be emphasized that a strong and dependable budgetary commitment is essential to ensure the success of the proposed Timber Sale Licence system, an issue I address in a broader context in Chapter 24.

RIGHTS OVER AREAS

I have earlier explained that most present licences do not specify the area within which the licensee will exercise his rights, but an informal chart area broadly describes the development plan area for each Timber Sale Harvesting Licence and many Timber Sale Licences. This arrangement is not satisfactory. Because chart areas are not binding on the Crown, licensees have no formal resource if the Forest Service finds it necessary to deviate from them when issuing Cutting Permits. For the Crown's part, it is not compensated for public resources reserved for a licensee in this manner. And, most importantly, the assignment of management and other responsibilities to licensees over a wider area is complicated when their rights over it are unspecified.

Many industry representatives and spokesmen for the forestry profession have stressed the advantages of a tenure system that conveys clear contractual rights and responsibilities over specified areas, and these features are credited with contributing to the relatively high standard of resource management on Tree-farm Licences. Rights over the entire area for the full term of the licence not only enable the operator to plan operations more effectively, but also engender a sense of responsibility and interest in the area, promoting good management. Moreover, they permit the licensee to assume responsibilities for forestry measures such as fire protection and reforestation that extend beyond the ambit of Cutting Permits, and facilitate incentives for voluntary silviculture as well. It is important for the licensee to know where he is to exercise his rights, and for the Crown to know where its commitments lie. And, as a general matter, it is desirable to have committed resources formally occupied, so that those for whom they are reserved can accept responsibilities for them and be held accountable.

For these reasons I feel strongly that forest tenure policy should, as far as practicable, embrace the principle of formal designation of geographical areas within which each licence shall be exercised, and I see no reason why this cannot be accomplished without sacrificing needed controls. Hitherto, some licensing systems have involved specification of areas over which licensees are given rights to harvest all the timber, which gives rise to difficulties of cut control in the absence of accurate inventories; others have conveyed rights to an annual volume of timber without identifying it, sacrificing the benefits of an explicit geographic base for management. I see no obstacle to a combination of these approaches in a contract that specifies an allowable cut to be harvested within a designated licensed area. The task is simply to ensure that the area licensed contains at least enough timber to fulfill the authorized harvest.

I propose that this be done by formalizing chart areas as licensed lands under the proposed Forest Licences and rationalized Timber Sale Licences, which will still specify an allowable annual cut. The Forest Service should review chart areas to ensure that they are at least sufficient to provide the authorized volume of timber but not obviously excessive for that purpose, and the rental arrangements proposed in Chapter 13 will also help to discourage reservation of unnecessary areas. Since the licences will convey rights to a volume of timber, the licensee should be protected against errors by provisions in the licence contract that the boundary of the area will be adjusted if it subsequently proves inadequate.

Under these arrangements a licensee applying for a new licence or renewal will also propose a geographical area to which the licence will apply. Once issued, the licence will designate the area, and Cutting Permits can continue to be used to regulate site-specific operations and stumpage rates. But the licensee's responsibilities for forest management and rewards for superior silviculture (discussed in Chapter 11) will extend over the whole area during the term of the licence. If the Forest Service is driven to alter the boundaries of the licence for any reason it will become a matter of contractual renegotiation, as with other area-based rights.

TRANSITIONAL ADJUSTMENTS

The Forest Licence and Timber Sale Licence arrangements I have recommended should bring about a simpler, more straightforward tenure in the Public Sustained Yield Units, eliminating much of the legal ambiguity that now obtains and establishing the timber disposal policy on a more secure footing. It should also result in a licensing system that will provide adequate flexibility for the Crown and equity in the treatment of licensees with respect to the allocation of public timber, while better accommodating a balanced and dynamic industry. But since much of the timber is presently subject to a variety of contractual and administrative arrangements, it may be useful to suggest some further means of paving the way from these to the revised system.

The current pattern of "quota positions" should be used as the starting point for designating volumes and areas to be covered by Forest Licences. While it is true that the Crown is not bound to honour "quota" arrangements, it is also fair to say that over the years licensees have grown to rely upon the protective cloak they have come to represent, to the point of paying substantial amounts to third parties for the privileges they offer. Certain actions of the government have encouraged licensees in their assumptions that "quota positions" were dependable. Accordingly, the reformed tenure system I have proposed in this chapter should be introduced gradually, and in consideration of this reliance.

As all of the current Timber Sale Harvesting Licences expire they should be replaced with Forest Licences, to be sold through competitive bidding. Revised regulations should provide that the licensee who initiates the sale by virtue of an expiring licence will have the right to elect that the sale be conducted by sealed tenders and to match any higher bids. This privilege should extend to a Forest Licence authorizing a rate of harvesting equal to at least 80 per cent of the rate provided by his expiring Timber Sale Harvesting Licence. Any remainder should be put up for sale as well (as long as this is consistent with the allowable annual cut of the management unit), in the form of a Forest Licence or Timber Sale Licence with no matching bid privileges. Where expiring licences authorize more than 50,000 cunits in annual cut, they should be replaced by two or more Forest Licences so that each covers 50,000 cunits or less. In such cases the matching bid privileges will extend to two or more Forest Licences or a combination of Forest Licences and Timber Sale Licences which in the aggregate will amount to not less than 80 per cent of the expiring right.

Those ordinary Timber Sale Licences which are currently covered by "quota" should be treated in identical fashion. Through these means all

"quota" holders will be treated equally, and some Crown timber will be released for disposal through unrestricted competition.

"Third band" Timber Sale Licences have not been accorded status in the "quota" system and so they should be treated differently. These licences have not provided the same preferential bidding procedures; the government has not assured licensees of their continuity, and their holders cannot reasonably have assumed a right to their automatic replacement without competition. The special bidding privileges should not, therefore, be extended to these. As they expire they should be replaced with fresh Timber Sale Licences or Forest Licences, at openly competitive sales. The bidding procedures which should govern these and other dispositions are described in Chapter 10.

These arrangements should provide scope for establishing a healthy balance in licensing arrangements in most regions of the Interior, but the need for new flexibility is even more urgent on the Coast, and there only a very small volume is committed under "third band" licences. In the lower coastal region the industry would be especially well served with a large proportion of Timber Sale Licences suitable for small and independent operators. The government should therefore exploit every other means available to make room for some of these new Timber Sale Licences.

First, the current estimates of allowable annual cut in coastal Public Sustained Yield Units appear to offer some room for additional allocations, but as I explain in a later chapter those estimates should be reassessed and revised before increases can be reliably allocated. Second, upon renewal of existing licences, the government should attempt to free cutting rights, to the extent allowed under the renewal privileges I have proposed above for Timber Sale Harvesting Licences and which I propose in the next chapter for Tree-farm Licences. Finally, if these avenues prove inadequate to the short-term need for diversity and balance in coastal licensing patterns, the government should consider setting the minimum volume to which bidding protection will initially apply (as "quota"-bearing licences are replaced by Forest Licences) lower on the Coast than in the Interior—say 70 rather than 80 per cent. The apparent inequity of this should be seen in light of the substantially greater increases made in coastal "quotas" when "close utilization" made higher harvesting rates possible. Once this balance has initially been struck, the 80 per cent minimum should apply equally in both regions for replacement of successive Forest Licences.

THE TREE-FARM LICENCE SYSTEM

It is now nearly three decades since the Tree-farm Licence system was introduced. From the beginning these tenures have been a focus of controversy, and policy affecting them has undergone considerable evolution. They were a major concern in the last two Royal Commission inquiries and since the last, 20 years ago, circumstances have changed considerably. A reassessment of this unique form of tenure and resolution of some serious problems concerning them is therefore timely.

In their original conception Tree-farm Licences (then Forest Management Licences) were to involve a transfer of rights and responsibilities from the Crown to licensees of such scope that it was almost akin to a Crown grant of zoned forest land. The licence was to be perpetual; the licensee was to take direct responsibility for management; he was to have the option of bearing the full costs of growing timber, in return for which he would be charged only a fraction of the stumpage value; and the Forest Service would exercise only minimal surveillance. Although the advantages of small licences were recognized, it is clear that Tree-farm Licences were intended primarily for large concerns with substantial manufacturing plants, for which it was considered desirable to ensure wood supplies forever. These companies were to combine their Crown-granted lands and old temporary tenures with additional Crown land to form units capable of yielding the necessary harvest continuously, and the public was to benefit from their management of the entire unit.

Over the years, the concept has changed. Licences granted since 1958, instead of a single perpetual term, have carried 21-year renewable terms. The government has adopted a policy of reimbursing licensees for forestry and development costs and charging full appraised stumpage for timber on all lands not contributed by the licensees. And the Forest Service has greatly expanded its involvement and regulation of the licensee's activities. Thus the licences imply somewhat less of a private property interest today.

The considerable variations in size and productivity of the 34 Tree-farm Licences now outstanding are evident in Table 7-1. They range in size from 19 thousand to 6.6 million acres: the largest is nearly half the size of Nova Scotia, and four exceed a million acres. Allowable rates of harvesting vary from 10 thousand to 1,250 thousand cunits annually.

The Tree-farm Licence system must be judged successful as a means for providing large enterprises with the assurance of wood supplies required to secure heavy investment in manufacturing plants. Several large pulp mills and sawmills have been constructed explicitly in response to the granting of licences, and in almost all cases they provide the raw material base for active manufacturing facilities maintained by licensees.

Table 7-1

SIZE AND AUTHORIZED HARVESTS OF TREE-FARM LICENCES

licence number	year granted	area		"Schedule A" portion of total productive area ¹	allowable annual cut	
		productive	non-productive		current ²	increase since first established
		thousands of acres	thousands of acres	per cent	thousands of cunits	per cent
1	1948	2,303.1	4,362.8	0	720.0	397 ³
2	1949	481.8	53.4	42	460.7	— ⁴
3	1951	109.9	87.0	0	44.6	148
5	1952	81.9	3.2	1	47.6	217
6	1951	355.2	64.3	20	479.4	166
7	1951	175.2	18.7	33	190.0	76
8	1952	179.6	12.6	0	53.3	323 ⁵
9	1952	180.2	15.8	1	74.3	142 ⁶
10	1952	99.4	474.9	1	64.0	491
12	1953	21.6	1.8	8	25.0	88
13	1953	51.6	40.7	1	12.7	256
14	1954	119.0	225.7	1	40.8	70
15	1955	113.3	7.0	0	37.4	594 ⁶
16	1955	120.2	7.9	0	45.2	352
17	1955	119.3	562.2	0	73.4	389
18	1955	170.7	13.3	0	58.0	132
19	1955	279.5	194.2	8	302.0	202
20	1956	356.1	70.3	40	460.0	203
21	1957	533.9	104.2	49	770.0	116
22	1956	374.3	39.4	16	363.0	126
23	1956	967.8	1,551.0	4	415.0	89
24	1959	192.1	85.8	4	154.0	105
25	1959	364.7	775.6	29	236.0	64
26	1959	16.2	2.8	18	11.4	168
27	1959	32.1	3.8	8	40.6	69
30	1960	392.7	55.3	0	149.0	90
32	1960	31.3	2.2	0	12.0	118 ⁷
33	1960	20.6	.5	0	10.1	161
35	1960	92.1	5.5	0	32.0	173
36	1960	27.0	1.8	23	31.1	257 ⁸
37	1961	333.3	132.2	31	404.0	98
38	1962	129.7	411.4	0	93.0	124
39	1962	1,167.7	622.8	25	1,250.0	185
41	1966	509.5	2,011.2	0	312.0	— ⁹

¹ Based on data in latest approved working plans as of December 1975. Where percentage is less than .5 per cent it is indicated as 0.

² According to most recent revision; all between 1970 and 1975.

³ Combined figures for amalgamated licences No.'s 1 and 40.

⁴ Harvests not regulated until 1974.

⁵ Combined figures for amalgamated licences No.'s 8 and 11.

⁶ Currently under review.

⁷ Combined figures for amalgamated licence No.'s 28, 29, 30, 31, and 34.

⁸ Combined figures for amalgamated licence No.'s 4 and 36.

⁹ Allowable cut based on a special cutting schedule to accommodate planned development of a pulp complex.

Source: Compiled from data provided by B.C. Forest Service, and from its *Annual Report 1975: Statistics*, Table 8.

From the point of view of resource management, also, Tree-farm Licences have met, if not exceeded expectations. They have been an effective instrument for bringing under management many otherwise unregulated Crown-granted lands and old temporary tenures, as well as extensive tracts of Crown

forest. The proprietary interest that licensees have developed in these lands, the incentives the system has provided, and the priority given them by the Forest Service have produced the highest standard of forest management in the province—a standard that in many cases is high by international comparisons as well. With few exceptions both the Forest Service and the licensees are proud of the rapid improvement of resource management under these tenures.

A Tree-farm Licence has several features that help to generate these desired results. Among the most important is the defined geographical area over which the licensee accepts rights and responsibilities. This definition of the land base contrasts with some of the existing tenure forms discussed in the previous chapter, and it has undoubtedly been important in creating conditions for the licensee's continuity of interest in forest development and for control by the Forest Service. This has been complemented by the terms of these licences, which are among the longest of any rights to Crown land. In addition, the regulation of these tenures as coherent sustained yield units has provided scope for strong incentives to increase the productivity of the land.

But there are nevertheless a great many problems associated with Tree-farm Licences. If these can be resolved in a way that preserves the great advantages this system offers to the forest industry, the public interest can be well served by its continued use and development.

The contractual and statutory arrangements governing the relationship between the Crown and Tree-farm Licensees are numerous and complex, and I have not included all of my recommendations dealing with them in this chapter. Here I will discuss only the most fundamental aspects of this form of tenure: their term, provisions for renewal, and adjustments to cutting rates and boundaries. In later chapters I will consider additional issues of Tree-farm Licence policy in other contexts: old temporary tenures in the following chapter; new allocations, transfers, performance, and other issues in Chapter 10; the division of management responsibilities and controls between licensees and the Crown in Chapter 11; and so on.

Owing to their size and complexity each Tree-farm Licence contract is unique in many vital aspects. Each was negotiated independently and at a different time, and its provisions reflect government policy of the day and the experience gained from earlier contracts. Some have been revised significantly. This variability often makes general observations on the 34 agreements somewhat perilous, and what follows here and elsewhere in this report should be interpreted cautiously in relation to individual agreements.

TERM AND RENEWABILITY

I turn first to the question of the term of Tree-farm Licences and their rights of renewal, which is an issue of great uncertainty and anxiety. By 1958, 23 licences had been granted with perpetual terms. In that year amendments to the Forest Act repealed the Minister's authority to grant perpetual terms, and limited the term of future Tree-farm Licences to 21 years with options for renewal. Since then, 13 new licences have been granted with 21-year renewal terms, and through negotiations between the Forest Service and licensees seven of the earlier licences have had their perpetual terms revised to 21 years, renewable. Over the years several licences

have been amalgamated with others, and today, of the 34 licences outstanding, 16 are perpetual and the remaining 18 have 21-year renewable terms.

A legal debate has arisen over the effect of the 1958 amendment on licences which had already been issued with perpetual terms. According to testimony given at my public hearings, the Forest Service has received legal opinion to the effect that this legislation applied retroactively to the perpetual licences, reducing their terms to 21 years, renewable. Under this view, the perpetual licences would run for 21 years from the date of the amendment—that is, to 1979—at which time they would come up for renewal. Holders of these tenures contend that the 1958 amendment did not apply to their licences and that therefore their perpetual terms remain intact.

Even with the 21-year renewable Tree-farm Licences a fundamental issue has been raised concerning their ultimate duration. Both the licence documents and the Forest Act provide that their terms are renewable, subject to renegotiation of their terms and conditions according to the provisions of the Forest Act and Regulations in force at the time of the application for renewal. But here another ambiguity has become evident. Some licensees maintain that this clause entitles them not only to an additional term of 21 years, but also to successive renewals in perpetuity. However, the language of these renewal provisions does not appear to me to convey such perpetual rights.

It is obvious that uncertainties such as these have no place in future tenure agreements, that a matter as fundamental to both the Crown as landowner and to licensees as the duration of rights should be couched unequivocally, leaving no room for doubt. As well, the public interest requires that the uncertainties surrounding the duration of existing agreements be resolved. The changes I propose are designed with these interests in mind.

"Perpetual" Licences. I have concluded that the necessary legislative steps should be taken to establish clearly that the 16 contracts issued prior to 1958 shall not be perpetual. I make this recommendation only after careful deliberation, because (although I do not purport to judge the legal issue which has been raised) the argument that the 1958 amendment does not apply to those licences appears to have some substance. My conclusion is not based solely on the desirability of resolving legal ambiguities surrounding the duration of these agreements before 1979 when they could well come to a head before the courts, although that is important. Of more fundamental concern are the substantive policy issues raised by perpetual tenures over Crown land.

First, it is essential that the government retains some flexibility in determining the uses to be made of Crown forest land. Under a perpetual right the Crown is left with very limited scope for withdrawing land from commercial timber production and diverting it to other more valuable uses. The agreements provide for certain withdrawals, but the opportunities for doing so (discussed below) are very narrowly circumscribed.

Second, the Crown should reserve the right to withdraw, from time to time, productive Crown timberland from the exclusive control of Tree-farm Licensees, in order to make timber rights available to other potential users as a means of influencing the pattern of industrial development. Third, as conditions change over time, the government must reserve the right to renego-

tiate terms and conditions periodically on behalf of the public. The public, as landowner, has an obvious interest in the management of its resources, an interest which touches on the manner and timing of harvests, the use of the land for purposes other than timber production, resource development, and so on. The provisions required in contracts inevitably change with time; and just as we would not be satisfied today with terms and conditions established 50 years ago, so our successors would find a contract made today unsuitable for conditions 50 years hence.

Indeed, one of the benefits of our early policy of retaining Crown ownership of forest land is that it has enabled us to regulate its use to meet changing economic and social conditions by means of contracts rather than through legislation. But by granting rights in perpetuity and thereby precluding regular renegotiation of the terms of those agreements we largely forfeit the flexibility to gear them to new circumstances, and place the authorities in the position of resorting to less sensitive legislative intervention. There are many examples in other provinces and elsewhere of governments finding it necessary to use legislation to change very long-term rights, and licensees themselves must be aware that in a changing world perpetual rights to public resources are inherently precarious. Periodic renegotiation of rights and responsibilities at prescribed intervals is undoubtedly a more satisfactory means of modifying tenures than legislation directed at altering perpetual rights.

Perpetual terms are not only undesirable from the Crown's point of view, they are also unnecessary for licensees. It is true that investments in reforestation and other silvicultural efforts which may be called for under a sustained yield forestry programme will not yield a cash return for many decades owing to the long time it takes to grow forest crops, but this in itself does not mean that the licensee requires perpetual tenure. Tree-farm Licensees who have expended funds in this manner in the past have been directly compensated for them (albeit inconsistently) through adjustments in stumpage charges, and through higher rates of authorized harvest. Insofar as the Crown thus bears the costs and the licensee is compensated contemporaneously for his efforts, it is not necessary for licensees to be guaranteed tenure of sufficient duration to realize on them. Indeed, the present incentives for silviculture appear to be equally effective for 21-year licences as for those with perpetual terms.

A possible alternative to my proposal for a legislative resolution of this question would be for the government to renegotiate with licensees for reduced terms, offering them some form of compensation in exchange. Indeed this has already been done with seven licences to date, whose holders agreed to substitute 21-year for perpetual terms in consideration for other amendments or amalgamations they sought. This approach is appealing insofar as it is consensual, but it suffers serious disadvantages. With government being a passive player, waiting for licensees to initiate negotiations for changes they wish to effect, it may well take decades to renegotiate all 16 contracts. It has taken almost 20 years for seven licences to be renegotiated. Moreover, the public could well suffer if the government were forced to initiate these amendments in an effort to hasten reform and to offer valuable consideration for rights which the Crown awarded without charge in the first place.

Accordingly, I have rejected this approach in favour of the more expeditious legislative alternative. This I do with reluctance, and with full aware-

ness of the deserved respect traditionally accorded by the Legislature to the security of private contracts. The public values at stake in this instance demand elimination of these perpetual terms, with due consideration to the security of their holders.

The seven perpetual licences whose terms were revised were given terms of 21 years, renewable, running from the date of the amendment. Correspondingly, I recommend that the revised Forest Act proposed in Chapter 25 provide that the terms of the remaining 16 perpetual licences be reduced to 21 years from the date of the legislation with an option to renew for an additional 15-year "evergreen" term, of the kind I propose below. It is worth noting that if this change were introduced today, by the end of the 21-year term and its renewal, the licensees would have enjoyed continuous tenure for up to 64 years. Additionally, I recommend that these licensees be given the right to elect as an alternative to the initial 21-year terms, a 15-year "evergreen" licence at the outset or at any time during the currency of the initial 21-year term.

Renewal of 21-year Tree-farm Licences. Eighteen Tree-farm Licences carry terms of 21 years renewable as described earlier. The wording of the contracts does not appear to me to convey the right to successive renewals forever, and for the reasons I have already explained I consider it contrary to the public interest for rights over Crown land to be held in perpetuity. To avoid any further uncertainty in this matter I recommend that legislation be introduced to establish firmly and unequivocally the ultimate duration of these licences.

As each of the 21-year Tree-farm Licences expires its holder should be given the right to a further term of 21 years, after which time the licence will expire. As an alternative, licensees should be given the option to elect that their renewed licences incorporate an "evergreen" renewal feature, which I will now describe.

Evergreen renewal. The 21-year renewal feature written into modern Tree-farm Licences has offered added security beyond the expiry of the initial term, but this approach to renewals suffers from a number of serious shortcomings. A relatively minor point is that the 21-year period itself has no logic other than quaint legal tradition, and in the context of the well-established 5-year periods which govern Tree-farm Licence planning, is administratively clumsy. Terms in multiples of five years are therefore more amenable to Tree-farm Licence administration and management.

A more substantial issue is that under any fixed term the licensee faces uncertainty about the continuity of operations as the expiry date is approached. This will inevitably influence his investment decisions and raise anxiety among employees and local communities as well. An alternative is a so-called "evergreen" provision, which provides for incremental additions to the existing term during its currency. Finally, while 21 years may approximate a suitable initial term in order to provide the security for investment in a new enterprise, it is unnecessarily long to maintain it, particularly under an "evergreen" arrangement.

On the basis of these considerations I have concluded that an "evergreen" renewal provision would be a valuable feature of Tree-farm Licences. I there-

fore propose that, where this alternative shall apply, the basic terms of Tree-farm Licences be for a period of 15 years. Then at the end of each subsequent period of 5 years (upon the expiry of successive management working plans) the licensee will have the option of adding a further period of 5 years to the remaining term, bringing the duration once again up to 15 years.

This procedure lends itself to regular and systematic review of the terms and conditions incorporated in licence documents. The contracts should clearly empower the Minister to determine what shall be the terms and conditions of the renewed tenure, subject to the qualifications concerning boundaries and cutting rates which I propose in the following section. If these are acceptable to the licensee, they will be incorporated in a fresh agreement bearing a 15-year term. On the other hand, should these terms and conditions not meet with the licensee's approval then he would be entitled to retain his licence in its unamended form for the remaining ten years, after which it would expire. As a purely practical matter, the licensee would be able to suggest revisions for inclusion in amended agreements every 5 years, which the Minister could either accept or reject according to the circumstances.

This arrangement affords the licensee much better certainty with respect to the continuity of his rights over time. He would never face the short-term prospect of non-renewal or sudden unacceptable change. As long as renewals were negotiated he would never have more than 15 nor less than 10 years tenure (which compares with a range of 21 to zero with a lower average number of years under fixed 21-year terms). From the point of view of the Crown the system offers much better scope for systematic review and amendment of licences and much greater flexibility for government to respond to changing circumstances, such as revisions to cutting rates, boundary adjustments and withdrawals, which I will now address in turn.

REVISIONS TO ALLOWABLE ANNUAL HARVESTS

Because each Tree-farm Licence is intended to be managed as a separate sustained yield unit, an allowable annual harvest is determined individually for each (according to the methods described in Chapter 17 and Appendix D) and is prescribed in 5-year management working plans approved by the Forest Service.¹ The licensee is required to harvest this allowable annual cut within certain limits. The relationship between the licensee's authorized harvesting rate and the estimated yield capacity of licensed areas is a central issue confronting government and its Tree-farm Licence policy.

When the government originally fixed the size of the Tree-farm Licences, one of its major objectives was to circumscribe a land area which would produce a sustainable yield sufficient to meet all or a large portion of the perceived raw material requirements of licensees' specific (existing or proposed) manufacturing facilities. These initial relationships between harvest and utilization capacity have not endured, however. Many licensees have augmented their timber supplies by acquiring other rights and have constructed or purchased additional manufacturing capacity, and the form of the raw material used in some plants has changed (notably the shift from logs to by-product chips in pulp mills). Most important, however, have been the substantial

¹ However, a clause in one licence contract provides that the Tree-farm Licence is designed to yield a specified annual harvest. Despite this, working plans approved pursuant to that licence have authorized substantial increases in harvests, as in other licences.

increases in the allowable rates of harvesting under all licences. Over the years successive working plans have approved cutting rates which are substantially higher than those calculated when the licences were initially granted; in some cases present levels are several times the original rates (see Table 7-1).

The policy relating to adjustments to the allowable cut is obviously an extremely important matter; the volume of timber that may be harvested is, after all, the crucial right conveyed under these licences from the point of view of both the Crown and the licensee. Yet in spite of the very large changes that have been authorized, there is little evidence to suggest that this issue has ever received the careful deliberation and policy assessment that it deserves.

In my judgment the present arrangements are unsatisfactory. They involve, by and large, acquiescence on the part of the Crown to whatever impact new information or revised assumptions may have on the allowable cut of different Tree-farm Licences, using criteria for fixing the rate of harvest that are themselves purely a matter of administrative discretion and undefined in other legislation or contracts. Hitherto, nearly all revisions have been upward and substantial, so licensees have been content; but the likelihood of adjustments in the other direction is increasing.

Some licensees maintain that these increments to their timber supplies have been earned largely by their efforts. However, data presented to me by the Forest Service and licensees reveal that only a very modest fraction of the increases in harvest rates can be attributed to licensees' efforts to enhance forest growth. On the basis of the most generous assumptions it accounts for less than 10 per cent, and I strongly suspect that across the province it lies well below that fraction. To an overwhelming extent the increases are the result of revisions in estimates of the forest inventory, recalculations of recoverable volumes and growth using assumptions of closer utilization standards, and shortening of the growing period assumed for new crops.

One alleged problem is that the system encouraged licensees, at the time they applied for licences, to be conservative in their estimates of timber volumes in the areas applied for, particularly insofar as the applicant's timber cruise information was not normally checked in the field by the Forest Service. Second, the upward revisions in the timber inventory and the impacts of higher recovery specifications have fallen rather randomly on different licences, depending on the proportions of timber that had previously been considered unmerchantable, the size and decadence of trees, and other factors. Moreover, as I explain in a later chapter, the leverage on the allowable cut of any change in data used in the calculation depends on the age distribution of the stands within the managed unit. The present policy thus leaves much to chance, and depends excessively on cruise information and calculations of allowable cuts supplied by licensees themselves (which are, however, subject to Forest Service approval). Later, I propose that the Forest Service improve its surveillance of inventory information and reconsider its harvest regulation criteria, but these initiatives will call for a more definitive specification of the licensees' rights to a harvest of timber.

There is no question that the Forest Service had the authority to grant these increases, or that (with the one exception) it extended a privilege that was not consistent with the contracts. However, there is no doubt that the recent enormous upward revisions of the allowable cuts were unexpected at the time licences were issued. Although it was recognized that improved

inventory data and silviculture practice would call for revisions, there is no evidence that the Forest Service, at least, anticipated anything like increases in the order of two or three hundred per cent.

I consider it essential that the extent of the Crown's undertaking to the licensee unequivocally specify an authorized rate of annual harvest for the term of the licence. This, in my opinion, is the only defensible policy on grounds of equity and definitiveness of the Crown's obligations. These licensees have, it should be noted, long-term rights to large amounts of Crown timber without facing the prospect of competition for it. This is justified by their contributions to the unit and their management undertakings, and their rights should be secure; but that does not imply that they should automatically receive whatever increases (or suffer decreases) in yield which might ensue from revised calculations. Incentives for improved silviculture are important and should be preserved, but not through double compensation of both the costs and the increased harvest: that will simply distort incentives, misallocate public silvicultural spending between these and other forest lands, and generate inequities.

I therefore propose that the policy respecting revisions to allowable annual cuts be much more discriminating in future. First, the government should approve any increases in yield that are attributable to "Schedule A" lands in a licence because these are strictly area-based rights contributed by the licensee. Second, increases attributable to "Schedule B" lands should be approved to the extent that they are the result of efforts beyond the licensee's contractual obligations and not otherwise reimbursed. Re-inventories, for example, are contractual obligations and the costs should be reimbursed monetarily; and revised utilization standards should be regarded as part of the normal process of harvesting regulations which are altered from time to time under cutting authorizations. On the other hand, this more explicit specification of available harvest should oblige the Crown to ensure that the licensee's right to the indicated harvest on "Schedule B" lands will be protected over the term of the licence.

To implement this proposal the allowable annual cut under current management working plans should be accepted as the licensee's basic harvesting right for the remainder of the term of the existing licences. The Forest Service should not authorize increases except insofar as they are attributable to "Schedule A" lands or to voluntary and unreimbursed silvicultural efforts on "Schedule B" lands. In new and renewed licences this basic harvesting rate should be specified in licence contracts, as should the method of making adjustments in recognition of silvicultural improvements.

Thus Tree-farm Licences will guarantee their holders a specific annual harvest, subject to increases in certain circumstances. Licences should also clearly circumscribe the government's right to reduce harvesting rates when contracts are renewed, a matter which is left open to question under present arrangements. I propose that the maximum extent to which the harvest rate attributable to "Schedule B" lands may be reduced should parallel my recommendations for Forest Licences. For those, I proposed that the bidding protection available to licensees should extend to 80 per cent of their authorized annual harvest, in a 10-year contract. I therefore recommend that government reserve the right to reduce the allowable annual harvest attributable to "Schedule B" lands by not more than 10 per cent upon any 5-year renewal

of 15-year "evergreen" contracts. All new 21-year contracts issued should provide for a corresponding limit to reductions, in successive 5-year management working plans. However, for the perpetual licences converted to 21-year terms under my earlier proposals the basic harvest rate should be kept intact for the 21-year term. The government should be free to make reductions within these limits for any purpose, but only at the prescribed intervals.

WITHDRAWALS AND BOUNDARY ADJUSTMENTS

Under current Tree-farm Licence contracts, the government has reserved the right to make limited adjustments to licence areas by withdrawing lands. These provisions are somewhat complex, the scope for withdrawals being dependent on land productivity and tenure status.

The "Schedule A" lands in Tree-farm Licences are inviolate, and may not be unilaterally withdrawn by government for any reason; but the licensee may, with the consent of the Minister, withdraw any of the Crown-granted lands he contributed to the licence if they are required for an economic use higher than forestry. Apart from this minor exception, withdrawals may be made only from the "Schedule B" portion.

Licence areas usually include lands that are not considered to be productive forest land—such as alpine areas or swamp—which are excluded from the forest inventory. As Table 7-1 indicates, the proportion of this "unproductive" land varies considerably from licence to licence depending on topographical and other factors, but in total it accounts for more than half of the area covered by Tree-farm Licences in the province. Under the licence contracts, the Minister is given complete discretion to withdraw any of these lands. It is therefore only in respect of the "productive" lands in the "Schedule B" category that matters become complicated.

First, productive "Schedule B" lands may be withdrawn by the Minister without the consent of the licensee for "experimental purposes, parks or for æsthetic purposes" to a maximum extent of one per cent of the *total productive area of the licence*: that is, one per cent of all productive lands ("Schedule A" and "B") may be withdrawn, but it must be taken from "Schedule B". Second, additional "Schedule B" lands which are "required for a higher economic use than growing and harvesting forest crops, or for any use deemed to be essential to the public interest" may be withdrawn without compensation by the Minister, provided that the productive capacity (that is the allowable annual harvest) of the licence area as a whole is diminished by not more than one-half of one per cent. If withdrawal for these purposes exceeds this upper limit, the government is obliged to compensate the licensee by substituting other Crown lands, "if available". Third, licences give the Minister unlimited power to withdraw "Schedule B" lands for rights-of-way required for forest roads, railways, highways, power lines, or other such purposes. As an alternative to withdrawing "Schedule B" lands under these provisions, the Minister may (in most licences) leave the licensed area intact and simply grant the "use" of lands totalling these maxima to others. The agreements outline a procedure for obtaining the consent of the licensee to satisfactory arrangements when this course is taken.

Finally, the Crown is required to compensate the licensee for any costs of moving equipment and improvements incurred by him as a result of a with-

drawal. In the case of immovable improvements (such as roads and buildings) the licensee is entitled to their depreciated cost. Areas which have been artificially reforested are also defined as fixed improvements; for these compensation is due to the extent of the "cost of reforestation". The agreements do not expressly address the situation where the licensee has received compensation through stumpage adjustments.

In Chapter 5, I stressed the importance of ensuring that forest tenure arrangements leave the government with sufficient flexibility to permit it to adapt its land use policies to changing circumstances, to enable it to recognize values other than timber, to accommodate industrial diversity and evolution, and to pursue other social and economic objectives. I do not consider that the withdrawal provisions of current Tree-farm Licences provide the government with the latitude it requires for these purposes. Moreover, my proposals for contractual specification of the licensee's harvest rights will remove much of the import of changes to licence boundaries.

I suggested earlier that the designated land base is a valuable attribute of Tree-farm Licences, but this does not imply that their boundaries need to be fixed for all time. My proposals concerning alterations of licence boundaries are designed to give the government the flexibility it requires, while leaving licensees with an appropriate degree of security for resource and investment planning.

The current arrangements applicable to "Schedule A" land are satisfactory and should be maintained in future contracts; old temporary tenures and Crown-granted lands included in Tree-farm Licences should be immune from cancellation by government, in recognition of their holders' proprietary interest in them. Conversely, where Crown-granted land forms part of a Tree-farm Licence, its owner (the licensee) should be permitted to divert it to other uses as long as this will not substantially impair the viability of the licence as a whole and he accepts the consequent reduction in the licence's allowable cut. The government's discretion to delete unproductive portions of "Schedule B" lands from Tree-farm Licence areas at any time should also be retained.

Beyond this, the government should retain the right to alter the boundaries of "Schedule B" lands at prescribed intervals, to adjust the yield capacity of the unit to the licensee's harvesting rights. From time to time the government may find it necessary to adjust boundaries for other compelling reasons, but the licensee's harvest rights should not be prejudiced by any such changes. Contracts should provide licensees with the right to compensation for fixed improvements they have made on withdrawn lands except to the extent that they have already been reimbursed through stumpage adjustments or by other means. Any boundary adjustments should, of course, be made with care to minimize disturbance to the management strategy of the unit as a whole.

In the case of "evergreen" licences any needed boundary revisions should be proposed at the time of 5-year renewals. If they are satisfactory to the licensee he will take an amended licence for a fresh 15-year term; if not, he will be free to decline them and retain the old boundaries for the remaining term of his licence. Under the perpetual Tree-farm Licences adjustments to licence boundaries, beyond the limits currently prescribed in the contracts, should be postponed until their renewal dates at the end of 21 years. Boundaries for the other 21-year licences can be revised, as necessary, at their next

renewal date. In the meantime authorized cutting rates for all these licences should be determined according to the principles I advanced above. If the licence area is found to be capable of producing a higher or lower yield than the licensee's authorized annual cut, harvesting rates on adjacent Crown lands should be modified in anticipation of future boundary adjustments.

I understand that in one or two cases Tree-farm Licensees have not maintained the minimum rates of harvesting called for by working plans, or have not revised allowable cut calculations to take account of new factors that would increase harvest rates, and in these cases the Minister has waived sanctions. In future, wherever the yield of a Tree-farm Licence obviously exceeds the needs of the licensee, the Minister should take advantage of his legal scope to reduce them, freeing cutting rights for allocation to others.

CONFIGURATION OF LICENCES

A central feature of the Tree-farm Licence system is that the forest land under each licence is managed to yield a sustained harvest. Later in this report I suggest that a logical sustained yield policy must be directed toward maintaining the productivity of forest land and regulating the harvest rate within economically meaningful timber supply regions. Even though they are often very extensive, no Tree-farm Licences encompass entire economic regions. Moreover, some Tree-farm Licences do not take the form of a single contiguous parcel, but are comprised of a number of separate blocks, often widely separated from each other in quite different regions. For these reasons the regulation of harvests on individual Tree-farm Licences is not always consistent with regulation of regional timber supplies.

This is illustrated graphically on the Queen Charlotte Islands, which clearly comprise a timber supply region with dependent communities warranting stability of economic activity. The islands are mostly divided into one Public Sustained Yield Unit, one Tree-farm Licence, and parts of two others held by three different companies. The major part of the latter two licences consist of other disparate blocks scattered along the Coast as far south as Vancouver Island and the southern mainland—a quite separate region and Forest District. In other words, while each Tree-farm Licence is managed according to principles of sustained yield, its separate blocks need not be, and so a timber supply region that includes fragments of sustained yield units is not assured of a steady harvest or of any integrated harvest control. This situation exists to a lesser extent in some other regions of the province.

Some licensees already manage blocks of their Tree-farm Licences in different regions as more or less independent units, and plan for continuity of operations in each. This practice should be formalized upon renewal of all licences, by issuing separate licences for tracts located in separate timber supply regions. The licences and their prescribed harvest can then be recognized as allocated rights that are meaningful components of the total planned harvesting in each region.

This chapter does not exhaust my discussion of the Tree-farm Licence system and the scope for improving it. In subsequent chapters I delve in further detail into other important aspects of this form of tenure.

OLD TEMPORARY TENURES

The so-called old temporary tenures—Timber Licences and Leases, Pulp Licences and Leases, and Timber Berths—have played an important role in the development of provincial forest policy since the colonial period.¹ Those remaining outstanding today are rather old: the licences and leases were all initially granted by the provincial government before 1907, while the berths were issued by the federal government prior to the reversion of certain railroad lands to the province in 1930. They were thus all granted long before the sustained yield policy was introduced, and they simply confer the right to harvest all mature timber on the licensed tract of Crown land.

Before and for a few years after the turn of the century the old temporary tenures were the only means available—other than outright grants of land—for conveying rights to Crown timber. Their importance peaked long ago, but while their share in the total provincial harvest has since declined to some 15 per cent they are still very important in some areas and to some firms.

In an earlier period these timber rights were widely held by thousands of individuals and firms, but with the passage of time they have gradually become concentrated into fewer hands through private transactions and reversion to the Crown, to the point where today there are only 84 owners. Of these, five large integrated companies and their affiliates control approximately 80 per cent of the 1.7 million acres now held under old temporary tenures.

All the old temporary tenures have finite terms fixed in the licence documents. With some exceptions which I turn to below, Timber and Pulp Licences and Timber Berths generally carry 1-year terms, while Timber and Pulp Leases carry 21-year terms. Their holders have sustained their rights over the decades through repeated renewals, which the government has granted as long as merchantable timber remained on the land. They are subject to annual rentals, royalties on timber harvested, and certain other contractual and statutory provisions, most of which I discuss in later chapters.

Unlike the variable stumpage charged on timber cut under other rights over Crown land, these tenures are subject to royalties which have been fixed by legislation and revised from time to time. In 1974 the Legislature passed amendments to the Forest Act that could have the effect of basing these royalties on appraised stumpage values, but at the time of writing this report those amendments have not yet been proclaimed. My terms of reference preclude consideration of these royalty arrangements, but since some of my proposals hinge on the action taken in this matter I must at several points deal with alternative possible outcomes.

¹ The history of these tenures is detailed in many sources: see *Fulton Report* (throughout); *Sloan Report 1945*, pp. 86–96; *Sloan Report 1956*, pp. 24–32; *Task Force 1st Report, 1974*, pp. 53–66; and Robert E. Gail, *Land, Man and The Law*, University of British Columbia Press, 1974, pp. 91–110.

More than half of these tenures are now integrated as "Schedule A" lands in Tree-farm Licences, as indicated in Table 8-1. On these, harvesting and management is governed by the approved management working plan for the Tree-farm Licence. The others are subject to less regulation and control than any other rights to Crown timber, and the licensees have been free to cut the timber or to defer harvesting as they choose. As the timber is removed, these tenures are cancelled; those outside Tree-farm Licences simply revert to the Crown, while those within those licences are transferred from "Schedule A" to "Schedule B" lands and remain part of the Tree-farm Licence.

In terms of modern needs and circumstances, the policy governing the old temporary tenures can be improved in a number of respects. First, while there were logical reasons for the several forms of these rights in the past, the distinctions among them have since become anachronisms. Since their separate forms now serve no useful purpose, and simply complicate forest policy and administration, they should be rationalized.

Table 8-1
OLD TEMPORARY TENURES IN GOOD STANDING
(January, 1976)

	within Tree-farm Licences		outside Tree-farm Licences		total	
	number	acres	number	acres	number	acres
Timber Licences	1,203	568,571	921	463,518	2,124	1,032,089
Timber Berths	5	3,636	93	145,592	98	149,228
Timber Leases	71	77,657	23	24,216	94	101,873
Pulp Licences	164	71,534	56	30,563	220	102,097
Pulp Leases	18	191,874	15	104,705	33	296,579
total	1,461	913,272	1,108	768,594	2,569	1,681,866

Source: B.C. Forest Service.

Second, continued uncertainty about their duration is an impediment to systematic long-term planning, and their terms should be determined once and for all. Third, again in the interests of long-term planning, the relationship between old temporary tenures outside Tree-farm Licences and neighbouring Public Sustained Yield Units requires rationalization. These are the basic issues I will confront in this chapter. Other problems associated with them, having to do with such matters as transferability, taxation, and regulation of development and harvesting, are considered in the context of general tenure policy in subsequent chapters.

FORM OF LICENCE

In light of present realities and my other recommendations there is no need for the old temporary tenures to take five different forms. Upon expiry of the current term for each of these tenures, renewals should be granted, subject to my subsequent recommendations, under a single form of licence document to which I hereinafter refer as a *Timber Licence*. Where several licences are contiguous, held by the same licensee and having identical terms, they can be reissued as a single Timber Licence if both the government and

the licensee concur. The special federal-provincial arrangements relating to Timber Berths may mean that federal consent is required in this case, although significant federal concern about such a change seems unlikely.

TERM AND RENEWAL

The old temporary tenures confer the right to cut all of the merchantable timber contained within their surveyed boundaries. Although in the early days some of these tenures in their original form were granted for specific terms with no rights of renewal, these were replaced long ago with contracts bearing renewal privileges contained in the agreements themselves or legislation.

Until 1965 the government followed a policy of renewing the whole licence as long as some merchantable timber existed on the area. In that year an amendment to the Forest Act permitted the Forest Service to delete from the licensed areas those portions that no longer contained commercial quantities of merchantable timber. Thus tenures or portions of tenures would revert to the Crown as and when they were logged, or to the extent that they did not meet this inventory test. Rights over the remaining areas (which contain merchantable timber in commercial quantities) have been renewed as a matter of course as their terms have expired.

Another important change was made in 1965. Up to that time licences were automatically renewed upon expiry according to a procedure set out in the Forest Act which directed the Minister to do so. In the case of Timber and Pulp Licences and Timber Berths, no new document was issued each time their 1-year term expired; the original contract was simply extended annually upon payment of the renewal fee. With the Timber and Pulp Leases, new documents were signed every 21 years. Then in 1965, amendments to the Forest Act added a different complexion to these procedures by stipulating that, upon expiry of their terms, Leases and Licences "may be renewed", so long as they met the inventory test described earlier. This provision threw into doubt the *right* of licensees to obtain renewals of their tenures each year, since it was now subject to the government's discretion. This change bears most critically on the annual licences; the holders of Timber and Pulp Leases are on firmer ground because they carry terms of 21 years, and in the case of Pulp Leases the lease document provides a contractual right to renewal.

Following these statutory developments, the Forest Service introduced in 1965 a number of new techniques for handling Timber and Pulp Licences. Well over half of these are included in Tree-farm Licences, and at the request of some licensees many were renewed for a term to coincide with the expiry of the relevant 21-year Tree-farm Licences, when they are once again renewable. Where these tenures were included in perpetual Tree-farm Licences, they were renewed until 1978. This innovation was not applied uniformly to all licences within Tree-farm Licences, however.

There was another inconsistency in the treatment of these tenures about that time. Nearly half of the Timber and Pulp Licences are held by one of the large coastal companies, and these were renewed in 1968 for various periods extending until the year 2013, corresponding to a harvesting schedule proposed by the company. All of the company's licences were afforded this treatment, those both inside and outside its Tree-farm Licences, and many of

those contained within the company's perpetual Tree-farm Licences extend beyond 1978 in contrast to those held by other such Tree-farm Licensees. No formal agreement binds the company to adhere to its cutting schedule, and each licence provides that it may be renewed by the Minister upon expiry of its revised term. No other licensees were offered extended terms for tenures lying outside their Tree-farm Licences.

The present arrangements with respect to the terms of these rights suffer several serious shortcomings. Clearly, the terms of most of them are not sufficient for orderly liquidation of the timber. Many, in the form of Timber and Pulp Licences, carry only 1-year terms, and the licensees therefore depend heavily on renewals until their full rights are exercised. But the provisions for renewal are insecure. Thus the question of security of these rights has become a source of considerable apprehension in recent years, and this, coupled with inconclusive reforms to alter the royalty rates applied to this timber, has undoubtedly distorted licensees' harvesting patterns. Continuation of these uncertainties is in neither the public nor private interest and the provisions for duration and renewal of these licences should be clarified and rationalized in a way that will permit their orderly liquidation under a simpler and more secure framework. To deal with this issue, the old temporary tenures within Tree-farm Licences must be considered separately from the others.

Within Tree-farm Licences. Those that form part of Tree-farm Licences should, by virtue of the fundamental long-term management purpose of these sustained yield units, carry terms that coincide with that of the relevant Tree-farm Licence itself. It was always intended that these old temporary tenures would be managed as integral parts of the Tree-farm Licence under a single plan, and they contribute to the allowable cut of the unit as a whole. It is essential that licensees be assured of the right to harvest these tenures in accordance with the long-term management scheme for the Tree-farm Licence. The 1965 amendment to the Forest Act effectively removed such a right, and this should be rectified.

Under existing management working plans the timber on many of the old tenures will soon be liquidated and the licences will therefore be extinguished during the remaining term of the particular Tree-farm Licence. But some will not, because harvesting is sometimes postponed on these old temporary tenures for a variety of reasons, such as maintaining seasonally-balanced operations beyond the current terms of the Tree-farm Licence and co-ordination with other harvesting operations. The circumstances vary, but because these tenures form part of a long-term management regime their terms can be rationalized systematically.

I propose that when the current terms of the tenures expire they be renewed uniformly as Timber Licences with terms that coincide with the date of expiry of the relevant Tree-farm Licence. As at present, portions of these old temporary tenures should be deleted as and when they are logged, and added to "Schedule B" lands in the Tree-farm Licence. Each Timber Licence should provide its holder with the right to renew portions that remain unlogged when the Tree-farm Licence is renewed, for a duration corresponding to the term of the renewed Tree-farm Licence. For example, Timber Licences included in "evergreen" Tree-farm Licences would be initially renewed for a

further 15 years, and thereafter in 5-year increments. These terms will enable Timber Licensees to liquidate their holdings gradually under the umbrella of approved management plans for their Tree-farm Licences, while ensuring that the logged-over lands are systematically deleted and transferred to "Schedule B" status.

Timber Leases and Pulp Leases have traditionally carried 21-year terms. In the case of Timber Leases the government is under no contractual commitment to renew, so as these expire they may be treated in the manner I have proposed above. Pulp Leases, however, provide a contractual right to renewal for 21 years. All of the 33 Pulp Leases expired in September 1975, and were extended for one year pending this inquiry. In recognition of the Crown's commitments these leases should be renewed as standard Timber Licences for 21 years running from September 1975 and should provide that beyond 1996 portions of them remaining unlogged be renewed to coincide with the term of the relevant Tree-farm Licences.

In the event that the holder of an "evergreen" Tree-farm Licence is unwilling to accept the government's terms for its revision and extension, or for any other reason chooses to allow it to run its full term and then expire, the remaining "Schedule A" lands should continue to vest in the licensee. I expect this development to be rare, but if it occurs the licensee should have the right to a once and for all renewal of his remaining old temporary tenures, following the policy which I recommend below to apply outside Tree-farm Licences. Similar treatment should be given any Timber Licence that is isolated from the management unit as a result of alterations to Tree-farm Licence boundaries.

The Crown's interest in orderly liquidation of old temporary tenures included in Tree-farm Licences can be readily asserted through established planning procedures. In approving licensees' 5-year management working plans the Forest Service should ensure that this timber is harvested systematically. All the above recommendations should be applied to the old temporary tenures within the remaining "perpetual" Tree-farm Licences only if my recommendations in the previous chapter respecting perpetual terms are adopted.

Outside Tree-farm Licences. Like those within Tree-farm Licences, the old temporary tenures that are independent of sustained yield units seldom have terms suitable for their purpose, namely the orderly removal of merchantable timber. Again, the terms range from 1-year Timber and Pulp Licences to overdue rights of renewal for 21 years in the case of Pulp Leases. The state of the original timber also varies from cases in which logging is proceeding apace to others without any apparent prospects of liquidation, and these circumstances do not correspond to the variability in terms.

Satisfactory resolution of this problem calls for determination of an appropriate term for each licence individually (apart from the Pulp Leases which I deal with separately below). The objective must be to establish a term of sufficient duration to enable the efficient removal of the timber, and no longer. It should be noted that from the time these tenures were introduced the desire to prevent speculative holding of timber has been an element in tenure policy, although the measures adopted for this purpose were obviously not entirely successful.

In recent decades the holders of these tenures outside Tree-farm Licences have been free to harvest or to defer cutting indefinitely, with almost nominal carrying costs, but today this is clearly not in the public interest. In the first place, as long as harvesting is deferred, the royalty revenue due to the Crown is postponed—a public cost that can be measured in terms of the annual interest on revenue foregone. In the second place, now that other Crown timber has become scarce, the postponement of removal of stagnant old-growth timber imposes a serious loss of growth in new crops. Without some commitment to a harvesting schedule the Forest Service faces additional difficulties in planning its responsibilities for site rehabilitation and reforestation each year. In short, the Crown requires some commitment to harvesting and termination of these licences, just as the licensees need firmer security to exercise their rights within a reasonable period.

Accordingly, I recommend that the old temporary tenures outside Tree-farm Licences be reissued as Timber Licences, for a duration which will provide a reasonable period for systematic removal of the licensed timber up to a maximum of 20 years. From estimates provided me at my public hearings I have concluded that with the exception of one company this period will provide a reasonable opportunity for licensees to liquidate their holdings.

To qualify for the new Timber Licences, the current licensees should be required by appropriate legislation to submit a schedule to the Forest Service, setting out their proposals for liquidating this timber. The Forest Service should examine these proposals, and approve them if they reflect a purposeful plan to remove the timber in an orderly way, without unjustified delay and consistent with controls on logging patterns. Once a satisfactory schedule has been settled, Timber Licences should be issued with terms corresponding to the planned liquidation date of the timber. There should be no provisions for further renewals beyond the contractual terms.

The licensee may, subject to any operational planning approved by the Forest Service, complete his harvesting before the end of his contractual term, and in that case the licence should be erased once his operations are finished. But for reasons I explain below, the area covered by each licence should remain intact until it all reverts to the Crown.

Implementation of these proposals with respect to most of the old temporary tenures will not be difficult. They can be used to replace annual Timber Licences, Pulp Licences, and Timber Berths upon a convenient anniversary date. The Timber Leases now outstanding are not due to expire for another 9 to 17 years. In the interests of uniformity the legislation should give holders of these leases the right to surrender them in exchange for new Timber Licences bearing terms at least equal to the remaining terms of the leases replaced, but not greater than the 20-year maximum I have proposed. Pulp Leases, which the Crown was committed to renew for 21 years running from September 1975, should be renewed as Timber Licences for a definite 20-year term, in view of the time which has elapsed since that date.

As a general rule, old temporary tenures renewed as Timber Licences should require the same standard of forestry practice as is prescribed for other Crown land. The application of this principle and licensees' other responsibilities are discussed in subsequent chapters.

SPECIAL PROBLEMS

My general recommendations proposed above for the old temporary tenures should ensure that both the private and public interest in these lands will be better protected in future. However, I described earlier a couple of inconsistencies in the treatment of the terms of these tenures held by certain licensees: these cover a substantial proportion of the old temporary tenures now outstanding, and so the resolution of these anomalies is as important as the general case. One problem is that Timber and Pulp Licences within certain Tree-farm Licences were given revised terms, beyond their traditional 1-year terms, to coincide with the terms of the Tree-farm Licences (as understood by the Forest Service); the other is the special treatment accorded to one licensee.

At the outset I feel it is necessary to say that the government's action in these cases was highly irregular and in my opinion improper. It is grossly inequitable that some licensees were given privileges that were not offered to others. By proffering special treatment to certain licensees the government inevitably exposes itself to charges of favouritism and undermines public confidence in resource administration. Moreover, by reissuing certain annual licences for periods of up to 45 years, the Crown's valuable option to periodically renegotiate their terms and conditions was forfeited. Finally, it is by no means clear that the Minister had the statutory authority to revise the terms of these licences in this way. Discretionary actions that lead to inequities and legal uncertainties of these proportions should have no place in the forest policy of British Columbia.

Fortuitously, the extended terms given to Timber and Pulp Licences in certain Tree-farm Licences can readily be reconciled with my proposals, since they have already been given the terms I have recommended for old temporary tenures within Tree-farm Licences. However, to remove any uncertainty about the validity of these terms and to incorporate other changes in these tenures that I propose, legislation should require that they be uniformly reissued as Timber Licences with terms that correspond to the terms of the relevant Tree-farm Licences.

The special terms of Timber and Pulp Licences reissued to one company in 1968, both within and outside that company's Tree-farm Licences, were even more generous. By receiving terms designed to accommodate a harvesting schedule proposed by the company, this licensee obtained a degree of security which is unmatched by any other holder of these tenures, and there is no evidence that this arrangement was offered to any other licensees.

Again, most of the revised terms can be accommodated to my earlier proposals. All of the extended terms of Timber and Pulp Licences within the company's "perpetual" Tree-farm Licences will expire by 2013, which is within the duration of such Tree-farm Licences under my earlier proposals (that is, a 21-year initial term with an option to renew for a further 15-year "evergreen" term). Accordingly, legislation should require that they be reissued as Timber Licences with terms that correspond to the duration of these Tree-farm Licences. Those within the company's 21-year Tree-farm Licence should be treated like those in other Tree-farm Licences that were given extended terms. They should be reissued as Timber Licences with terms that correspond to the term of the Tree-farm Licence, with the renewal privileges that I recommended earlier.

Most of the extended terms of the licences outside the company's Tree-farm Licences are within the 20-year limit I have proposed for these; the last is due to expire in the year 2000. However, at my public hearings the company explained that the long-term harvesting schedule on which the extended terms were based is no longer appropriate in view of new controls on logging. Accordingly, the government should invite the company to propose new harvest schedules for these, as I have suggested for other licences in this category, before they are reissued as Timber Licences with more suitable terms.

TIMBER LICENCES AND PUBLIC SUSTAINED YIELD UNITS

Because lands under the old temporary tenures will, in any event, become part of Public Sustained Yield Units as they are denuded, they should be considered as parts of those units now for administrative purposes. Inclusion of the mature timber on them will contribute to the calculated allowable annual cut for the unit, and the licensee's rights, which he plans to exercise according to his plan, will represent a commitment in the unit. The long-term sustained yield regulation of the unit will then be more meaningful and consistent over time.

These tenures should thus be treated as allocated rights within Public Sustained Yield Units, and the licensee's rights and responsibilities should continue over the entire area conveyed under the revised Timber Licences for their specified terms. This contrasts with my recommendation that parts of old tenures within Tree-farm Licences be deleted as they are logged, but it is not inconsistent. In the former case, the licensee retains responsibility for the management of the lands deleted because they remain part of the Tree-farm Licence. In this case, if he is to be responsible for reforestation, protection, and other activities associated with rights in Public Sustained Yield Units, the boundaries of the licence should remain intact until it expires. It is worth noting that the policy of deleting logged portions of old temporary tenures was adopted in 1965 primarily to circumvent any uncertainty about licensees' rights to cut second crops, a problem that would be resolved by the approved logging schedules proposed above.

CHAPTER 9

PULPWOOD AGREEMENTS

To complete this review of the basic features of the major forms of rights to Crown timber I turn in this chapter to the Pulpwood Harvesting Area Agreements. These highly innovative contracts are relatively recent, the oldest having been executed only 14 years ago. However, rapid changes in circumstances combined with ambiguities in the contracts have given rise to difficulties with them in recent years. To understand the context of these problems, it is necessary to trace briefly the evolution of these agreements in the Interior of the province, where all of the existing Pulpwood Harvesting Areas are found.

EVOLUTION OF PULPWOOD HARVESTING AREA AGREEMENTS

In 1962 the first of the five existing Pulpwood Harvesting Area Agreements was signed, securing wood supplies for a new pulp mill at Prince George. By then, most of the allowable harvest in the Public Sustained Yield Units near Prince George was already allocated to sawmilling companies, and the large unregulated area, known as the Prince George Special Sale Area, was being overcut. But the sawmilling industry of that time was capable of utilizing only the better timber stands, and a significant proportion of the timber logged was being either left on the ground or burned as waste at sawmills. It was this unutilized timber that afforded a potential raw material source for pulp mills. The Pulpwood Harvesting Area Agreement was accordingly devised to superimpose a pulp industry on an existing sawmilling economy, and five pulp enterprises in the Interior now hold these agreements—three in the Prince George area and one each at Quesnel and Kamloops.

Pulpwood Harvesting Area Agreements are complicated contracts. Each designates an area by naming several Public Sustained Yield Units, and in four cases, the Prince George Special Sale Area also. The contracts deal extensively with each licensee's obligation to build a pulp mill; they contain many detailed clauses committing him to purchase certain kinds of wood in the area; and they extend to him certain options to acquire rights to Crown timber. All the agreements have terms of 21 years and are renewable.

In addition to acquiring pulpwood offered for sale by loggers and settlers, a pulp company that holds one of these agreements is expected under the contract to purchase logging residuals and wood chips produced by sawmills in the Pulpwood Harvesting Area. Most critical from the point of view of the licensee is his option to obtain cutting rights over standing timber, which he may exercise to the extent that he requires additional raw material after having fulfilled his obligations to purchase the residuals listed above. To meet this option the Minister is obliged to issue Timber Sale Licences over "pulpwood" defined to include the wood left on areas already logged for sawtimber and other standing timber unsuitable for sawmilling. The agreements also fix the

stumpage payable on such pulpwood at modest rates for the initial years of their terms.

At the time the first agreements were signed, the sawmilling industry was logging only to "intermediate utilization" standards. The pulp companies hoped that, by providing a market for residuals, sawmilling companies would be encouraged to install the log barking and chipping equipment necessary to produce wood chips as lumber by-products, and thus reduce the pulp mills' dependence on roundwood. The government encouraged this by offering incentives to sawmillers in the form of reduced stumpage charges and increased "quota" if they would adapt their mills to "close utilization" standards and chip recovery. But no one foresaw the speed and extent of their response. In a very few years the Interior sawmilling sector was transformed into larger, fewer, and more sophisticated mills with barkers and chippers producing pulp chips as an adjunct to dimension lumber. Logging to "close utilization" standards, they could now recover and manufacture all the timber that was economically usable for either lumber or pulp production, not only in the kinds of stands they had previously been harvesting but also in the extensive tracts of small Interior timber hitherto considered unsuitable for sawmilling.

The supply of residual chips proved so great that the holders of Pulpwood Harvesting Area Agreements soon found it met nearly all their raw material needs, relieving them of the necessity of logging their own timber and manufacturing chips from roundwood at considerably higher cost. Indeed, three of the five licensees have never installed the machinery that would be necessary to process roundwood in their pulp mills. Thus the mills have hardly ever exercised their options to acquire Crown timber, and these tenures have become primarily a safeguard against possible shortfalls in the supply of residual chips from sawmills.

With its new technology in place, and with a market for residual chips, the sawmilling industry was capable of efficiently utilizing timber that had previously been considered unsaleable by sawmills, some of which was implicitly reserved for pulp companies under Pulpwood Harvesting Area Agreements. Since the pulp companies were only rarely exercising their options, and did not appear to have any continuing need to do so, the Forest Service allocated this timber to established sawmill companies by increasing their "quota" eligibility by one-third and by issuing "third band" Timber Sale Licences, as explained in Chapter 6.

Since some of these allocations in areas covered by Pulpwood Harvesting Area Agreements encroached on the timber that would be needed to meet the demands of pulp companies if they exercised their options to the full extent, additional steps were taken to protect the supply of raw material to pulp mills. First, the "third band" licences were short-term, and they provided that the Minister could cancel them or reduce the volume they authorize to be harvested on a year's notice if the holder of the relevant Pulpwood Harvesting Area Agreement exercised his option to obtain Crown timber. Second, these licences were issued only to operators who had agreed to offer all of their chips for sale to the pulp company holding the agreement; and this condition was strengthened by a stipulation in the licence itself that the licensee offer to the pulp company the chips produced in his sawmill from timber cut under the licence. As well, many Timber Sale Harvesting Licences since granted in these areas similarly give the Minister discretion to direct the licensee's chips.

These requirements enabled the introduction and administration of the "chip direction" policy discussed later in Chapter 21.

Finally, to complete this trilateral arrangement, the Minister of the time confirmed these arrangements by letter to the pulp companies involved, agreeing to direct to them the chips produced from within (and in exceptional cases from outside) the areas covered by their agreements for an undetermined period, and to cancel "third band" licences if the need arose. In no instance did these Ministerial assurances take the form of amendments to the Pulpwood Harvesting Area Agreement, however, and they cannot be regarded as conveying contractual rights.

The adaption of sawmills to chip production strengthened the pulp industry's raw material supply, but it became yet more secure by another change that was not originally foreseen. When the first agreements were entered into, the government was anxious to ensure that the pulp mills would complement, and not disrupt, the existing sawmilling industry. Accordingly, the first four Pulpwood Harvesting Area Agreements provided that the pulp company would not compete for timber rights applied for by sawmill companies, without the Minister's consent. Subsequently, the effectiveness of this restriction in some of the contracts was gradually eroded by amendments permitting partners, subsidiaries, and affiliates of the licensees to do so, and in one case the restrictive clause was eventually deleted altogether. All the pulp companies, either directly or through affiliated companies, have since expanded into sawmilling by purchasing and building mills and establishing "quota positions" for timber, thus internally securing part of their chip supplies.

EMERGING PROBLEMS

In light of all these changed circumstances, the Pulpwood Harvesting Area Agreements must be reassessed. Their essential feature, from the pulp companies' point of view, is their assurance of raw material in the event of an interruption of residual chip supplies, and this assurance has demonstrably been sufficient to support enormous capital investment in pulp mill capacity. As an innovation in forest tenure policy, the Pulpwood Harvesting Area Agreement is, in principle, an ingenious device. It has facilitated the establishment and growth of the Interior pulp industry while at the same time providing a substantial stimulus to the pre-existing sawmilling industry. Thus the forest industry was encouraged to achieve the advantages of integration, without necessarily inducing horizontal integration and concentration of resource rights in a few large firms. The resulting implications for fuller utilization of timber and for resource management generally have been profound.

There are, nevertheless, serious problems surrounding Pulpwood Harvesting Area Agreements which, for the most part, arise from ambiguities in the contracts themselves. The contracts are badly formulated; and in the new circumstances the holders' rights are unclear, giving rise to anxiety and confusion not only on the part of the pulp companies but among sawmilling companies and the Forest Service as well.

- i) The three earliest contracts convey an option over "pulpwood", defined as residual material and timber "below sawmilling standards". When they were signed, the "intermediate utilization" standard under which sawmills were recovering timber meant that much of the material they did

not recover as sawtimber and many entire stands clearly fell "below sawmilling standards". But the shift to the "close utilization" standard and chip manufacturing in sawmills has largely absorbed that wood. The pulp companies' rights depend critically upon whether the relevant standard of sawmill utilization is the one obtaining at the time the right may be exercised, or at the time the agreement was originally signed; but the contracts provide little guidance on this point. Under the latter interpretation, other licensees have been allocated timber on which the pulp company already had a right to call; under the former, the volumes available to pulp companies have been substantially diminished.

- ii) The two most recent agreements are somewhat less ambiguous in this respect insofar as they define "pulpwood" as the timber in stands which, when harvested to "close utilization" standards, would be below sawmilling standards. This appears to put emphasis on the nature of stands (rather than on the character of individual trees or logs) and to introduce a specific standard of utilization. It apparently excludes any timber in stands that can be harvested for sawmill purposes, but embraces all of the timber, including any above the "close utilization" standard, in stands which are generally unsuitable for sawmills. The issue thus turns on the identification of "stands" and their suitability for sawmilling. But what constitutes a "stand" is debatable; and the suitability of a "stand" for sawmilling varies with changing technology and fluctuating market conditions for lumber and chips. In short, the language in these two agreements does not add much clarity to the rights conveyed to the pulp companies.
- iii) In effect, all of the agreements provide that their holders may exercise their rights to "pulpwood" to the extent that the supplies of residual chips and other pulpwood which they are obliged to purchase fall short of the requirements of their pulp mills. Four of the agreements set a maximum limit on the volume which the Crown is committed to make available annually, in fulfillment of these requirements. An amendment to the fifth, however, deleted the limit, leaving it up to its holder, the pulp company, to determine its requirements in its complete discretion and without any ceiling. In this case the commitment of the Crown to issue sales covering roundwood is completely open-ended.
In two of the agreements, the amount of timber the holders may call on is linked to the capacity of their pulp mills, which raises ambiguities about the volume of timber this implies.
- iv) The manner in which four of the agreements define the price the pulp mill is to offer suppliers of residual chips leaves this important provision open to interpretation. One contract fails to deal with price at all. The price is unquestionably a major determinant of the quantities of chips that sawmillers are willing to produce and offer for sale at any time; and insofar as the pulp company's rights to acquire Crown timber is conditioned by the availability of chips, this is a serious shortcoming.

These are only the most conspicuous ambiguities; there are others, as well as problems of a different kind. Events that were foreseen by neither the Crown nor the licensees have significantly altered both the needs of the licensees and the manner in which the Crown can best meet them. And, in

addition, policies that have been introduced since the contracts were signed (especially those relating to chip supply) have substantially changed the context of the rights and commitments.

RECOMMENDATIONS

The present problems surrounding Pulpwood Harvesting Area Agreements are sufficiently serious to warrant their renegotiation. The right of the pulp companies must be clarified and secured in a way that will accommodate continuing changes in industrial conditions, and the Crown's obligations must be explicit and consistent with the original intent of the agreements. Contractual ambiguities that throw into question the essential nature of rights and obligations have no place in Crown timber policy; the public interest requires that the Crown's commitments be spelled out in unequivocal terms, readily understandable to all parties involved.

The essential element in each of these agreements today is the provision of an option to the pulp company to acquire Crown timber to make up any deficiency in residual chip supplies. This should be preserved and clarified in renegotiated contracts which, to distinguish them, I will call simply *Pulpwood Agreements*. These should rectify the shortcomings of present contracts by incorporating the following features:

- i) Their terms should be the same as the original contracts, namely the remainder of existing 21-year terms and renewable for a further period of 21 years.
- ii) The maximum annual volume of timber that the Forest Service is obliged to make available under the option provisions should be the same as in the current agreements. For the two agreements that do not stipulate limits the maximum should be fixed at the level originally set out in those contracts.
- iii) The limit to the pulp company's rights should be specified explicitly in terms of an annual volume of standing timber, obviating the need for references to "mill capacity". In the one case where this limit was deleted, it should be fixed at the level that was designated originally in that contract.
- iv) The volume of standing timber the pulp company is eligible to obtain at any time should be specified as the difference between the annual limit and a volume of timber equivalent to the residual chip supplies available to it, at a price at least equal to the cost it would incur in obtaining standing timber and manufacturing the chips at the pulp mill.
- v) The contract should not attempt to define the character of timber to be made available under the options. The firm assurance of an annual volume is sufficient for the pulp company's purposes; the kind of timber should be left to the discretion of the Forest Service in light of prevailing circumstances.
- vi) The contract need not prescribe the volumes to be made available in each Public Sustained Yield Unit. Rather, it should specify that the timber will be provided within a certain distance of the pulp mill—the distance to be determined with reference to the maximum distance within which the Forest Service may allocate timber under present contracts.

- vii) To fulfill an option, a holder of an agreement should be granted Cutting Permits rather than Timber Sale Licences, because the rights will be conveyed without competition, and the general terms and conditions will be set out in the Pulpwood Agreement.

To implement these changes the government should approach the relevant pulp companies with a view toward entering into these clearer contractual arrangements. Many other provisions of present agreements can be dispensed with, notably the lengthy provisions relating to the obligations of the pulp company to construct a pulp mill (since they are now all in place). The result can be, in contrast to the complexity of present agreements, a very concise and straightforward Pulpwood Agreement. Some of the current contracts contain other special provisions that should be incorporated into the revised agreements. For example, under four agreements certain volumes of timber are to be made available from the Special Sale Area without an annual limit, and the balance of these commitments should remain a feature of the new contracts, but I see no need to restrict the source of this supply to the Special Sale Area, which, as I recommend later in Chapter 17, should be rationalized.

With the pulp companies' position thus secured, the Forest Service can continue what has hitherto been a somewhat precarious policy of allocating the full allowable annual cut in the relevant areas to sawmilling companies. But in these areas, a relatively high proportion of short-term Timber Sale Licences—with terms of three to five years—should be maintained, providing the Forest Service with the flexibility it may need to fulfill its commitments under Pulpwood Agreements.

Under these more systematic arrangements the forest resources of the region can be fully and efficiently utilized by sawmilling enterprises which will provide residual chips for the pulp industry. In the event that timber is required to fulfill a Pulpwood Agreement, aggregate Timber Sale allocations can be reduced as necessary. This may, of course, impinge on the continuity of timber supply available to the sawmilling industry, but it would not involve any interference with contractual rights. Moreover, any adjustment need not be abrupt. Allocations to the holder of a Pulpwood Agreement might be made without necessarily simultaneous and equal reductions in other allocations, by permitting the allowable cut to be exceeded for a time with planned compensating shortfalls over the years following. This would not have serious consequences for the continuity of harvests from subsequent crops.

In any event, these arrangements must be viewed in light of the low probability that Crown timber will have to be diverted to pulp mills. The sawmills have already proved capable of providing more chips than the pulp mills normally require at their present capacity and only in extreme conditions would they become unable to continue. Indeed, during 1974 they proved this capability even when pulp capacity was being strained while lumber markets were depressed. Pulp companies' own confidence in residual chip supplies is reflected in the decision taken by three of them not to construct roundwood chipping facilities.

The most likely cause of interruption in residual chip supplies would be some sort of shutdown in the regional lumber industry, but in such a case exercising the harvesting rights under the Pulpwood Agreements would simply mean activation of logging where it had ceased under other licences. These

proposals must also be viewed in the context of the problematical surplus of pulping material. My later recommendations respecting chip marketing policies should provide added resilience to chip supply and demand equilibrium.

MILL LICENCES

Under authority of the Forest Act, regulations were proclaimed in 1969 giving the Minister new powers with respect to construction of manufacturing plants in the province: namely to require of the prospective builder that he obtain a Mill Licence, and to issue such a licence. To date, these powers have been used in three cases, two for new pulp mills and one for a particle board plant. In many other cases the Minister has not required such a licence, and in no case has he required one but refused to issue it.

A Mill Licence is a rather curious document, amounting to a permit to construct and operate a mill of a certain capacity in a certain place, containing a few brief stipulations requiring adherence to the Forest Act and pollution control standards, and providing for its renewability after an initial term of 21 years. For present purposes it is sufficient to note that it confers no rights to Crown timber. It warrants attention here only because it has been argued that rights to wood supplies were conveyed to the licensee through attachments to the licence document.

In the cases of the two licences issued for pulp mills—at Kamloops and Skookumchuck—the then Minister attached a letter indicating that he would direct chips to the licensee from sawmills in specified Public Sustained Yield Units in the area; that if these proved insufficient he would direct additional chips from elsewhere; and finally, if necessary to meet the needs of the pulp mill, he would revoke “third band” Timber Sale Licences and make roundwood available. No limit was put on the duration of these arrangements. The third licensee, the owner of a particle board plant, was given a similar, but less definite assurance.

As far as I can ascertain, the Minister had no legislative authority to enter into contractual commitments of this kind on behalf of the Crown.¹ The Minister undoubtedly could and can provide conditions in Timber Sale Licences that chips will be directed or that the licences may be revoked, but he does not have power to contract with another party that he and his successors in office will do so, nor that future Timber Sale Licences will be issued without competition. The status of these letters is identical to similar assurances given to holders of Pulpwood Harvesting Area Agreements, which I discussed earlier. They must be regarded only as an expression of the Minister's intent with respect to the manner in which he would exercise his discretion at that time.

The three affected companies, one of which also holds a Pulpwood Harvesting Area Agreement, nevertheless relied in good faith on these assurances from the Minister at the time they committed themselves to investments in their plants. The government should therefore consider sympathetically applications from these firms for Pulpwood Agreements of the kind I have proposed above, to provide assurances for at least part of their raw material needs.

¹ One of the pulp mill licensees holds, in addition, an earlier contract in which the Minister in general terms agreed to make timber available for its proposed pulp mill, but I am unable to find any firm statutory foundation for such a commitment.

PART III

GENERAL ISSUES OF TENURE POLICY

**Chapter 10. New Allocations, Transfers and Termination
of Licences**

**Chapter 11. Responsibilities for Management and Develop-
ment**

Chapter 12. Roads and Public Access

Chapter 13. Taxes and Other Charges

NEW ALLOCATIONS, TRANSFERS AND TERMINATION OF LICENCES

The chapters in Part II have dealt with the skeletal structure of timber rights—the basic privileges and responsibilities they convey, their terms, and the essential character of each. This chapter turns to more general matters that are relevant to all forms of tenure over Crown forests and that call for some coherent policy, namely the granting of new rights, controls on transfers and exchanges of licences, and provisions for suspension and cancellation.

The government's freedom to choose among alternative forms of rights offers one of the most powerful means of shaping the development of the forest industry. Because I want to emphasize the impact of tenure arrangements on the structure of the industry, and hence the need for a deliberate policy to achieve public objectives, I offer some general suggestions for selection among the various licensing arrangements, discussed earlier.

Governmental controls on the transfer of licences and provisions for either suspending or cancelling contracts bear importantly on the scope of rights conveyed and the discretion reserved to the Crown. These are often sensitive matters. As I note below, present policy respecting some of them is not altogether clear, and the resulting confusion and apprehension were reflected at my public hearings.

SELECTION AND ALLOCATION OF NEW TIMBER RIGHTS

I have already discussed provisions for renewability of existing rights to Crown timber. The first question to be resolved whenever new rights are to be issued or expired ones replaced is the form of tenure to be used. The second is the procedures to be employed for allocating them among potential licensees. I discuss these questions together in the following pages, for each of the main forms of tenure described in the previous chapters.

Later in this report I suggest that some priority should be accorded to certain special forms of rights, such as those that enable recovery of minor forest products that might not otherwise be utilized to their best advantage, and those that will extend opportunities for small scale forestry. Here, I consider the choice among the tenure forms designed for typical industrial operations, namely Forest Licences, Timber Sale Licences, Tree-farm Licences and Pulpwood Agreements, each of which should play a particular and important role in future tenure policy.

Clearly, the policy must be broad and flexible enough to cope with a wide variety of circumstances, ranging from the need to accommodate pioneering ventures in undeveloped regions to the replacement of expiring licences where

the industry is well established; from situations where the purpose is to maintain existing activities to those where new industries or changed forms of utilization must be accommodated; from circumstances that demand a high degree of security for new investment to those where more flexibility is called for, and so on. This means that my general suggestions here must be interpreted in light of the particular conditions of each time and place.

FOREST LICENCES AND TIMBER SALE LICENCES

In Chapter 6, I recommended that Timber Sale Harvesting Licences and "quota" bearing Timber Sale Licences be replaced, as they expire, with Forest Licences, and "third band" Timber Sale Licences with new Timber Sale Licences. Thus the initial balance between the two revised forms of tenure will be dictated, in large degree, by the distribution of existing forms; and Forest Licences and new Timber Sale Licences will become the basic forms of rights over Crown timber outside Tree-farm Licences.

Beyond this first stage there will be more opportunity to alter the pattern of rights. Since the two forms of tenure will vary in size and term a critical issue will be the relative weight to be assigned to each. This will have to be decided in light of the industrial circumstances and economic objectives in each region, and the latter should be determined (as I suggest in Chapter 23) in consultation with the Department of Economic Development. But in well-developed areas emphasis should be put on reducing the size of very large licences and establishing a larger number of more adaptable rights that will accommodate changing patterns of use and reduce the dependence of each enterprise on a particular licence. Where there are many potential users and especially in areas where Pulpwood Agreements apply, a relatively high proportion of short-term Timber Sale Licences should be maintained to provide needed flexibility. It is in these areas that the Forest Service should begin to assume direct responsibility for roads and forest development, as I recommend in the following chapters.

Pioneering ventures in undeveloped areas will call for longer-term licences, in recognition of financing requirements, the lead time required for construction, and the risks inherent in opening up new territory. In such cases one or more Forest Licences having terms of up to 15 years should be considered, to provide a volume of timber close to proposed mill capacities.

The procedures for allocating new Timber Sale Licences and Forest Licences should accent opportunities for competition among potential licensees. Bids for Forest Licences should be submitted as sealed tenders, with bid-matching privileges for those that embody the replacement arrangements described earlier. I propose that sealed tenders be used for Timber Sale Licences also, because many of the difficulties ascribed to competitive sales appear to stem from the oral auction proceedings that have been followed in the past. In Chapter 13 I explain my recommendation that bids be expressed in the form of a bonus on the annual rental for the term of the licence, rather than in the traditional form of bonuses over the variable appraised stumpage rate on each species.

If the highest bidders submit identical tenders for licences not subject to matching bid privileges, all competitors should be invited to submit new sealed tenders, with the sale being awarded to the highest. In the unlikely event that this second round again produces identical bids, the licence should be sold at

an oral auction. These arrangements should circumvent the deadlocks that may occur if applicants submit identical bids, either through collusion or by coincidence.

My investigations have revealed that sometimes in the past, when competitive bidding has been particularly vigorous and stumpage has been bid far above the upset price, the successful party has approached the Minister requesting him to disallow the sale on the grounds that his winning bid was exorbitant. On several occasions, including one celebrated case involving a Pulpwood Harvesting Area Agreement proposed in the Nelson Forest District, successive Ministers have acceded to these requests, cancelling the sales and instructing the Forest Service to begin anew.

The prospect that Ministerial discretion will be exercised in this manner seriously undermines a competitive timber policy. When imprudent bidders can expect to benefit from relief of this nature they will not take the necessary care in preparing their bids before submitting them. I strongly recommend that this practice be discontinued. Once it is clearly understood by all bidders that the winner will be expected to perform in accordance with the terms of his licence and will be liable to pay the amount he has bid, they will have a strong incentive to keep their bids within reasonable limits. It is worth noting that the instances I refer to involved oral auctions, and I expect that the sealed tender process will be more conducive to careful bidding. Strict administration of performance bonds should add further ballast to the integrity of competitive sales.

A final matter that warrants comment in connection with these bidding procedures is the recent innovation of the Forest Service in allocating Timber Sale Harvesting Licences for new ventures in the Burns Lake and Clinton areas. Twelve-year Timber Sale Harvesting Licences were put up for competition, and the specifications of the sales called for applicants to submit a bonus bid. More important, they were required to submit to the Forest Service a proposal for a new sawmill capable of using the timber to be licensed, giving full details of socio-economic impacts such as construction schedules and employment opportunities, and other information including pollution abatement techniques, wood utilization, financial feasibility, marketing arrangements, production techniques, and site plans. The Forest Service was to choose among applicants by evaluating these details as well as any bonus bid by them.

In my opinion it is legitimate for government to be concerned with these aspects of new enterprises, especially in remote parts of the province where patterns of development established today will have important implications for the future of these regions. However, the approach adopted by the Forest Service can be improved in one vital respect. The minimum specifications of new enterprises should be determined at the outset by government and should not form part of bidding procedures. When formulating these guidelines the Forest Service should receive the guidance of other relevant agencies such as the Department of Economic Development, the Regional District concerned, the Pollution Control Branch, and so on. Then, once these specifications have been determined, the Forest Service should invite tenders from any parties willing to undertake a development which incorporates them. Thus bids will be expressed in financial terms only and will not be encumbered with the character of the proposed development itself.

TREE-FARM LICENCES

Between 1948 and 1966 Tree-farm Licences were granted over extensive areas at a time when alternative forms of tenure were not well suited to integrated management of Crown lands by licensees. That has now changed; the Timber Sale Harvesting Licence (and the Forest Licence that I propose as its successor) was designed as another instrument for bringing the resources of the private sector to bear on the management of Crown timberlands. For these purposes, then, the Tree-farm Licence is no longer critical.

However, Tree-farm Licences were designed to promote a high standard of management not only on Crown lands, but also on the private lands and old temporary tenures contributed by the licensee. This touches on the unique advantage of this tenure form. Today, with more than half of the old temporary tenures and almost one-fifth of the Crown-granted forest land incorporated into Tree-farm Licences with sophisticated management plans, the system must be judged successful in this respect.

The opportunity to integrate private lands and old temporary tenures with other Crown forest land in a Tree-farm Licence should, I suggest, be the essential criterion in considering applications for new industrial Tree-farm Licences. The contribution of the licensee should be substantial: I propose lands accounting for not less than 50 per cent of the initial allowable annual cut of the licence. Moreover, new licences of this kind should not be issued if the effect will be to concentrate further timber rights in the few large corporations—a tendency that may arise from the fact that they hold much of the land that might be contributed to potential Tree-farm Licences. Accordingly, the government should consider sympathetically applications in these cases only if the applicant will release other rights they hold in Public Sustained Yield Units equivalent in annual volume to the allowable cut of the lands to be contributed by the Crown.

There do not appear to be many companies with sufficiently concentrated holdings of private lands and old temporary tenures remaining outside Tree-farm Licences to form the core of new licences under these criteria, but there are some. Also, non-industrial concerns are in some cases well placed to contribute half of a potential licence. Local governments that are prepared to integrate their lands with surrounding Crown forest land is one attractive possibility. The sensitive balance between timber production, recreation, and other non-commercial forest land uses that are particularly valuable close to centres of population can in these cases be struck locally, making resource management highly responsive to local demands. It is to be hoped that the success of the Tree-farm Licence held by the District of Mission, in the Fraser Valley, can be repeated elsewhere.

Native Indian reserves present another potential source of forest land that might be combined with provincial Crown land into sustained yield units, under band management. Reserve lands, which are vested in the federal government and held in trust for the individual bands, in many cases comprise areas of highly productive land suitable for sustained timber production.

Other potential Tree-farm Licensees deserving encouragement are associations or co-operatives of owners of small parcels of forest land who wish to combine their individual holdings for forest management purposes. Such associations are well organized in many other countries, and contribute con-

structively to improved resource management and to industrial timber supplies. In the relatively well-developed parts of the province where private lands are concentrated, potential timber values are high, and as advancing crops of second growth timber draw attention to the benefits of management we can expect co-operative arrangements to emerge. This might well be encouraged through additions of Crown forest sufficient to form logical management units. In later chapters I propose tax arrangements and a wood-lot system that would promote these developments.

Two qualifications to these proposals should be made. First, under a special provision of the Forest Act municipalities holding Tree-farm Licences receive a substantial preference with respect to the charge for timber cut from the "Schedule B" portion of the licence. Instead of the appraised stumpage that applies to other licensees, they are obliged to pay only statutory royalty, which during normal market conditions is significantly lower. This preferential treatment amounts to a rather arbitrary transfer of revenue from the province as a whole to selected municipalities, and has no apparent logic in either forest management policy or municipal finance. I recommend that this privilege be discontinued when the Forest Act is revised. The benefits of controlling the management and harvesting of additional Crown forest land should be sufficient incentive for municipal Tree-farm Licensees.

Second, applications for new Tree-farm Licences may cover areas that presently form parts of Public Sustained Yield Units, and that are depended upon by established local milling enterprises. In such cases the agreements should provide a degree of initial protection to these users by specifying that a portion of the annual harvest be offered to them on a first refusal basis.

Because of their proposed integration with other lands held by potential licensees, competitive allocation of Tree-farm Licences will not normally be appropriate. Allocation procedures should therefore be similar to those that have (sometimes) been used in the past. An applicant will first submit a general proposal to the Minister indicating the location and scope of the proposed licence, in terms of the lands he and the Crown would contribute and any new manufacturing development to be associated with the project. If the Minister considers that a Tree-farm Licence of that general form is worthy of consideration, he should announce his intention to entertain it, and make arrangements for a public hearing in the area after sufficient time for all interested parties to examine the proposal.

The hearing should be convened and chaired by the Minister or his designate (but not by a representative of the Forest Service, which should be left free to act as a participant). The hearing should invite participation from forest enterprises in the area, other government departments (particularly the Department of Economic Development), the regional resource advisory committee (see Chapter 19), local government bodies and others. If the proposal generates alternative proposals, arrangements should be made to receive and advertise these well before the hearing also.

The hearing should be for the advice of the Minister. With the information and criticisms obtained he will decide whether a Tree-farm Licence should be granted, and if so the licensee and the appropriate structure and terms of the licence.

PULPWOOD AGREEMENTS

Pulpwood Agreements should be the preferred form of right for new manufacturing ventures requiring raw material that can be provided in the form of residuals from roundwood milling enterprises. Thus pulp, paper, and particle board ventures should be accommodated in this way whenever possible, leaving the opportunity to allocate standing timber to users that can extract more valuable products from it in the first instance and minimizing the need for integration within firms. However, where it is apparent that timber cannot find a higher use because of its decadence or other characteristics, a Pulpwood Agreement might well be awarded, as a supplement to normal Forest Licences conferring immediate rights to harvest roundwood. As well, they will serve as suitable adjuncts to Tree-farm Licences which become reduced in area owing to their holders' inability to utilize the full allowable annual harvest, or the undesirability of processing the full harvest directly into pulp.

Proposals for new Pulpwood Agreements should be dealt with in a way similar to Tree-farm Licences, except when it comes to deciding among competing applications. Where there is more than one mutually exclusive application, the hearing should help resolve only the question of whether an agreement is in the public interest and what general form it might take. The Minister, if he decides to proceed with it, should then design its form and arrange a competitive sale of the right by sealed tenders in which applicants bid in terms of an annual payment for the option conveyed in the agreement.

In any new Pulpwood Agreements I recommend that no preferential stumpage rate be provided (other than those replacing existing Pulpwood Harvesting Area Agreements and certain general exemptions that I recommend in later chapters to help overcome certain utilization problems under any form of licence). The objective should be to secure raw material supplies rather than to provide a price advantage over other users. I believe it would be desirable, however, to invoke the provisions that were originally contained in some earlier agreements to restrict a new pulp company (including its partners and affiliates) in a developed region from eligibility for rights to harvest sawtimber during the term of the contract, to counter the centripetal forces of industrial concentration.

TRANSFERS AND EXCHANGES OF RIGHTS

Through various provisions of the Forest Act and tenure contracts, rights to Crown timber may not be transferred except with the consent of the Minister. Until a few years ago applications for transfers were approved regularly, almost as a matter of course. Recently, however, proposed transfers have been more closely scrutinized, apparently out of concern for the substantial capital gains being realized by licensees selling rights to public resources, the increasing concentration of rights, and the degree of foreign control.

In this area the Forest Service has not confined its efforts to passing on transactions in licences but has also required corporate licensees to report transactions in their shares by which control of the company changes hands, amalgamations with other companies, and even changes of their names without any corresponding shift in ownership. These requirements should be

viewed as informal stipulations, not being authorized through either legislation or contract.

In recent years consent to the transfer of rights has been withheld in a number of instances, and on two occasions the government's response to proposed transactions was to purchase the companies which were to be sold and to operate them as going concerns. Other transactions have been held up indefinitely, and because there is no clear policy on this matter it has become a matter of considerable uncertainty.

The first question is, of course, whether government needs to exercise any control in this matter. Often, important economic and social gains may be realized from industrial reorganization accommodated through transfers of timber rights, and these should not be impeded. It is obviously undesirable for the forest industry to be frozen into rigid patterns that do not take into account changing market conditions, cost structures, and social expectations.

Nonetheless, it is fundamentally important to the province that these economic forces be permitted to operate in a policy environment which is sensitive to other overriding concerns. It is therefore appropriate for the government to concern itself with transfers of licences; if it does not it will sacrifice much-needed control over the distribution of rights to public resources. The problem is one of determining the circumstances and manner in which that control is to be exercised, so that those who may be affected can proceed with some certainty.

The policy objectives to be served by asserting the public's interest over the pattern of ownership and development of Crown timber rights are explained in detail in Chapter 23; the most relevant concerns for the present discussion are:

- i) Avoiding excessive concentration of timber rights, regional or local monopolies, strategic geographical advantages, or other impediments to competition.
- ii) Forestalling consolidation or relocation of industrial activity that seriously conflicts with community or regional stability or development objectives.
- iii) Maintaining a suitable balance between domestic and foreign ownership and control.

What is required, then, are policies that will be capable of systematically accommodating these objectives. In the following paragraphs I discuss the changes needed to provide appropriate instruments of control over several kinds of transactions.

TRANSFERS OF LICENCES

The long-standing policy of requiring Ministerial consent for transfers of licences seems to be the most expedient means of providing the required surveillance and control. All tenure contracts should therefore routinely specify that they are not transferable without his consent. Many current Tree-farm Licence documents restrict transfer in this manner only for the initial ten years of their terms, although the Forest Act appears to cover the remainder of their duration with its more general language. This inconsistency should be rectified in Tree-farm Licence documents drafted in future, by unequivocally requiring the approval of the Minister for all transfers.

In recent years the government has been willing to consider transfers of a licensee's rights only if he proposed to transfer all of his "quota" rights in a given Public Sustained Yield Unit together. I see no compelling justification for refusing to consider transfers of only some licences, or indeed of parts of licences (which would require subdivision of rights and issuance of separate licences).

At present, the restrictions on transfers of some rights, notably Tree-farm Licences and Pulpwood Harvesting Area Agreements, exempt assignments of the licensee's interest to trustees of debentures where he has used the rights to secure debt capital for plant and equipment. In these cases, the actual rights are not normally held by the creditors, but if the licensee defaults on his loan his timber rights may be exercised on the creditor's behalf by the trustee or a receiver. The exemptions that permit this are constructive and should be retained; to restrict such assignments would simply reduce the value of timber rights for financing new productive capacity to no useful purpose. But two changes appear warranted. First, the exemptions should be embodied in Forest Licence and Timber Sale Licence contracts as well; I see no justification for providing them only to Tree-farm Licensees and holders of Pulpwood Agreements. Second, to provide a check on undesired redistribution of rights following firms being placed in receivership, contracts should provide that Ministerial approval be required for transfers from trustees or receivers.

TRANSFERS OF SHARES

It is an easy matter for the traditional restriction on transfers of licences to be circumvented through transactions in the shares of companies that hold them. To be complete, policy should take into account in a formal way this indirect avenue for transferring control over Crown timber.

The kinds of transactions which should attract government scrutiny are those which have the potential for shifting ownership and control over rights to Crown resources, namely transfers of shares from one party to another, and amalgamation of two or more companies. The British Columbia Companies Act applies to almost all relevant companies in the province and this legislation should be amended to provide that any transfer of the shares in a company holding, either directly or indirectly, rights to Crown timber, that has the effect of shifting control over its affairs, shall be conditional upon the prior approval of the Minister. Rules should be formulated for companies chartered under federal and foreign laws, and for precisely defining what shall constitute a change of control.

It should not be government policy to prohibit all transfers of licences and corporate shares, but merely to exercise needed surveillance over the transactions to ensure that, when they occur, full account is taken of their effects on regional industrial structure, local labour forces and communities, and the balance between foreign and domestic ownership and control. To assess a proposed transaction, the government should have before it the relevant data to make an informed decision. Applicants for transfers should be required to submit information that will explain the implications of the transaction under each of the subheads I have mentioned.

EXCHANGES OF RIGHTS

A related matter is that of trades of timber or forest land between private parties and between a private party and the Crown. In this case, however, the transactions involve less of a net change in the holdings of the parties involved, or may result in no net change at all.

For some years the government has been reluctant to permit exchanges in timber rights among licensees and has resisted proposals for trades between applicants' holdings and Crown resources (although it has negotiated trades of the latter kind at its own initiative for purposes such as obtaining preferred land for parks). This has been a continuing source of frustration for the industry because fragmented rights often impede orderly patterns of forest development, and fragments or shards of timber holdings are difficult and expensive to manage. These problems are most commonly associated with the old temporary tenures, particularly those outside Tree-farm Licences, but they arise in connection with Crown-granted lands and other licensed lands as well.

The public and private costs inflicted by the discontinuity of development, logging, and management that often result from disjointed tenure patterns cannot be estimated, but judging from evidence presented at my public hearings they are often substantial. In some cases, these problems can be resolved by transfers of rights, as discussed in preceding paragraphs. Here, I am concerned with solutions through exchanges of rights, either between two private parties or between one and the Crown. I deal with these separately.

Exchanges between two private parties. There are apparently many situations where exchanges of rights between two private parties could significantly improve patterns of resource development, particularly on the Coast where old temporary tenures and private lands are most prevalent and where the holdings of a few large companies are intermingled. An obvious example is one company's holdings of old temporary tenures within another's Tree-farm Licence, where the latter has holdings elsewhere near the operations of the former. Because the government has generally been unwilling to consent to trades, the companies have often entered into contractual agreements to log timber for each other or to exchange logs. But these arrangements are often awkward, and a better solution lies in mutually acceptable exchanges of rights which will permit each to proceed with development systematically and independently.

A policy of refusing to allow exchanges of this sort is an impediment to orderly resource development and an unnecessary erosion of resource values. The government should, instead, encourage exchanges that are clearly in the interest of rationalized operations. Where proposed exchanges between two private parties do not significantly alter the net holdings of either, the Forest Service should simply ascertain that the exchange is in the interest of more efficient operations and management and will not aggravate problems of regional monopoly power before recommending approval. Such exchanges should not, however, be an avenue for automatically increasing the Crown's commitments through accretions to Tree-farm Licences.

Exchanges with the Crown. In recent years the government has become increasingly reluctant to consider exchanges of Crown resources for rights

held by private parties. This is apparently a result of experience in which the Forest Service, in attempts to negotiate exchanges to release private holdings for purposes such as parks and wildlife protection, has found itself in a weak bargaining position, and, under pressure, has reached settlements which were alleged to involve excessive compensation. However, in the interest of systematic resource management and its attendant economic benefits, this problem should be faced and solutions found that will protect the Crown's bargaining position.

I propose that when the government considers proposals for trades of private rights for Crown resources it adopt a practice of seeking settlements through binding arbitration. When a proposal is received, the Forest Service should recommend to the Minister whether it is, in principle, consistent with the public interest on the basis of resource management rationalization and the other concerns noted above in connection with transfers. If the Minister is willing to consider the proposal, the Forest Service and the applicant should establish the general location of the Crown rights to be offered in exchange and the basis of the settlement. Where the exchange involves timber that in both cases is subject to full stumpage, a settlement based on volumes conveyed may be most appropriate; in other cases a net value basis is to be preferred with possible cash adjustments. The Minister should then condition the bargain on the results of a binding arbitration in which both parties agree to a settlement reached under the procedures of the Arbitration Act.

Where the Crown wishes to initiate an exchange, the problem is complicated by the need to obtain the concurrence of the private party to the transaction. The Crown's right to withdraw licensed lands or cutting rights under contracts has been dealt with already; we are concerned here with cases which extend beyond those provisions or which for other reasons the Crown considers a fully compensated trade appropriate. To deal with these cases I propose that, in all forest tenure contracts involving Crown lands, a clause be inserted committing both parties to a settlement under the procedures of the Arbitration Act in the event that the Minister deems that there is a compelling public interest in a revision and that a compensating exchange is feasible.

AMALGAMATION OF RIGHTS

When the "quota" system was first introduced in Public Sustained Yield Units that required reductions in cutting rates to comply with the allowable cut, some of the resulting allocations were insufficient to support separate logging enterprises of economic size. Moreover, some licensees found themselves holding rights to very modest volumes in each of two or more units. Because of the exigencies of established "quota positions" in the different units, the Forest Service has resisted licensees' proposals to amalgamate their uneconomic rights into a single viable licence.

Later, in Chapter 17, I recommend changes in harvest regulation that will have the effect of relaxing some of the strictures on cutting rates within individual Public Sustained Yield Units, and in Chapter 18 I propose a more flexible cut control policy. I am certain that these reforms, coupled with my recommended changes in the licensing system, will alleviate the current problems with fragmented rights, enabling licensees to consolidate unmanageable small and fragmented rights into larger, more efficient licences.

SUSPENSION AND CANCELLATION

Under normal circumstances rights to public timber terminate as tenures expire, but in addition to these predictable events it is sometimes necessary for the government to curtail rights when their holders fail to live up to the terms of their contracts with the Crown. Accordingly, both the Forest Act and licence documents make provisions for suspension and cancellation of the various forms of rights.

A Tree-farm Licence may, under the Forest Act, be either cancelled or suspended by the Minister if the licensee fails to comply with the terms of the Act or its Regulations, his licence contract, or a Cutting Permit. In addition, an authorized forest officer may suspend Cutting Permits, for the same causes. Should either of these events occur the licensee may appeal the decision to the Lieutenant-Governor in Council: that is, the Cabinet. An amendment to the Forest Act in 1974 repealed a right licensees previously enjoyed to appeal suspensions or cancellations first to the Supreme Court of British Columbia, and then to the British Columbia Court of Appeal. Further, while the licensee was entitled to three months' notice of government's intention to suspend under the pre-existing arrangements, no notice is now required.

According to the terms of the contracts, Tree-farm Licences and Pulpwood Harvesting Area Agreements may also be cancelled if their holders become insolvent, provided that any trustee or receiver for creditors has first had an opportunity to operate and dispose of the licensee's undertaking. Holders of these two forms of tenure have the option of cancelling their agreements by giving two years' notice to the Minister.

Procedures governing cancellation and suspension of the old temporary tenures and Timber Sale Licences (including Timber Sale Harvesting Licences) are also found in licence documents. These tenures are subject either to suspension or cancellation by the Minister for the same causes as Tree-farm Licences, but procedures differ slightly. Licensees are entitled to receive either 30 or 60 days' notice (depending on the tenure) of the Minister's intention to cancel, but no notice of his intention to issue a suspension.

In several respects these provisions are inappropriate and inconsistent. I see no need to differentiate in any substantive way among the different forms of tenure contracts with respect to the action that may be taken when a licensee fails to fulfill his obligations to the Crown. A number of rules and procedures should be common to all tenure contracts, and should be set out clearly in contracts and legislation. Moreover, tenures may now be cancelled for even minor infractions of the Forest Act or licence agreements, and this ultimate sanction should be qualified. My proposals below should be set out in legislation so that they will apply to all existing contracts. Then, as new documents replace licences currently in force, they should be incorporated as contractual provisions.

LICENCES VERSUS CUTTING PERMITS

Present arrangements do not differentiate between the nature of the misconduct that can lead to suspension or cancellation of the entire licence on the one hand, and a Cutting Permit issued under the licence on the other. These two alternatives have very different implications, and I propose that the alter-

native sanctions be more systematically applied. Licences should be liable either to cancellation or suspension for breaches that go beyond active operations on individual Cutting Permits, such as failing to pay stumpage, exceeding cut control limits, or defaulting on post-logging obligations such as slash disposal, site preparation, or reforestation. In these instances, all operations of the licensees under the relevant licence should be liable to suspension or cancellation.

On the other hand, Cutting Permits should be the target where the breach relates to active logging operations on a specific site. Such things as trespass into unauthorized timber, failure to adhere to logging plans, and violation of fire prevention regulations are germane to this level. Where the licence document itself serves as the Cutting Permit (as in short-term Timber Sale Licences) there will, of course, be no need to draw this distinction.

CHOICE OF REMEDIES

The circumstances that call for suspension and cancellation of rights are many and varied. In the past, Ministerial discretion has been used to cancel licences only on very rare occasions. Suspension notices, however, are issued much more frequently—to enforce licensees' slash disposal or utilization obligations, for example, or to prevent imminent environmental danger to sensitive sites.

When a licence is cancelled its holder forfeits, in addition to immediate access to timber, privileges relating to acquisition of future rights conferred in the licence, such as bidding privileges under Forest Licences or rights to renew Tree-farm Licences. In contrast, if his licence is suspended only his current operations are interrupted while his long-term position is left intact. Suspension is therefore a far less drastic measure than cancellation. But present provisions do not logically discriminate between the kinds of actions that should give rise to each of these two remedies, although I understand that the informal administrative practices of the Forest Service draw a distinction.

I propose that the alternatives of either suspending or cancelling licences should be retained in the licence contracts (but with some changes concerning notice, discussed below). Cancellation of a licence should be the remedy of last resort, and documents should expressly stipulate that it will be available to government only where the licensee has substantially failed to meet his contractual or statutory obligations. I cannot, however, foresee a need to cancel a Cutting Permit. Licences under which they are issued entitle their holders to receive Cutting Permits in fulfillment of the Crown's obligation to make certain volumes of timber available for harvesting. If a Cutting Permit were cancelled for non-performance, the licensee would simply reapply for another one. For this reason it appears to me that cancellation is an inappropriate remedy for Cutting Permits, and that only the power to suspend need be provided. Government should retain the right to suspend either licences or Cutting Permits for failure to comply with the Forest Act, the Regulations or the terms of those documents.

To add clarity to licensees' rights, all future licence documents should set out these remedies in specific terms. Moreover, they should entitle the licensee to receive notice of the government's intention to take action.

NOTICE

In exercising its power to suspend or cancel rights the government must balance the need to protect the public interest in proper practices on Crown forest land with the immediate interests of licensees, contractors, and workers in an uninterrupted flow of timber production. In addition to these powers, the government has available to it the licensee's deposit and certain other financial penalties such as waste and cut control assessments to assist it in enforcing adherence to contracts.

In commercial contracts it is standard practice to permit a party in default of its terms to remedy his breach within a stated period of time, following receipt of notice from the other party. Some timber contracts extend this opportunity to licensees while others do not. In the interests of equity and consistency these procedures should be rationalized.

In my opinion it would be reasonable for licence documents to require the Forest Service to give 30 days' notice before suspending either a licence or a Cutting Permit, and 60 days' notice before cancelling a licence. During the interval the licensee will have the opportunity either to rectify the default or appeal the order under summary procedures I recommend in Chapter 24. There should be only one exception to this requirement, namely where there is evidence that serious and imminent environmental threats are posed by a licensee's operations. To cover such cases the contract should authorize suspension of the Cutting Permit without notice, but again subject to appeal.

AUTHORITY TO SUSPEND OR CANCEL

In line with other recommendations in this Report, the authority to suspend or cancel licences and Cutting Permits should be delegated more precisely than at present. Since District Foresters have the power to issue Cutting Permits, they should be vested with the parallel authority to suspend them, and this should be specified in the Forest Act. Discretion to proceed with the more severe suspension or cancellation of licences should continue to rest with the Minister.

RESPONSIBILITIES FOR MANAGEMENT AND DEVELOPMENT

In the preceding chapters I have directed my attention to the basic forms of rights to harvest Crown timber, and related issues concerning allocating, transferring, exchanging, and terminating them. There remain for consideration a number of other matters of general application to contractual relationships between the Crown and licensees. This chapter reviews several of these, which have to do with the division of responsibilities between licensees and the Crown for forest development and resource management functions—reforestation and silviculture, protection, and management for values other than timber. Here the underlying issue is the extent to which licensees—rather than the Forest Service acting as the Crown's agent—should perform these activities as conditions of their rights. Where functions are delegated, the manner of financing them must also be resolved.

The matters examined in this and the following chapter on roads and public access are rather complicated, and I have found it necessary to try to sort out the current arrangements in what I fear is rather tedious detail. These topics do not exhaust the areas where private and public functions interact; problems of planning, administration, and the determination of priorities for forest management are addressed in subsequent chapters.

Policy relating to the division of responsibilities for forest development and management between licensees and the Forest Service has not been well articulated, except in connection with Tree-farm Licences, which were deliberately designed to delegate most managerial activities to the corporate holders. But over the years, in the face of its own inadequate financial resources, the Forest Service has tended to rely increasingly on licensees to carry out functions ranging from access development to cruising, planning, and reforestation; and it has evolved a variety of complicated arrangements for reimbursing the costs through adjustments to stumpage levies.

This reliance on the private sector is now very heavy relative to other important forest jurisdictions with extensive public ownership. To some observers our present dependence on licensees to not only carry out management and development functions but also to initiate their planning and determine their priorities is alarming. The old temporary tenures were, of course, located and surveyed by the licensees, and harvesting schedules left to their discretion. More recently, Tree-farm Licences were delineated by applicants and approved on the basis of their cruise information with only rudimentary verification by the Forest Service. Within Public Sustained Yield Units the Forest Service has largely left it to the licensees to divide up their areas of influence and to identify tracts to be harvested. The Forest Service looks to

licensees to do most of the cruising required for its stumpage appraisals and other purposes, and to propose and execute road building, operational plans, and many forestry practices. I share the concern that the Forest Service is in danger of losing the initiative and effective control over the development of the public forests through excessive reliance on licensees. Moreover, some of these functions (particularly road building) are exceedingly costly, and in Chapter 20 I comment on the implications of these arrangements for forest financing and the determination of priorities.

In my opinion the appropriate division of forest management responsibilities between the public and private sectors should not be regarded as a political or philosophical question, but rather should be approached pragmatically. It is not, it should be emphasized, a matter of who should pay; the cost will be borne by the public (on Crown forest lands subject to stumpage charges) either way—as direct budgetary expenditures or as reduced revenues. The issue, as I have tried to deal with it, is to find the most efficient division of functions consistent with general policy objectives and the expertise and wherewithal of the two sectors. There are clearly certain tasks that the Forest Service must perform, such as the province-wide forest inventory and stumpage appraisals, and others that are inseparable from the licensee's harvesting activities. Between these there is a variety of activities such as road development, reforestation, and silvicultural measures that can be carried out by either.

Several general considerations should be borne in mind in considering the appropriate scope of licensees' responsibilities here and elsewhere in this report. First, the larger corporate licensees with long-term tenures are in a much better position than are smaller firms to accept responsibilities for functions that require extensive professional expertise, financing, and administration. A general reliance on licensees to perform these functions therefore constitutes bias towards larger enterprises. It follows that the maintenance of diversity in the structure of the industry calls for variety in the division of development and management responsibilities.

Second, decisions on these matters must take account of the distribution of expertise between the industry, Forest Service and other government agencies in order to make the best use of all; but it must be recognized also that the decisions made will in turn influence the distribution of personnel between the public and private sectors. There can be no doubt, for example, that the substantial increase in professional foresters employed by timber companies during the last couple of decades has been spurred by the obligations put on licensees to discharge managerial functions.

Third, there is an important distinction to be made between the responsibility for initiating, planning, and controlling managerial functions and the responsibility for carrying out the work. The latter can be dealt with in terms of practicality and efficiency, while the former raises more basic issues of public responsibility and accountability, discussed later in the context of planning.

Finally, where obligations for development and management functions are assigned to licensees, the arrangements for reimbursing the costs are important. In this, and the following chapter I deal with financing as it relates to the responsibilities of licensees; more general issues of forest financing are postponed to Chapter 24.

REFORESTATION AND SILVICULTURE

In a later chapter I suggest that sustained yield policy for the future should place less emphasis on achieving a steady rate of liquidation of old-growth timber and more on maintaining and enhancing the productivity of the land. This calls for measures to ensure that potentially productive forest land is not left in an unproductive condition; that at the minimum, reforestation after logging be assured. But that leaves many questions about how this is to be accomplished and who is to be responsible for it. The same questions are raised with respect to other silvicultural measures designed to increase the yield from Crown forest land.

REFORESTATION

Adequate reforestation of all logged lands has been an objective of the Forest Service for several decades. Fortunately, most of the forests of British Columbia are sufficiently resilient to renew themselves after denudation by logging or fire with only minimum efforts to provide for regeneration, and it is only recently that artificial reforestation has been practised on a significant scale. Even today, artificial measures are prescribed only where natural renewal is expected to be inadequate, although there is a growing practice to plant seedlings immediately after logging to avoid risk, to speed new growth, and to improve the growing stock.

Tree-farm Licences. Tree-farm Licence contracts oblige licensees to ensure reforestation by either natural or artificial processes. First, when each licence was initially granted, the licensee was required to reforest artificially, according to a prescribed time schedule, all lands within his licence area which were then denuded or overgrown with brush, and classified as site index 80 or higher: that is, all forest land except sites on which most species grow only very slowly. Second, licensees are required to artificially restock lands they have logged wherever natural regeneration proves inadequate within a maximum time limit: five years for higher, and ten years for lower quality sites. Finally, licensees have not been required to artificially reforest logged lands that are classified as poor growing sites for most species.

These obligations apply to all lands within Tree-farm Licences, including old temporary tenures and Crown-granted lands. Reforestation programmes adopted by licensees, which are set out in the 5-year management working plans approved by the Forest Service, often provide for planting at faster rates than the minimums specified in contracts.

Licensees are reimbursed, albeit imperfectly, for reforestation costs through deductions from stumpage charges. The approved cost is entered in a "forestry cost ledger" appurtenant to the licence, and these and other allowances in the ledger are amortized at a fixed rate per cunit against all of the timber cut from the licence area. But because only the timber cut from "Schedule B" lands is subject to appraised stumpage, licensees can, at most, recoup only a portion of these costs: the fraction that the harvest from "Schedule B" lands bears to the total harvest from the licence as a whole. However, this fraction may be applied against low stumpage assessments to effectively reduce the impact of minimum stumpage; the normal minimum rates are reduced to absorb up to one-half of approved forestry costs. The balance of these

costs—those attributed to the harvest from royalty bearing "Schedule A" lands and any balance remaining at the revised minimum stumpage rates—are absorbed by the licensee. Most licensees do not, therefore, recoup all reforestation costs, their success in doing so being dependent on the proportion of their harvest derived from "Schedule B" lands and the frequency with which minimum stumpage rates apply.

Old temporary tenures. Old temporary tenures within Tree-farm Licences are subject to the reforestation requirements described above. Others carry no obligations for reforestation. Consistent with the current policy of deleting lands from these licences as they are logged, the reforestation task falls on the Forest Service.

Timber Sale Licences. Until the Timber Sale Harvesting Licence was introduced, responsibility for reforestation on all Crown lands outside Tree-farm Licences remained entirely with the Forest Service. Under the Forest Act the licensee could be directed to dispose of slash under Timber Sale Licences, and in addition Cutting Permits often required him to carry out other post-logging treatment, such as scarification to the satisfaction of the Forest Service. Then if planting were necessary and the funds available, the Forest Service would do the actual planting itself or through contractors. This division of responsibility still applies for ordinary Timber Sale Licences and "third band" Timber Sale Licences, except where it is delegated in the latter to licensees through development plans.

Since the Timber Sale Harvesting Licences were introduced in the late 1960's this responsibility has shifted to licensees. As well as post-logging site treatment, licensees are required, in development plans approved by the Forest Service, to monitor the programme of natural regeneration, and where warranted plant seedlings and conduct regeneration surveys. The costs incurred by the licensee are reimbursed through special forestry cost adjustments to his stumpage payments as in the case of Tree-farm Licences. But in this case, because appraised stumpage is payable on all of the timber cut, the licensee stands to be fully compensated for his allowed costs, subject to the constraints of minimum stumpage rates.

Pulpwood Harvesting Area Agreements. Holders of these tenures are responsible for ensuring that any lands they log under their options to obtain standing timber become restocked to prevailing standards. But these options have been only sparingly exercised so the obligation to reforest has seldom been triggered.

OTHER SILVICULTURAL MEASURES

Planting seedlings is only one of a number of techniques for increasing yields from forest land. The growing stock may be improved by spacing the trees in juvenile and immature stands, and by thinning or selectively logging advanced immature stands that have reached commercial size in an effort to utilize them before they are lost through natural mortality. The productivity of the soil itself may be enhanced through fertilization. In a subsequent chapter I discuss some of these measures in further detail; here the issue is the division of responsibility between licensees and the government.

During recent years some Tree-farm Licensees have embarked on juvenile spacing and commercial thinning programmes, but unlike reforestation, which

is required in the licence provisions, these other efforts have been voluntary. When approved in advance by the Forest Service in management working plans, at least a portion of their costs may be recouped through forestry cost allowances in the same way as expenditures on reforestation. With commercial thinning the licensee also benefits to the extent that the volume removed is not taken into account for cut control purposes; to that extent his permitted rate of harvesting is increased, but only for the year in which the operation is conducted.

On Crown forest land lying outside Tree-farm Licences these other silvicultural measures have been restricted largely to initiatives taken by the Forest Service for experimental purposes. Applications to cut timber in immature stands have rarely been approved and licensees have not been charged with any responsibilities except in those cases involving the harvest of special products, as described in Chapter 16.

ASSESSMENT AND RECOMMENDATIONS

In Chapter 20 below, I review progress in reforestation and make certain general recommendations relating to this aspect of forest management. Artificial reforestation has increased markedly in recent years. In 1975, for example, more than 32 thousand acres were planted in Tree-farm Licences and 98 thousand acres on other Crown land. Of the latter, licensees accounted for 29 per cent and the Forest Service planted the remainder, either directly or by contract, on lands harvested under old temporary tenures or Timber Sale Licences. Thus, excluding private lands outside Tree-farm Licences, in 1975 some 130 thousand acres were planted by the Forest Service and licensees, compared to 38 thousand ten years earlier in 1965.

Tree-farm Licences. The present arrangements for reforestation in Tree-farm Licences has proven quite successful; most licensees have kept pace with current needs and have substantially reduced the backlog of unsatisfactorily stocked lands. This undoubtedly reflects the strong incentives that Tree-farm Licensees have to maintain productive cover; their contractual obligation to do so and the provisions for reimbursement of costs are reinforced by immediate increases in allowed harvesting rates when planting shortens the delay between harvest (or other denudation) and regeneration, or it brings into production forest land which would otherwise not yield commercial crops.

These requirements and incentives to Tree-farm Licensees should be continued, but qualified in several important respects. The first relates to the minimum restocking criteria set out in Tree-farm Licence agreements, described earlier. These standards no doubt have served as useful starting points for reforestation objectives in the context of a sustained yield management regime, but there is the danger that priorities based solely on site classes may lead to undesirable rigidity. If the public is to underwrite all forestry costs, it is essential that financial criteria be used in conjunction with biological information in determining these standards and setting priorities for expenditures on silviculture. I address this issue in Chapter 20. Regeneration periods should not in future be designated in contracts but should be left to individual Cutting Permits so that they will tend to be more sensitive to growing sites and individual species, and will not create artificial biases for overplanting.

Second, licence documents should give formal recognition to second-growth stand treatment which is certain to become a more conspicuous feature of forest management in the coming years. I do not suggest that minimum standards be prescribed in the licences themselves, but that the appropriate treatment be approved in successive management working plans, as is presently the case. However, the contracts should identify these activities as being included as licensee responsibilities, and specify that reimbursement shall be made through credits against stumpage. Third, the formula used to reimburse licensees for forestry costs should be modified, according to the proposals I advance in the following chapter.

Forest Licences and Timber Sale Licences. The current responsibilities of Timber Sale Harvesting Licensees should be continued under my proposed Forest Licences. Their longer terms, size, and formal licence areas will place holders of these tenures in a favourable position to accept responsibility for reforestation. Moreover, as second-growth treatment becomes more important, these licensees should be encouraged to undertake more advanced forestry measures in their licence areas. Cutting Permits should prescribe required treatment and licensees should receive reimbursement under the stumpage arrangements I propose later.

The relatively small and short-term Timber Sale Licences that I have recommended are not intended to convey to licensees management responsibilities beyond the harvesting process. Thus the Forest Service should accept direct responsibility for any necessary post-logging site treatment that goes beyond slash disposal, and it should conduct any necessary reforestation of lands harvested under these tenures.

Old temporary tenures. My proposals in Chapter 8 pertaining to the old temporary tenures outside Tree-farm Licences involve keeping each of them intact as Timber Licences for a period long enough to be harvested in an orderly manner under an approved plan. Under this scheme it will be an easy matter for licensees to be given responsibility for reforesting cutover areas following logging. Where the Forest Service determines that prompt planting will be necessary to establish the next crop in commercial species the licensee's final authorization to harvest should exact this obligation. However, as an alternative to conducting the planting operations themselves, licensees should have the option of contracting them to the Forest Service at cost. As I recommend later in this chapter, costs should be reimbursed if and to the extent that this timber becomes subject to appraised stumpage.

CRUISING AND INVENTORIES

As I explain in Chapter 17, forest inventories are required for purposes of long-term harvest planning. When rights to specific tracts of timber are granted, much more detailed information is required for purposes of operational planning and appraisal of stumpage values. Current tenure arrangements divide responsibilities for both inventories and operational cruises between licensees and the Forest Service.

FOREST INVENTORIES

Nearly thirty years ago, with the introduction of sustained yield policies, the Forest Service embarked on a forest inventory programme to assess the

province's stock of timber and its growth capacity.¹ This is a continuing programme, steadily improving available data through air reconnaissance, photogrammetry, and field sampling. This inventory information is used to calculate the allowable annual cut in each sustained yield unit (as described in Chapter 17 and Appendix D).

Tree-farm Licensees are required to take periodic inventories of all the lands within licensed areas, as part of their obligations under management working plans. They gather the field data, compile it, and calculate allowable annual cuts according to procedures approved by the Forest Service. The Forest Service reserves the right to check the field data, but it has done so in few, if any, cases.

On all other Crown forest land the Forest Service's Inventory Division takes direct responsibility for preparing inventories used for calculating the allowable cut in Public Sustained Yield Units. The inventories prepared by the Forest Service and Tree-farm Licensees are revised and published every few years.²

In terms of the formal division of responsibilities between the Forest Service and licensees, I consider these present arrangements satisfactory. The Forest Service should retain direct responsibility for inventories on Crown lands outside Tree-farm Licences for purposes of planning the allocation of harvesting rights. For Tree-farm Licences, on the other hand, the licensees are well placed and capable of undertaking this function as part of their management responsibilities. However, with respect to the latter, two changes are desirable. First, the obligation of Tree-farm Licensees to compile inventories should be specified in the licence documents rather than being left to management working plans. Second, protection of the public interest calls for systematic checking by the Forest Service of the data gathered and compiled by licensees.

OPERATIONAL CRUISING

At one time, the Forest Service undertook operational cruises of all stumpage-bearing timber allocated for harvesting, but in recent years this function has been assigned increasingly to licensees as a condition of Cutting Permit applications. Today, all operational cruises in Tree-farm Licences and most under Timber Sale Harvesting Licences and Timber Sale Licences are done by licensees. Forest Service personnel sometimes check the accuracy of cruises undertaken by licensees, but the degree of monitoring varies widely among Forest Districts.

Operational cruises provide the essential data for planning logging operations and for determining stumpage values, and in my opinion the present reliance on licensees to provide this information is excessive. I consider it inappropriate to depend so heavily on licensees to gather critical information about Crown timber when they have such a direct financial interest in the results. In addition, I make several proposals in this report that will increase the onus on cruise data. In Chapter 18 I propose that cruise information be

¹ The first attempt at a comprehensive forest inventory for the province was published in a Dominion report in 1918: H. N. Whitford and R. D. Craig, *op. cit.* Twenty years later, a detailed study was published by the B.C. Forest Service, F. D. Mulholland, *op. cit.* Continuous forest inventory statistics such as are now used were first published in 1957.

² For the most recent see *Forest Inventory Statistics of British Columbia*, B.C. Forest Service, 1975, 213 pp.

used to determine not only stumpage prices but also the volumes of timber allocated in Cutting Permits, to obviate waste assessments and to strengthen incentives for closer utilization. For all these reasons the Forest Service should expand its direct role in cruising.

In Chapter 18 I propose a programme to strengthen the Forest Service's standards and capability in cruising. Under my proposed changes in the tenure structure, the Forest Service should take responsibility for all operational cruises for Timber Sale Licences and for Cutting Permits issued under other licences whenever cruise-based stumpage assessments are made. Moreover, where licensees are assigned this responsibility the Forest Service should maintain close surveillance over data collection and compilation.

FIRE PROTECTION

The need to control fire has been recognized as a high priority of the Forest Service since it was created in 1912, and over the years an impressive protection and suppression capability has been developed. Fire protection is a very costly and highly variable activity. The Forest Service itself bears much of the burden of fire protection and its systems of fire lookouts, air reconnaissance, and suppression forces are well known. But its initiatives are supplemented by responsibility delegated to the private sector through legislation, regulations, and licence contracts.

The policy relating to this issue is rather complicated, and in the following pages I describe it in some detail in order to explain the need for modifications in the interests of clarity, consistency, and equity. To discuss the assignment of responsibilities under tenure arrangements, it is convenient to divide the subject of fire protection into three categories: precautionary measures, suppression responsibilities, and liability for damage.

PRECAUTIONARY ARRANGEMENTS

By their nature, most precautionary measures involve restrictions or obligations on occupiers of the forest, and the Forest Act and Regulations impose fire-related restrictions on a wide range of activities. With minor exceptions, Burning Permits are required of anyone who wishes to kindle a fire on or near forested land. Other rules apply to construction and operation of railways, powerlines, telephone lines, and pipelines. And in response to especially hazardous conditions, the Minister is given power to close areas of forest land to all or certain specified activities.

Private responsibilities. Besides these general provisions, the Forest Act contains fire preventative requirements aimed specifically at timber operations, on both Crown and private land. Snags must be felled and slash disposed of to the satisfaction of the Minister, who is given the power to specify the time and manner of its disposal. Failure to comply with these prescriptions, or to take reasonable precautions in burning, attracts various penalties. Many of these statutory requirements relating to hazard abatement are couched in only general terms and are reinforced with more specific rules set out in Regulations made pursuant to the Act.

Holders of Tree-farm Licences and Timber Sale Harvesting Licences are given additional precautionary responsibilities through provisions in their

planning documents and licence contracts. Under Tree-farm Licences, the 5-year management working plans set out detailed arrangements governing fire protection organization and contingency planning which are submitted for approval of the Forest Service. Because the licensee is deemed to occupy the whole area covered by his licence (which has important implications for his obligations when fires occur, described below), his plans have relatively broad scope. He is required to assess the risks of loss by fire; to maintain watches, patrols, and communication networks; and to make detailed arrangements relating to manpower, equipment, and access. His costs may be included in his forestry cost ledger to be recouped, in part at least, through abatements to stumpage levies.

The protection obligations exacted of Timber Sale Harvesting Licensees vary throughout the province. In the Prince Rupert and Prince George Forest Districts licensees do not assume any special contractual responsibilities for protection; suppression crews are provided and planning is done by the Forest Service. In the other Districts licensees may elect to provide standby suppression crews and equipment during the "close season"³ and prepare fire pre-organization plans. Where they choose to do so they qualify for reimbursement of the costs through stumpage adjustments, in much the same manner as they recoup reforestation expenditures. If they elect to leave these responsibilities to the Forest Service, the Forest Service bills them for the cost which they can then (rather circuitously) claim back as a deduction against stumpage charges.

Recommended changes. I have little to say here about the strictly precautionary measures found in legislation, regulations, and the various tenures and permits. The detailed provisions governing operation of machinery and equipment in and near forests, disposal of logging debris and snags, and so on will continue to evolve as they have in the past, in the light of experience.

However, the division of responsibilities for planning against contingencies raises some basic questions regarding tenure. By their nature Tree-farm Licences are well suited for substantial participation by licensees in planning and organization and, with some qualifications set out below, the arrangements presently governing these tenures should be continued in future.

The new Forest Licences should delegate to licensees responsibilities for preorganization planning and standby crews as is done under Timber Sale Harvesting Licences where, from the point of view of efficiency, this will be the most expedient. In some areas logistical considerations may dictate that the Forest Service assume these functions, with the contracts leaving the licensee free of them. Where this proves to be the case the costs should not concern the licensee at all. This more equitable method will contrast with the complicated procedures now governing those Timber Sale Harvesting Licensees who elect not to accept those obligations.

Timber Sale Licences should not exact obligations for planning or provision of standby crews. The old temporary tenures lying outside Tree-farm Licences should be treated in similar fashion, with the Forest Service assuming the responsibility.

³ In the Forest Act the "close season" is defined to be the period from May 1 to October 31, or otherwise as the Lieutenant-Governor proclaims.

SUPPRESSION RESPONSIBILITIES

The Forest Service has traditionally taken the leading role in the effort to suppress forest fires, but it looks to private resources for assistance in containing fires on both private and Crown lands. Some of the statutory obligations on private parties and provisions for reimbursement of costs are both onerous and contentious.

The Forest Act obliges “. . . any person . . . conducting any land-clearing, lumbering, industrial, engineering, or construction operation . . .” or any other occupier of land to direct his resources toward extinguishing any fire that is burning on or has burned across land he occupies. This general obligation, certain supplementary provisions, and especially their interpretation by the Forest Service warrant some further explanation because they are used to determine important obligations of forest operators.

Obligations to act. First, an operator's obligation arises only when the fire originates on or spreads onto land occupied by him, so the definition of “occupation” is important. This term is interpreted by the Forest Service to mean a surveyed or defined area in which an operator is conducting operations. Thus on private land it is the area circumscribed by the boundaries of the parcel. For old temporary tenures and ordinary Timber Sale Licences it is the entire licensed area, or if it is divided into discrete blocks, those blocks which are actually occupied. Tree-farm Licensees are deemed to occupy their entire licensed area, and for Timber Sale Harvesting Licences it is interpreted to mean only the areas covered by Cutting Permits at any time.⁴

Second, when a fire occurs, the legislation requires the operator to deploy and pay for as many of his men as may be necessary. If literally applied in extreme circumstances this could oblige him to direct his entire labour force—including personnel not engaged in woods operations (such as office staff) and even men and equipment located in distant parts of the province—to the suppression effort. However, in practice the Forest Service requires mobilization of only those resources available in the area of occupation. Thus the Forest Service's interpretation of the area of occupation is used for two purposes: to invoke responsibility to act, and to identify the resources that must be made available to control a fire.

Third, the duty to attend to a fire is independent of its cause or origin, being triggered even if the outbreak is attributable to natural causes, the actions of strangers, or of a neighbour. And, finally, the obligation does not end if the fire passes beyond an occupier's area of occupation; he must pursue the fire until it is extinguished.

Other legislative provisions give the Forest Service power to conscript men and equipment for fire fighting. This procedure is adopted for emergencies, or where the occupier of forest land who is under a duty to respond to a fire fails to marshal his crews to the suppression effort. In such instances work is carried out under the direct supervision of the Forest Service.

Compensation. An operator who fulfills his obligations is eligible under the Forest Act to be compensated for his suppression costs under certain condi-

⁴ An additional qualification applies. An operator is required to attend to fires on any tenure held by him even though it is not actually “occupied” by him under the definitions given here, if it is connected by an access road system to lands which he actually occupies.

tions: viz., (i) if the fire originated on other lands, or (ii) if it was caused by a member of the public *making authorized use of a private road*, or (iii) if it burned on unoccupied land, did not originate from his area of occupation, and his response was voluntary. In other cases he must absorb the costs himself. Thus if a fire starts in his area of occupation as a result of natural causes, such as lightning, the operator must bear the costs; and, curiously, so he must if it is caused by some stranger making *unauthorized* use of a private road or who entered the forest by any means other than by road.

Compensation rates for labour, which are specified in the Regulations, have traditionally been lower than going industrial wage scales, although in recent years the disparity between the two has been narrowed markedly. Equipment rental is normally based on an informal schedule adopted by a number of government departments. In normal cases where operators qualify for compensation, they are not repaid their full costs and must absorb any difference between the approved government rates and the wages they actually pay. These rates apply equally to men and equipment conscripted by the Forest Service.

In special circumstances the Minister is authorized to repay fully operators' actual costs incurred in suppressing forest fires. As a general rule this provision is used to compensate operators who voluntarily take action on fires originating and burning outside their area of occupation, or railway companies that take steps to suppress a forest fire not caused by their railway operations.

Recommended changes. The most pressing issues are the scope of suppression responsibilities borne by private parties and the arrangements for compensation of costs. The present policy is designed to take advantage of the resources of forest operators to control fires. Occupiers' responsibility for fires burning across the lands they occupy is long-standing, having first appeared in a 1922 amendment to the Forest Act. It recognizes the strategic advantage offered by the availability of operators' men and equipment at or near the site, and it provides a strong incentive for forest operators to minimize fire hazard. For these reasons I consider it essential that the resources of private occupiers continue to be available to the extent that they are needed to bring forest fires under control, and that operators be encouraged to respond promptly to the threat of fire. But the current policy assigns responsibilities somewhat arbitrarily in some respects and is unnecessarily complicated.

There are three issues to be dealt with, viz., (i) determining the circumstances in which private responsibility arises, (ii) designating the resources of the operator to be directed to the suppression effort, and (iii) fixing the reimbursement, if any, of his costs. My recommendations are based on the principle that operators should be required to mobilize their resources to control fires, but that they should not be obliged to bear the cost of fighting fires that they do not cause.

- i) *Duty to act.* Forest operators should continue to be under an automatic obligation to respond to fires that start on or spread onto lands they occupy, without regard to the cause of the fire. But the *area of occupation* needs to be more clearly defined so that operators will be fully aware of their responsibilities. I propose that in the case of private lands it be applied to the whole parcel, as at present. In the case of licensed Crown

lands, the problem is to designate in clear terms a specific area that will minimize the uncertainties associated with discretionary powers. I suggest that the area of occupation for longer-term Crown tenures be defined as the area circumscribed by the boundaries of the licence. This will mean maintaining Tree-farm Licensees' responsibilities to their entire licence area. For Forest Licences it expands the area beyond that specified in current Timber Sale Harvesting Licences (that is, Cutting Permits only) to the licence area defined in the contract. As well, Timber Sale Licences and old temporary tenures should attract the automatic obligation for fires starting on or spreading to their defined licence areas. Because it will be necessary for licensees' responsibilities to extend beyond the duration of their tenure to include escapes from prescribed burning, and to attach responsibilities to private land holdings, these provisions should be set out in statute.

- ii) *Resources to be made available.* The present open-ended statutory provision defining the resources an operator is obliged to direct to a fire should be clarified to eliminate ambiguity of liability and to avoid unnecessary administrative discretion. Thus, to fulfill his responsibility to respond to a fire, an operator should be required explicitly to mobilize the men he and his contractors have on their payrolls (together with equipment) for operations in the area of occupation at the time of the outbreak.

The additional statutory power given the Forest Service to conscript any men and equipment needed to fight fires should be preserved. This flexibility seems necessary at present to enable the Forest Service to cope with emergencies, and although it can be a severe imposition on operators who have no connection with the fire I see no feasible method of restricting this discretion. However, I suggest below that the financial burden on those whose resources are conscripted be alleviated.

- iii) *Reimbursement of costs.* Unless he, his employees, or his contractors are responsible for causing the fire a licensee should be eligible for reimbursement of the costs he reasonably incurs in fighting it, in response to his automatic responsibility, his voluntary actions, or by order of the Forest Service. The present limitation on eligibility to cases where the fire starts on and burns from other land, or is caused by others making authorized use of private roads, is unduly restrictive. The latter, especially, is giving rise to serious inequity as licensees respond to growing pressures from the public and the Forest Service to make their roads accessible. I propose therefore that costs incurred in controlling fires due to natural causes or ignited by strangers should be repaid.

Currently, an operator who does not fully discharge his legal suppression obligations loses his right to reimbursement of costs. This incentive for compliance should be retained. The burden of proving that he has met his legal obligations, or that he is not responsible for causing the fire, should continue to rest with the occupier. As the party on the ground and closest to the situation, he is in the best position to ascertain the facts surrounding the fire.

In all cases where compensation is to be paid, the rates of reimbursement should correspond to prevailing industrial rates, and should be revised as often as necessary to keep pace with those rates. Primary responsibility for protecting Crown-granted land should rest with its

owner, and occupiers of private lands should be reimbursed only for expenses incurred in response to a directive from the Forest Service to act on a fire that starts on other lands.

LIABILITY FOR DAMAGE

In addition to the requirements for private parties to act on fires, the Forest Act imposes liability on those who cause fires or create hazards. Anyone who fails to extinguish a fire that he has started may be required to compensate the Crown for public funds expended in bringing it under control.

Forest Service policy qualifies this liability for prescribed burning. The holder of a Burning Permit is not held responsible for any public costs incurred fighting a forest fire arising from the burning unless he has failed to comply with the conditions in the permit. However, if his authorized fire escapes and the Forest Service is called in to bring it under control he is required to reimburse the Crown for suppression costs if, for example, he had not provided the prescribed manpower and equipment to monitor the fire.

Failure of any operator to dispose of slash as directed by the Forest Service attracts a special levy of \$12 per acre, all or a portion of which may be refunded if and when disposal is completed. Parallel provisions apply to operators' obligations to fell snags encountered during logging.

Traditionally, the government has not taken a very aggressive attitude toward damage caused to standing Crown timber through the negligence of forest users. In addition to common law remedies the Crown as public landlord enjoys a statutory right under the Forest Act to obtain redress for damage to its timber, but heretofore the government has not often pursued this remedy. The exception has been where, through licensees' carelessness, fire destroyed young plantation growth. Aside from these special cases government's efforts at collecting compensation have been focused on its own suppression costs, and not at the value of the timber itself.

Recommendations. The current statutory provisions that enable government to claim its suppression and precautionary costs from operators and others who lose control of fires or create hazards seem generally appropriate. It will be necessary for the Forest Service to continue its policy of prescribing burning or a slash disposal technique, in the interests of both site preparation and fire hazard abatement, but more attention should be paid to the so-called "fringe burns".

Government should continue to take responsibility for deciding when and by what means slash shall be burned, and for stipulating in Burning Permits the precautions to be taken in conjunction with prescribed fires. It is reasonable, then, that beyond the manpower and equipment specified in the permit the public should bear the costs incurred and damage caused when these burns escape into adjacent Crown timber if the operator has complied with the directives and precautionary measures laid down by the Forest Service. Risks of damage caused by unpredictable weather and capricious winds should be borne by the public.

However, where prescribed fires escape due to carelessness on the part of the operator, or his failure to live up to the terms of his Burning Permit, he should be held responsible for not only the costs borne by the public in bringing the escape under control but also the damage caused to Crown

timber. I have the impression that losses occasioned by fringe burns are considerable and operators should be given this additional incentive to minimize them.

PROTECTION FROM INSECTS AND DISEASE

Forest protection embraces efforts to control both the ravages of fire and the less conspicuous but nevertheless important losses from insects and disease. The Forest Act imposes responsibilities for controlling insects and diseases which roughly correspond to those aimed at preventing the spread of fire. The Minister is empowered to require both private landowners and licensees of Crown lands to take remedial action to control forest blights and to isolate them through designation of quarantine areas. In the Minister's discretion, the Crown may share the costs incurred on private lands.

As a step toward co-ordinating forest pest programmes the Forest Pest Review Committee was struck in 1974, comprised of representatives from the Forest Service, six other interested provincial and federal government agencies, and three industrial associations. This group functions as a forum for discussing specific insect and disease outbreaks and recommending suitable control measures.

Responsibilities. Only under Tree-farm Licences are licensees given specific responsibilities for insect and disease control on Crown lands. In their management working plans, licensees are required to report potential damage and to take specific measures to meet threats. The licence contracts themselves commit their holders to control damage by insects (only) and to absorb one-half of the costs, to a maximum liability equal to the "total stumpage of that year's allowable cut".

Recommendations. My proposals on this question parallel those relating to fire protection. Private landowners should retain responsibility for the costs of controlling insects and diseases on their properties, in consultation with the Forest Service, and the current statutory duty to take such remedial action as directed by government should be maintained. Tree-farm Licensees should continue to assume primary responsibility under their renewed tenures for detection and control of outbreaks, but with two modifications to the current arrangements. First, the contractual obligations should be clear and should extend to controlling both insects and diseases, since there is no apparent logic in including one and not the other. Second, the licensee should not be required to shoulder any of the cost of approved control measures undertaken on Crown land. All approved expenditures incurred detecting and monitoring outbreaks should be treated in the same manner as other forestry costs in stumpage appraisals. Where definitive remedial action required to check the spread of blights—such as spraying or uneconomic harvesting—would otherwise impose heavy costs on the licensee, compensation in the form of cash will be more appropriate. Salvage operations in timber having positive value will be covered under salvage sales (see Chapter 16).

Under my proposed Forest Licences the responsibilities of licensees should be similar to those under Tree-farm Licences, their responsibilities extending over their licence areas. The Forest Service should retain primary responsibility for detection and control of insects and diseases outside licence areas.

Timber Licence and Timber Sale Licence contracts should provide that the licensee may be directed to take measures to control outbreaks of insects or disease on their licence areas, if the Forest Service deems them necessary.

FOREST VALUES OTHER THAN TIMBER

All of the major forms of tenure over Crown timber convey rights to occupy the land only for purposes of forestry operations. As the pressures of other uses and users of forest land have grown, some attention has been given to the possible advantages of conveying to licensees the right or obligation to assume some management functions relating to other resources and activities. Undoubtedly, the close proximity of licensees to the forest and their specific geographical interests often place them in an advantageous position to assume responsibilities for such things as fish and wildlife, and recreation management. Moreover, many licensees, under suitable financing arrangements, would welcome opportunities to assume such functions in areas where they are well established, and some of the larger companies already employ specialists in these fields.

In recent years, through its Recreational staff, the Forest Service has undertaken development of basic recreational facilities on Crown forest land. These sites vary in size from two to ten acres, and provide rustic camping, picnicking, and sometimes boating amenities. By the end of 1975 almost nine hundred projects had been completed by Forest Service personnel and contractors.

Licensees are increasingly concerned with the management of resources other than timber through the operational planning procedures described in Chapter 19. Under these arrangements the licensee plans his operations in close consultation with all concerned resource agencies, but beyond these requirements he does not assume responsibilities for any resources other than timber.

Hitherto, a few of the Tree-farm Licensees have provided recreational facilities on their licensed Crown lands and some other licensees have voluntarily built works such as picnic sites and boat launching ramps. Although neither the Forest Act nor the licence contracts sanction these activities they do not preclude them; the Forest Service has often authorized the projects but without reimbursement. Licensees have found it in their interest to undertake them not only to promote goodwill, but also as a means of controlling the dispersal of recreationists in order to facilitate protection from fire and other damage.

Some have suggested that in light of the limited staff and budgets of resource agencies such as the Fish and Wildlife Branch, greater advantage should be taken of the wherewithal and strategic location of forest companies for managing non-timber resources on land under their care, through contractual arrangements like those they have with the Forest Service. There are certain functions relating to non-timber resources that licensees are well placed to undertake, but this issue must be approached cautiously. It is not appropriate, in my opinion, to transfer to timber licensees authority to regulate other users of the public forests; this would inevitably lead to conflicts of interest. Nevertheless, it is often expeditious to integrate with the licensee's responsibilities some activities that relate to the management of other resources.

First and most obvious are the advantages of collecting information on a licensed area in an integrated and systematic way. With minor additional cost and broadening of expertise it is often possible to avoid duplication of field surveys for different resource values in an area. I discuss this issue further in Chapter 19.

Second, timber companies often are in the best position to construct recreational projects like camping and picnic sites, hiking trails, boat ramps, and other works that are needed in their licensed areas. In this respect they offer the potential for executing projects approved by the Recreation component of the Forest Service or other relevant government agencies. Third, licensees may be able to serve a useful function in assisting other agencies to monitor other uses, by means of such things as gates on roads for recording hunters and fishermen, or checkpoints for snowmobiles.

In order that these functions and resource programmes may be undertaken in a more systematic way than at present the major forms of tenures should explicitly permit them, under appropriate authorization and government supervision. This initiative should be pursued cautiously at first, under Tree-farm Licences and Forest Licences, to allow the government agencies and licensees alike to test its scope and to permit delegation of additional responsibilities on a selective basis. While contract documents should provide for this participation by licensees, these obligations should not be imposed against their will. The frame of reference for Tree-farm Licences and Forest Licences should be their licence areas. The short duration and small size of Timber Sale Licences and remoteness of most Timber Licences lying outside Tree-farm Licences will make these tenures unlikely candidates for delegation of many of these additional functions.

TREATMENT OF FORESTRY AND MANAGEMENT COSTS

At several junctures in this chapter I have referred to arrangements for reimbursing licensees for forestry and other management expenditures incurred by virtue of contractual obligations which go beyond the actual harvesting process. Under my proposals the range of such responsibilities will be widest under Tree-farm Licences, and narrowest under Timber Sale Licences. I will therefore conclude this chapter with a summary of the manner in which licensees should be reimbursed for undertaking these activities. The financial formulae that I recommend for forest roads in the following chapter parallel my proposals here.

In developing my recommendations on this issue I have followed a number of underlying principles. First, it is a matter of fundamental importance that the approved costs of only those activities which are authorized by the Forest Service or other government agencies should be reimbursed to the licensee. This long-standing policy should be retained by government as an indispensable control on expenditures of public funds on public lands. Second, arrangements for reimbursement should permit licensees to recover all of their approved costs and minimum stumpage rules should not preclude recovery. Third, the stumpage accounts can serve as a practicable vehicle for handling all costs relating to harvesting and forestry, but in order that public accounts will systematically tally expenditures incurred in generating benefits unrelated to forestry the stumpage system should not be used to

reimburse those costs. Finally, licensees should stand to recover expenditures on Crown land but not on private land. Eligible reimbursements should be treated in one of two ways: credits against Crown stumpage or cash payments.

CREDITS AGAINST STUMPAGE

Earlier I described the forest ledger techniques employed to reimburse Tree-farm Licensees the approved costs for their forestry responsibilities such as site preparation, planting, inventories, forest protection, and thinning. Their eligibility is subject to modified minimum stumpage rules and is dependent upon the portion of the annual harvest taken from stumpage-bearing "Schedule B" lands. A parallel system is applied to costs—mostly for site preparation and planting—incurred under Timber Sale Harvesting Licences. In both cases, when any of the species included in the relevant stumpage appraisal are at or near minimum levels the licensee is forced to absorb all or a portion of the expenditures he has made on public land.

When the government approves reimbursable expenditures, it is quite inappropriate to prevent licensees from recouping the costs in this way, although it now happens frequently. Nor should licensees be forced to carry the costs any longer than necessary. Accordingly, licensees should be compensated for approved forestry costs through direct credits against their stumpage assessments under the relevant licence. This will allow licensees to recover all approved costs, and compel them to carry the amounts only until their stumpage assessments can absorb them. As a general rule, forestry costs should be treated this way whenever they are incurred on Crown land subject to appraised stumpage.

If the royalties applicable to the old temporary tenures are revised to reflect appraised value, these reimbursement arrangements should apply to these rights as well. However, as long as the present fixed royalties are retained, the licensee should continue to absorb forestry costs incurred on these lands.

However, within Tree-farm Licences the present policy of pro-rating these costs according to the division of the licensee's harvest between "Schedule A" and "B" lands is distortive and illogical, and should be modified. Instead of the origin of the harvest, the Forest Service should look to the status of the lands where the costs were actually incurred. Thus costs incurred on any Crown-granted lands or old temporary tenures subject to fixed royalties should be absorbed by the licensee, and those incurred on other Crown lands reimbursed as stumpage credits. Most relevant costs are readily identifiable in this way; those few that are not (such as some planning and protection costs) can simply be apportioned according to the area of stumpage-bearing and other lands in the licence.

REIMBURSEMENT IN CASH

Payment for a number of responsibilities delegated to licensees under their tenures or otherwise should be made in cash rather than through credits against stumpage payments. Traditionally, where licensees have qualified for reimbursement for fire suppression, they have been compensated in this

manner. Owing to the potentially large and unpredictable outlays that may be incurred by operators in discharging their critical suppression duties, I recommend that this method of payment be continued.

Earlier in the chapter I proposed that licensees be given the opportunity to assume responsibilities for a number of resource management activities that are unrelated to timber harvesting: conducting inventories of non-timber resources, providing recreational amenities inside licence areas, and taking on other related activities. Reimbursement for these should not be effected through the licensee's stumpage accounts, but should be paid directly in cash by the relevant public agencies. It is important that public revenues from Crown timber are not artificially depressed and distorted through adjustments to stumpage accounts that have no direct bearing on forestry, so the costs of these functions should be clearly identifiable and separately budgeted.

ROADS AND PUBLIC ACCESS

Typically, harvesting operations must be preceded by construction of roads, since only rarely is the area to be logged already connected by a transportation system to the destination of the timber. Roads are the key element in forest development. A large proportion of the road construction in the province is directly linked to forest operations, at heavy expense. Each year, several thousand miles of forest roads are built under the authority of the Forest Service, at a cost almost as great as the annual construction budget of the Department of Highways and Public Works. Forest roads have a critical and lasting impact not only on forest management but also on the permanent transportation system of the province. As I explain in Chapter 20, their construction gives rise to some of the most serious environmental problems and they have important implications for forest uses other than timber production.

In recent years, roads (I include bridges, culverts, and other related works) have taken on much greater importance as activity has progressed into more remote areas and as logging operations have been dispersed in an attempt to reduce adverse environmental effects. In addition, construction standards have become more stringent to accommodate large modern trucks and the demands of the general public. The policy governing this important aspect of forest development is somewhat complicated, and has recently been reviewed elsewhere.¹ Here, my concern is with the rights and responsibilities of forest owners and licensees with respect to road construction and use; other aspects of road policy are touched on in Chapter 20.

RIGHTS-OF-WAY

To gain access to timber, operators invariably require rights to build and use roads. For roads which will be located on licensed Crown lands, the licensees do not require any separate right-of-way authorization; instead, the necessary authority is embodied in the usual tenure procedure. Thus, in Tree-farm Licences and the chart areas of Timber Sale Harvesting Licences, Cutting Permits covering the proposed route are all that are required. Old temporary tenures and ordinary Timber Sale Licences confer on the operator the right to harvest all of the timber included within their boundaries (subject to restrictions imposed in planning procedures) so with these no additional authority is normally required to construct and use roads on the area covered by the licence. Owners of Crown-granted land may in most circumstances build roads on their property as they see fit.

¹ Task Force on Crown Timber Disposal, *Timber Appraisal*, Victoria, July 1974 (hereinafter *Task Force 2nd Report, 1974*), Chapter 9.

Where an operator needs to build a road across lands that are outside his property or licensed area he must obtain special permission. The government does not normally become involved in providing any access a licensee may require across Crown-granted land owned by others. In some instances, however, where the road is to form part of a main road system to be used by the public, the Forest Service acquires the right-of-way across the Crown-granted land and may authorize the licensee to construct the road as a "Forest Service Road". Where the operator is left to make these arrangements and he is unable to privately negotiate terms with a landowner he may follow procedures in the Forest Act which authorize him to expropriate a right-of-way across private land, and pay compensation determined by arbitrators appointed under the Railway Act.

Rights-of-way across Crown land were, until recently, issued under two procedures, depending on the status of the land. Special Use Permits were issued by District Foresters over land within Forest Reserves, while a special letter of consent signed by the Deputy Minister of Forests (under the authority of the Minister) provided access across Crown land outside Forest Reserves. In 1972 these procedures were streamlined, with a single document being issued by District Foresters under delegated Ministerial authority, for both cases.

Occasionally the Forest Service undertakes construction of main access roads—called "Forest Service Roads"—on its own account, usually by letting the work out to contractors. In these and other cases where a licensee constructs a road and is reimbursed either in cash or by direct offsets against stumpage, or where ownership of a road reverts to the Crown after logging, the Forest Service has jurisdiction over its use. To use it for removing timber, a forest operator must obtain a permit from the District Forester, which often specifies that the operator will be responsible for road maintenance during the currency of his tenure.

Sometimes access to a tract of Crown timber is blocked by other tenures, and this is often the case with old temporary tenures located in valley bottoms. In many such cases the Forest Service has withdrawn a right-of-way from the obstructing tenure—leaving the tenure holder with any timber on the right-of-way area—and granted use of the right-of-way to the other operator. Some of the old temporary tenures provide specific authority for this procedure, while others—notably Timber Leases and Timber Berths—do not.

FINANCING ARRANGEMENTS

A variety of methods of financing the heavy costs of road construction have evolved in recent years, and these have an important bearing on the rights and liabilities of forest operators. For Forest Service Roads, the Forest Service pays construction costs directly from its budget. Some 1,300 miles of road have been constructed by the Forest Service in this way, mostly in the Interior. But this is now rare, and in most cases licensees take responsibility for constructing the roads they need under financing arrangements that do not depend on funds voted by the Legislature. These can be summarized as follows:

- i) The cost of all roads built on Crown-granted lands by landowners, and those built on old temporary tenures (either within or outside Tree-farm Licences) by licensees is borne entirely by the operator. However, if they are also used to remove stumpage-bearing Crown timber, part of their cost may be reimbursed in the appraisal as described below. The remaining categories relate to roads built to remove stumpage-bearing timber.
- ii) Costs of temporary roads, built to remove a particular stand of timber and then abandoned, are treated as a direct logging cost in stumpage appraisals.
- iii) Permanent "system roads", which are designed for longer-term use, attract two procedures. For all stumpage-bearing tenures in the coastal portion of the Prince Rupert District, and for Timber Sale Harvesting Licences in the Vancouver District, costs of these roads are entered on a special "road ledger" for the licence and are written off against stumpage levied on the timber hauled over the road as harvesting progresses. The procedure for such roads built on "Schedule B" lands in Tree-farm Licences is slightly different, but has the same effect. Under both, the approved cost is recovered through reduced stumpage charges except to the extent that it is applied against timber bearing minimum stumpage rates. When that occurs the licensee bears all or a part of road costs.
- iv) In the Interior the ledger system for "system roads" has been abandoned; their cost is now credited (or "offset") directly against stumpage assessments payable to the Crown and no stumpage is due until all the approved costs have been recouped. This corresponds to the arrangement I recommended at the end of the previous chapter for the treatment of forestry costs.
- v) There is an intermediate category of roads falling between strictly temporary roads and "system roads", which are intended to be used for several years but not permanently. Here the cost is pro-rated over the volume of timber to be hauled over them, and this per cunit cost is recognized as an operating cost in appraisals of the relevant Cutting Permits.
- vi) In all cases involving the stumpage appraisal system, approved outlays for road maintenance are treated as current operating costs.
- vii) When a licensee operating on a stumpage-bearing tenure obtains a right-of-way across someone else's Crown-granted land or old temporary tenure, his reasonable costs of acquiring use of the land and constructing and maintaining the road are recognized in his appraisals in much the same manner as for the various categories of roads built on Crown land.

TITLE AND RIGHTS OF ACCESS

Public highways may, of course, be used by anyone, subject to the laws governing traffic, vehicles, and so on. But many forest roads in the province are private property either because they are built on Crown-granted land or because they are given private status under the Forest Act. The latter has important implications for the rights of licensees and for public access to Crown land. In this connection it is important to keep in mind that, as a

general rule, the general public is not prevented from entering Crown forest land for recreation or other purposes; but difficulties may arise where the public endeavours to gain access to Crown land by using private roads.

Private roads. The use of roads on Crown-granted land may be restricted by the landowner under the general laws governing private property and trespass. Similarly, licensees who obtain rights-of-way over Crown-granted land owned by others may restrict traffic over them according to the terms of their private rights. In both cases operators may regulate traffic and use by invoking the Industrial Transportation Act, which is discussed below.

Some roads, even though they are built on Crown land, are treated as private roads under special statutory provisions. First, roads located by their holders on the old temporary tenures are deemed to be their private property. Moreover, whenever a road is constructed by a licensee without reimbursement through stumpage offset (or, more rarely, in cash) it is deemed to be his private property during the currency of his tenure. This rule embraces all coastal roads and temporary and "intermediate" roads in the Interior. Once a licensee has completed his operations, and the relevant tenure has expired, ownership of the road reverts to the Crown and it may come under the control of the Forest Service as a Forest Service road. In such case it is still considered to be the "private" property of that agency. These arrangements leave many forest roads classed as private property, and therefore without the freedom of access of public highways.

The designation of roads as the private property of licensees has important implications for control over use and liability for property tax. Under the Forest Act licensees may restrict the use of all roads which are deemed to be their private property. They may close them altogether or require others to obtain permission to use them, but if permission to use such roads on Crown land is unreasonably withheld the Minister may overrule the restriction, subject to any regulations approved under the Industrial Transportation Act.

Most licensees control the use of their private roads through the provisions of the Forest Act, described above. But the Industrial Transportation Act provides an alternative means for owners to control traffic and use of their private industrial roads. It enables the owner to prescribe rules for the road and to restrict road use, through regulations approved by the Minister of Transport and Communications. This option has been exercised by only a handful of forest companies, for regulating use of private roads built on Crown land as well as on their own Crown grant holdings.

Finally, even though many of these private roads are located on Crown land, they are taxed as the assets of licensees, under the Taxation Act. The one per cent improved land tax rate is applied to their assessed value, but an approximation of this levy is eventually claimed by licensees as overhead cost in appraisals of stumpage-bearing timber.

Forest Service Roads. Access roads constructed by the Forest Service on its own account are owned by the public, but come under the jurisdiction of the Forest Service rather than other provincial government departments which are concerned with public highways.² Similarly, roads constructed by licensees who receive reimbursement through stumpage offset or in cash are

² Jurisdiction of these other agencies, such as the Department of Highways and Public Works and the Department of Transport and Communications is excluded by the Forest Act, which designates these roads as "private roads" to distinguish them from public highways.

not considered to be the private property of the licensee, but come under Forest Service control. And when a road built on Crown land under other stumpage arrangements reverts to the Crown upon completion of a licensee's operations, the Minister may declare it to be a Forest Service Road as well, placing it under Forest Service jurisdiction.

The Forest Service is empowered to restrict or limit the use of these roads, or to close them entirely. Authority to use Forest Service Roads for industrial purposes is obtained through permits issued by that agency. The Forest Service reserves primary responsibility for road maintenance, although it sometimes effectively contracts this function out to Crown timber licensees through conditions in these permits and adjustments to stumpage levies. In contrast to owners of private roads on Crown land, licensees who use Forest Service Roads do not attract liability for property tax on them, nor may they restrict or prohibit their use by others. These qualifications are in keeping with their more public nature.

Frequently, Forest Service Roads, and "systems roads" that have reverted to the Crown without being given that designation eventually come to bear the heavy traffic of the public at large: for recreation, other industrial purposes, and so on. In these cases the Forest Service seeks to have them declared public highways so that responsibility for them will be assumed by the Department of Highways and Public Works. There is no general rule prescribing when such transfers of jurisdiction will take place; the agencies concerned consider each situation individually as it arises.

PROBLEMS AND ALTERNATIVE APPROACHES

It is obvious that the arrangements defining the respective rights and responsibilities of timber licensees and the Crown with respect to roads are extremely complex. In recognition of the large costs involved I have described current policy at length and in relatively fine detail. My proposals that follow are aimed at simplifying these arrangements, and making them more consistent and equitable.

As the burdens of constructing and maintaining roads have grown, and the demands of the public to use them have expanded, the present policies have given rise to increasing difficulties. In spite of recent innovations, existing arrangements are in some respects out of date with the current importance of forest road-building in the developing transportation infrastructure of the province, the heavy costs involved in their construction, and the multiplicity of demands placed on them.

The Forest Service has hitherto relied heavily on the initiative of timber companies for road planning and construction. But main roads designed to efficiently remove specific tracts of timber are sometimes not well suited to the long-term transportation needs of a region as it becomes developed and interconnected with other roads. In Chapter 19 below, in the context of resource development planning, I recommend procedures that will help to rationalize road design and quality with other needs, and again in Chapter 20 I question policies that inflate the need for road construction. But it also seems necessary for the Forest Service and the Department of Highways and Public Works to take a stronger initiative in this important activity, in ways that I outline below.

There is also cause for concern about the current methods of financing roads through adjustments to appraised stumpage. Undoubtedly many, if not most, road costs can properly be regarded as costs of removing timber. But it is not appropriate to charge the full cost of main roads against specific tracts of timber when they will eventually become part of the permanent public highway system of the province and used for a wide range of purposes. To do so involves using timber to artificially subsidize other industries and users. The timber can be properly debited only with the minimum cost of new roads required for its removal, including any necessary measures to ameliorate environmental damage but not the additional costs of providing new benefits. On the other hand, the road costs of some harvesting are underestimated, where the Department of Highways and Public Works must upgrade tributary public roads to accommodate heavy log hauling.

Moreover, the current methods of reimbursing licensees for road construction costs are inconsistent and inequitable. First, the approved costs are in some cases less than the actual costs incurred to build the roads authorized by the Forest Service in development plans. Second, whenever minimum stumpage rates apply, licensees whose roads are treated as logging costs and those who build "system roads" on the Coast under forestry ledgers are unable to recover even their approved costs; and this falls most heavily on those with the highest construction costs, in the poorest timber, in the most difficult economic periods. Third, the delay in recovering costs imposes a heavy financial burden, particularly for small enterprises.

Finally, the approval procedures for reimbursable road costs seem to lack clarity and consistency. The specifications for roads are often prescribed in addenda to Cutting Permits. These documents usually fix a ceiling on the costs to be approved, but leave the final settlement to be made after the road is built. However, I understand that in many cases the licensee's actual costs are not approved even when they are within the prescribed ceiling.

The 1974 Task Force on Crown Timber Disposal reviewed these problems in detail³ and made recommendations which I generally endorse, with some modifications and additions that reflect my wider terms of reference and other recommendations on tenure policy.

Road classification. All roads that fall under the supervision of the Forest Service should be designated according to a three-fold classification, reflecting their purpose and permanency, viz.:

- i) *temporary roads*—to include spur roads, skid roads, and other roads built to remove particular parcels of timber and then abandoned to revert to productive forest land.
- ii) *resource roads*—main roads built to remove timber over a wide area of several Cutting Permits, expected to have a useful life of several years but to be used primarily for log hauling and forest management.
- iii) *major roads*—main roads initially built for timber extraction but expected to become part of the permanent highway system.

Forest roads fall fairly clearly into these categories and they offer a less ambiguous and more consistent framework than the present designations.

Construction and maintenance. Roads classified as *temporary roads* should be designed and built by the licensee subject to the general approval of the Forest

³ *Task Force 2nd Report, 1974*, pp. 109-110.

Service under planning procedures, as at present. Approved expenditures should be treated as logging costs in stumpage appraisals, and be recovered to that extent by the licensee.

Under current policy most roads that would fall into the *resource road* category are designed and constructed by licensees, with at least some reimbursement through ledgers or offsets against stumpage. For the reasons I have given, these procedures place unnecessary burdens on licensees and should be abandoned. Approval of their location, design, and standards should be the responsibility of the Forest Service, after receiving the advice of other relevant agencies under the planning procedures I recommend in Chapter 19. Similarly, with *major roads* the Forest Service should take the lead in location and design, but with the advice of the Department of Highways and Public Works. In all cases efficiency will require that planning be conducted in close consultation with the licensees who will be using the roads.

Responsibility for financing *resource* and *major roads* should rest with the Forest Service, and not with licensees. A consistent theme expressed at my public hearings by industrial representatives was the inadequacies of present stumpage adjustments for financing heavy road construction costs. I consider it most important to disencumber the stumpage system and harvesting rights from the complications of public road construction.

Roads falling into the *resource* and *major road* categories should be put out to public tender in the same manner as public highways, and paid for in cash. The Forest Service will be free to let road construction contracts in whatever manner and according to whatever schedule will ensure greatest efficiency. As it is now, licensees often arrange for independent contractors to build roads they need, so in many areas the work may actually be performed by the same contractors under these reforms. In more remote locations where a contracting industry has not become established I expect that the timber licensee will often be the road contractor. But I have no doubt that these more direct contractual arrangements for road building will simplify forest tenure policy, permit control of road construction, be more appropriate to present needs, and provide more equitable financing arrangements for both road building and timber operations.

During the course of active logging operations licensees should continue to be responsible for maintaining *resource* and *major roads* on which they are the primary user. Being on the ground with their equipment places them in the most logical position to undertake these regular tasks; reimbursement should be effected through the stumpage system by including approved outlays as logging costs. Once logging has been completed, responsibility for maintaining those roads which will continue to have some use for other purposes should be assumed by the Forest Service until it is taken up by the Department of Highways and Public Works.

These proposals will be most readily adaptable to Crown forest land lying outside the old temporary tenures and the Tree-farm Licences. When introducing this programme, priority should be given to its application to Timber Sale Licences and Forest Licences. Here lie the chief advantages of my recommendations, relieving smaller operators from onerous engineering and financial responsibilities for roads.

As long as the old temporary tenures remain subject to fixed royalties, licensees should continue to construct and bear the cost of roads. If and when appraised royalties are introduced, *resource roads* and *major roads* built on these Crown lands should be constructed and financed by the Forest Service under the cash contract arrangement I have recommended above.

As long as licensees continue to be responsible for constructing roads on Crown lands under reimbursement arrangements, stumpage credits should be adopted as the method of reimbursing costs. But the procedures for cost approval should be improved. It is unsatisfactory that a licensee who builds roads to the specified standards is not reimbursed for the full cost as long as it is within the ceiling prescribed by the Forest Service. I propose that the procedures used should follow those normally adopted for highway contracts where approved costs are fixed in advance, expressed not in terms of the total cost of the project but as unit costs of moving material and so on. Final settlement can then be based on the measured volumes moved when the project is completed.

Ownership and access. As the Forest Service thus takes responsibility for planning and financing *resource roads* and *major roads*, the vesting of private property rights in roads built on Crown land will become obsolete. Ownership of these roads will vest in the Crown. The Forest Service should have direct responsibility for regulating their use, as Forest Service Roads, except for those that become public highways.⁴ Any special privileges accorded licensees and any responsibilities (such as maintenance) to be exacted from them should be set out in their tenure contracts. Without private property rights, licensees should no longer be liable for property tax on the roads they use.

It would likely be difficult to implement immediately all these proposals concerning road construction and financing on old temporary tenures and Tree-farm Licences, but apart from these aspects of policy I have concluded that my reforms aimed at providing public access to Crown forest land should be introduced at the earliest opportunity. As a matter of basic principle *resource roads* and *major roads* that are built on Crown land should be subject to public control and supervision, giving full recognition to the special safety requirements and the need to protect valuable machinery and equipment, both of which must be considered in light of the rugged roads used by heavy industrial traffic. In my opinion the public's interest is not adequately protected when companies are given almost blanket discretion to regulate road use on Crown land.

Accordingly I have concluded that the rules governing the use of roads built on Tree-farm Licences and old temporary tenures should be subject to the approval of the Forest Service. Legislation should clearly absolve licensees from liability for damage resulting from unauthorized use of these roads by the public or from the condition of the roads. Owners of Crown-granted land, including parcels within Tree-farm Licences, should have the common law right to regulate or prohibit entry onto their property, and to

⁴ To this end, s. 6 of the Highways Act should be amended to make it clear that expenditures on roads made by the Forest Service either directly or through stumpage will not necessarily bring them within the jurisdiction of the Department of Highways and Public Works.

make use of the Industrial Transportation Act if they elect to do so. However, as the Forest Service assumes control over access, use of that enactment will become redundant for roads built on Crown land. Finally, there will be no need for legislation to deem licensees to own these roads, with increased public supervision over their use. Hence they should not be treated as private property and property tax should no longer be applied to them.

It is obvious that my recommendations here and in the previous chapter imply some shift in financing responsibilities, from reliance on licensees and manipulation of stumpage assessments to direct public financing of more forestry and development programmes on Crown forest land. This will necessitate increased budgetary allocations to the Forest Service, but by the same token stumpage revenue should correspondingly increase. To the extent that forestry costs continue to be reimbursed through stumpage credits, as I have proposed, these expenditures will not be directly subject to legislative control, a serious matter which I return to in Chapter 25.

It will undoubtedly take the Forest Service several years to gear up for these new programmes. The shift from reliance on licensees and current financing arrangements will have to occur gradually, especially in road construction, to ensure that where the Forest Service takes responsibility its budgeting and technical capabilities will be adequate to keep abreast of the industry's needs for orderly development. But the Forest Service's immediate financial and personnel constraints should not be allowed to bias the balance of tenure forms, particularly between Forest Licences and Timber Sale Licences, because of their differing division of responsibilities between licensees and the Crown. That must be governed by the much more fundamental considerations of industrial strategy discussed in Chapter 23. It would be preferable, if necessary, to impose more responsibilities on Timber Sale Licensees for a time rather than prejudice the development of this form of right in the Public Sustained Yield Units.

TAXES AND OTHER CHARGES

Some of the most critical issues of forest tenure policy are the financial obligations imposed by the Crown. This is probably also the most contentious aspect of forest policy, at least as far as relations between the government and those who are liable for the levies are concerned. The special fiscal arrangements relating to forest land and timber are the subject of this chapter.

Several parts of my terms of reference limit the scope of my review and guide me in formulating recommendations. Within the general context of my investigation of forest tenure policy, I am explicitly charged to examine "the taxes, royalties, rentals and other charges levied upon forest land, timber and primary forest products . . .". Other references prescribe objectives for the design of recommendations. One is that:

The various public levies on, and the charges associated with the acquisition and retention of, Crown timber reflect the full value of the resources made available for harvesting, after fair and reasonable allowance for the costs of harvesting, forest development and profits; and that the various forms of public revenue derived from Crown granted and Crown forest resources are systematic, equitable and consistent with general taxation policy in the province.

These instructions limit my review of public levies to those that are embodied in the forest tenure arrangements. This is important, because some of the most important sources of public revenue generated by forest-based activity are in other forms, such as the corporation income tax, the personal income tax, indirect taxes on inputs, and the tax on logging profits, all of which are excluded.

Moreover, of the considerable variety of public charges that form an integral part of forest tenure policy, I am instructed to exclude from my review the two most important, namely ". . . the royalties payable by the holders of Timber Leases and Licences, Pulp Leases and Licences and Timber Berths, and . . . the general form of the stumpage appraisal system . . .". These are currently the two major devices used for appropriating the public's financial equity in Crown timber.

Finally, my recommendations are to be guided by the general need to ensure that "The efficiency and vigour of the forest industry is maintained", which must mean, *inter alia*, the opportunity to earn a competitive return on capital employed in the forest industry. Without that, as I have pointed out elsewhere in this report, it will not be possible in the long-run to attract the capital needed to maintain a dynamic and competitive industry, capable of harvesting, manufacturing, and marketing forest products to the province's best advantage.

These terms of reference are thus concerned with the aggregate impact of all forms of public levies, while my review excludes some of the most important. The broad objectives of appropriating the net value of Crown resources in excess of a reasonable profit allowance could be accomplished by a variety of combinations of public charges, some of which are excluded from consideration here and some of which are not. I have therefore taken the provisions of income taxes, indirect taxes, and other excluded levies as given, and designed my recommendations relating to levies under tenure arrangements to permit them, in combination with other fiscal arrangements not examined here, to meet the general objectives described in my terms of reference.

Since the taxes excluded from this review constrain the scope for capturing resource values through the devices considered here, their general impact must be taken into account. It should be noted, in particular, that the corporation income tax system in Canada offers no significant preferential treatment for forest-related income, in contrast to its special provisions for other natural resource industries. Nor does the federal government offer any other subsidies, direct or indirect, to forest enterprises that are not available to other industries; and even the Canadian tariff provides little protection for the main forest products. An exception that benefits only some sectors of the industry in some areas is the implicit subsidy on raw material to manufacturers in the form of federal and provincial export restrictions on intermediate products—the topic of Chapter 22. But by and large the forest industry has received remarkably little preferential treatment from any government.

In discussions of tax arrangements at my public hearings, representatives of the forest industry drew attention to the relatively high rates of corporate income tax imposed by the federal and provincial governments, and were critical of some of the provisions of that tax (particularly its treatment of depreciation). But, significantly, most seemed to consider that their industry is capable of paying its full share of the income tax, without special concessions, provided that other levies recognize its impact.

The province levies a special tax on income earned in the course of certain forest-related activities, the Logging Tax. Recent amendments to the Logging Tax Act passed by the Legislature (but not yet proclaimed at the time of writing this) will ensure that the tax is fully abated under the corporate income tax system, with the exception that it does not provide for the carry-forward of past losses. It is thus primarily a device for redistributing income between the federal and provincial treasuries, and has little net impact on the industry.¹ But it should be noted that the taxes on corporate income in the forest industry do not offer any significant opportunities to escape the full brunt of the standard rates applicable to business income, so that no special levies on the resource base can be justified on grounds of loopholes in the general tax system.

The kinds of levies that must be reviewed by the Commission include all those associated with the acquisition and retention of timber rights and with the harvesting of resources, apart from the exclusion relating to royalty and stumpage. These are charges that are therefore specific to the forest economy

¹ See *Task Force 1st Report, 1974*, pp. 32–4. The recommendations therein have since been embodied in the amendments mentioned above.

of the province. They include such diverse levies as royalty levied on timber cut on Crown-granted lands, property taxes, the forest protection tax, rentals and renewal fees, and charges for services such as log scaling.

OBJECTIVES

The public levies examined in this chapter are imposed through a variety of instruments, such as taxation legislation, the Forest Act, provisions in land titles, and contracts. Like forest tenure arrangements, the various taxes and charges presently in use have been introduced and modified over the decades as public objectives and revenue requirements have evolved, so that today they comprise a mixture of diverse levies with complicated interrelationships among them. This inquiry has led me to the conclusion that a thorough re-examination of all these provisions taken together is overdue. This subject has therefore been one which the Commission has attempted to examine particularly carefully, and the discussion in this chapter is supplemented with additional detail and analysis in Appendix C. I propose some rather substantial reforms; and in order that my recommendations be fully understood it is necessary to begin with an outline of the objectives on which the recommendations are based.

Total burden. Some broad objectives are, as already mentioned, specified in my terms of reference. One concerns the aggregate burden on timber and forest land, where a distinction must be made between the charges for public resources and the taxation of private property. With respect to the former, the objective is to appropriate the full net value of the resource after proper allowances for costs and entrepreneurial profit. There can be little doubt that the most effective means of accomplishing this goal over the extremely diverse public timberlands of the province is through separate assessment of each tract of timber. I conclude, then, that the stumpage system should be the primary instrument for appropriating the Crown's financial interest in public timber.

With respect to taxation of property, the instruction is to ensure consistency with general taxation policy in the province. I infer that this means that forest properties should bear tax broadly similar to the burden of the property tax on other properties, unless special considerations prescribe otherwise. The unique time pattern of revenues and investments in forestry pose a special problem in meeting this objective.

Equity. My terms of reference also refer to the need for an "equitable" system of public levies. I have interpreted this to mean that similar rights are to be subject to a similar burden.² Another aspect of equity relates to the impact of changes in policy. Significant alterations to the system of public levies are likely to result in windfall gains or losses to the holders of property or timber rights. I have therefore sought to reduce the extent to which my recommendations would produce large and irregular changes in private asset values.

Neutrality. The form and method of assessing public charges is often as important a matter of policy as the total revenue they exact, because the form

² This, of course, contrasts with a definition of equity based on the ability to pay of holders of rights; that principle, while suitable for such fiscal devices as income taxes, is precluded by the objectives outlined above. In any event, the levies on forest resources offer no feasible scope for recognizing the variations in income and wealth of licensees, landowners, or shareholders in the corporate owners of rights.

of levy may generate incentives to alter behaviour. Those who are subject to a charge naturally seek to minimize its burden, and there are few fiscal devices that do not create incentives to adjust liability by some modification of activity. Such distortions in behaviour are frequently accidental and unwanted features of levies designed solely for the purpose of raising revenue and they may impede realization of "the full contribution of the resources to the economic and social welfare of British Columbians . . .". It does not follow from this that taxes and charges should be totally neutral in their impact (even if that were possible) for it may be desirable to encourage certain actions, and the best means of doing this may be through fiscal incentives.

Such induced distortions in forest management practices are subtle, difficult to measure, and often unrecognized. I have the impression, moreover, that as the system of public charges has evolved over the years these implications (in contrast to the revenue aspects) have never received the analysis that they warrant. I have therefore paid special attention to features of the revenue system that encourage undesirable resource management decisions.

Local revenue. General taxation policy presently enables local and regional governments to share in the yield of property taxes. Local participation in the value of forest resources is desirable as a means of promoting interest in resource management. I do not consider that the division of public revenues among governments falls properly within the range of this inquiry, but in designing my recommendations I have sought to provide scope for local participation in forest revenue.

Efficiency and simplicity. My instruction to ensure that the system of public levies is "systematic" implies the need for an orderly structure—a coherent set of charges that clearly serves the other identified objectives. I have therefore attempted to find alternatives for existing levies that incorporate elements of arbitrariness or lack consistency with other arrangements. It is also desirable that public charges be as simple as possible, not only in the interests of economy in public administration but also to enhance public understanding of policy. I do not seek simplicity for its own sake, however; fiscal arrangements must often be complicated in order to equitably and consistently cover a wide variety of circumstances. But within the constraints of other objectives I have sought ways of simplifying the complex of public levies: by eliminating some that no longer serve a unique or necessary purpose, by substituting simpler forms, and by combining others.

REVENUE SOURCES

To provide some initial perspective for the following review of forest charges, Table 13-1 lists the various forms of levies considered and shows their yields in the calendar year 1974.³ In order to identify the levies on timber and land used primarily for forestry purposes the data in Table 13-1 exclude property taxes on forested land within municipalities. Such lands

³ A comparison of revenue yields, as in Table 13-1, for any one year may be misleading, because some revenues fluctuate widely. The figures for 1974 are much more indicative of the typical relative magnitudes of the various revenues than those for 1975. Stumpage was very low in 1975 by historical standards, but forest land assessments, which normally vary with stumpage, were frozen at their high 1974 levels (apart from revisions to cruise information and to Taxation Tree Farm working plans). The assessment freeze and the increased mill rates that followed resulted in property taxes on forest land in 1975 being disproportionately high compared with stumpage. This abnormality will persist in 1976 with little increase in stumpage revenues and further increases in mill rates.

are relatively insignificant in the total forest land of the province, and in any event non-forest values typically dominate within municipal boundaries. Taxes on improvements on forest land also are excluded.

The total yield from all these charges of \$196 million represented about 8 per cent of gross provincial revenues in 1974. Stumpage revenue dominates the total, but it fluctuates widely from year to year because of its sensitivity to markets for forest products; the corresponding revenues in 1973 and 1975 were \$251.8 million and \$28.4 million. The other sources are much more stable, although they show the general long-term trends discussed below.

Table 13-1
REVENUES FROM FOREST RESOURCES IN 1974

type of levy	revenue yield ¹	share of total
	thousands of dollars	per cent
provincial property tax ²	3,491	1.8
schools tax ²	5,774	2.9
other property taxes ²	1,125	.6
stumpage	169,699	86.5
royalty	8,221	4.2
scaling fees	5,724	2.9
annual rentals, and renewal, advertising and transfer fees	1,214	.6
forest protection tax	1,028	.5
total	196,276	100.0

¹ Figures show amounts charged, which differ slightly from amounts actually collected in the same year.

² Figures refer to amounts charged on properties outside municipalities only. Taxes on improvements are excluded.

Source: Compiled from B.C. Forest Service *Annual Report*, 1974; and *Comments of Surveyor of Taxes to Select Standing Committee on Municipal Matters Concerning Real Property Taxation in Rural Areas of British Columbia*, September, 1974.

ROYALTIES ON CROWN-GRANTED LANDS

Most of the royalty revenue shown in Table 13-1 was generated from timber cut on the old temporary tenures. Timber harvested on Crown-granted lands yielded, in 1975, only 23 per cent of total royalty revenue.

LIABILITY AND REVENUES

The royalty liability of timber on Crown-granted land depends upon the statutory provisions that existed at the time the land was alienated, and these have changed over the years. Generally, there are three categories, and the areas in each still in private title and their respective royalty rates are summarized in Table 13-2.

Table 13-2
ROYALTY YIELDS ON CROWN-GRANTED LANDS IN 1975¹

date of alienation	total area (thousands of acres)	harvest (thousands of cunits)	royalty rate	royalty revenue (thousands of dollars)
pre-1887	1,567.9	1,294.4	0	0
1887 to 1914	541.5	345.5	30¢/cunit	103.7
post-1914	230.3	586.6	per statutory schedule	1,292.0
total	2,339.7	2,226.5		1,395.7

¹ The data in this table are drawn from several sources that are not altogether consistent.

The lands that were originally granted prior to April 7, 1887 comprise about two-thirds of the total, and are exempted from royalty. Of the more than one and a half million acres in this category, most are within the Esquimalt and Nanaimo Railway Belt on Vancouver Island.

There remain in private title some 542 thousand acres of lands originally granted between April 7, 1887 and March 1, 1914—about 23 per cent of the total—and these bear royalty at a fixed rate of 30¢ per cunit as specified in Crown grants and legislation. These lands are scattered over the regions of early settlement.

The third category comprises lands alienated since March 1, 1914, after the policy of non-alienation of title to forest lands was a well-established feature of provincial land policy. Most of the lands in this class were thus granted ostensibly for purposes of agriculture and settlement, with forest values considered incidental at the time. Nevertheless, nearly 10 per cent of all the Crown-granted forest lands shown in Table 13-2 fall into this category. These lands are subject to royalty rates set out in a detailed schedule in the Forest Act, the rates varying among Forest Districts and among the species and grades of timber harvested. This schedule has been revised many times since 1914, most recently in 1968. Today, the highest rate is \$5.10 for No. 1 Douglas fir in the Vancouver Forest District and most rates are considerably lower. The average charge in this category in 1975 was slightly more than \$2.00 per cunit.

EVALUATION AND RECOMMENDATIONS

Several features of these arrangements should be noted. First, the royalty liability varies among private lands according to the date of their original alienation. These differences reflect the scope of property rights conveyed at the time of alienation, and are now built into the land values of the properties. Second, even within a category of land that bears royalty, the share of the timber value exacted varies capriciously. In the 30¢ per cunit category, the burden varies inversely with the value of the timber harvested, and in the category subject to statutory rates the impact is rather random, based as it is on obsolete grades and varying somewhat arbitrarily with species and regions.

Third, the burden of fixed royalties varies with changes in the market value of timber, and in the long run their impact is eroded by decline in the value of money. To illustrate, a royalty of 30¢ in 1914 would have to be roughly five times that amount, about \$1.50 in 1976 dollars, to be of equal value today; and, of course, the percentage of timber value it represents has changed dramatically and inconsistently. Fourth, where such royalties are charged, they create incentives to distort management and harvesting (although the rates are probably too low to have much impact of this kind, and in any event would be controlled on lands included in Taxation Tree Farms or Tree-farm Licences).

I do not regard any of the above as compelling reasons for revising the royalty rates on private land, but there are other reasons why reform is warranted. One is that the revenue these royalties generate is small, and threatens to be overtaken by the costs of scaling and collection. According to the best estimates available to me, the cost of "stick-scaling" (the method most commonly used on the Coast, where most of these lands are located) alone approximates 70¢ per cunit. This means that by the time the Forest

Service bills them for the cost of official scaling, owners of lands subject to 30¢ royalty incur a cost of about \$1.00 per cunit for a revenue to the Crown of 30¢. On lands subject to the statutory schedules of rates the costs amount to about a third of the royalty revenue.

Even weight scaling now costs an average of 45¢ per cunit, and as I point out later in this chapter, scaling costs are rising rapidly. Moreover, official scaling is not the only cost in royalty collection; there are considerable private costs in providing facilities and in log handling practices to permit the scaling, and there are administrative costs in data processing, billing, and collection. Not all of these costs are attributable solely to the scaling of logs from Crown-granted lands for royalty purposes, but there can be little doubt that the cost of collecting royalty has already outstripped the revenue yield on much of the timber assessed, and that the difference is widening.

Not only are the revenues small in relation to the cost of collection, but they are offset to a greater or lesser extent in property tax assessments. Every dollar of royalty liability reduces the property tax assessor's estimate of the value of the timber on these lands. I suspect that the implications of this have not been fully appreciated, and in Appendix C I attempt to throw some empirical light on them. As near as I can estimate, these royalties reduced the yield of property taxes on private lands in the order of \$85 thousand in 1974.⁴

Analysis of these property tax savings on individual parcels reveals that they accumulate in the last few years prior to harvest to a large fraction of the royalty payable. In some circumstances the accumulated saving can exceed the royalty itself, which leads to the somewhat paradoxical result that when owners carry timber over many years they enjoy a fiscal advantage if it is subject to royalty, and that total government revenues are reduced by the royalty levies.

For all of these reasons, I have concluded that the public interest will be best served by abolishing royalty liability on Crown-granted lands altogether. It has obviously become an exceedingly inefficient method of collecting public revenue, particularly insofar as the revenue is offset in other payments to the Crown. These deficiencies might be tolerable if the royalties served a special and unique function in the revenue system, but they are now a very minor item in provincial revenues that reduce the tax base of other levels of government that have much narrower options for raising funds.

I should briefly explain why I have rejected alternative policy revisions. I have considered increases in royalty rates, but any such change would require legislative action to, in effect, expropriate part of the property right of landowners. Such solutions should be avoided unless there are no other means to accomplish the needed result. I have explained that the existing property tax will to some extent pick up reductions in royalty. In the next section of this chapter I recommend revision of property tax arrangements as they apply to forest land. Under the proposed system, the offsetting effect of royalties will remain. Hence the abolition of royalties on Crown-granted lands will not only eliminate the costs associated with their collection but their yield will be recouped in part through higher property tax revenues.

I noted earlier that the statutory royalty schedule applicable to post-1914 alienations has been repeatedly revised. That schedule applies most importantly to the old temporary tenures, where there is no question about the

⁴ See Appendix C.

Crown's right to alter the charges levied on timber cut on Crown lands. I should point out, incidentally, that there is considerable room for doubt about the legality of revisions to royalties applicable to Crown-granted lands by this means.

As a substitute for the present royalty structure I have also considered the alternative of an *ad valorem* yield tax on timber cut from Crown-granted lands, as proposed by several participants at my public hearings. This is a direction of reform that has recently been adopted in the northwest United States although in some parts of Europe this approach is being abandoned. Many disadvantages of the present royalty arrangements would be avoided by this alternative; but in Canada it would almost certainly be challenged on constitutional grounds as an indirect tax, lying beyond the legislative authority of the province.

PROPERTY TAXATION

The present property tax system in British Columbia is exceedingly complicated and certain reforms in policy are currently underway. In addition to recent statutory changes, there is, as this report is written, another Commission—the Commission of Inquiry on Assessment and Taxation—investigating the property tax structure in the province. In view of that inquiry I have tried to restrict my review as far as my terms of reference permit, considering strictly the problems that relate to the taxation of timber and forest land, and recognizing that any changes in this policy may have to fit into a different structure of property taxation than now prevails.

The most important property taxes now levied on forest land and timber are the *provincial property tax* and the *schools tax*, but there are also several minor forms levied for special purposes. Statutory authority varies for the different levies and the rates of tax are determined by different agencies, as described in detail in Appendix C.

PROVINCIAL PROPERTY TAX

Provincial property taxes are levied under the Taxation Act, which applies to rural areas—the 99 per cent of the province that lies outside municipalities. The revenue generated from forest land accrues to the province's general fund, but it is a small proportion of provincial revenue, and indeed is small in relation to other forms of forest revenue, as Table 13-1 indicates. It falls mainly on Crown-granted land and privately owned improvements on them.

For property tax purposes, lands are categorized into classes. The main classes of forest land are listed in Table 13-3, which shows also their total areas outside municipalities in 1976. The classes are defined according to criteria set out in the Taxation Act. In summary:

forest land is land in the old temporary tenures, and is the main exception to the general exemption of Crown land from property taxation. Those tenures that are incorporated into Tree-farm Licences are exempted, however, and this provision removes liability from more than half of the total acreage of old temporary tenures now held. Since areas from which the original timber is removed are deleted from these tenures, a large portion of the present acreage supports mature timber.

timber land is Crown-granted land held for forestry purposes containing a minimum average volume of standing timber per acre for each parcel. A substantial proportion of the private land that supports merchantable timber is in this class.

tree-farm land is land that is included in Taxation Tree Farms, and is by far the largest class in terms of acreage. Table 13-3 shows that a relatively small proportion of these lands supports mature timber. The remainder consists of 751 thousand acres of immature timber and 178 thousand acres of "non-commercial" cover and "not satisfactorily restocked" land.

wild land is private land that does not fall into the preceding categories or any non-forest category (such as farm land) and does not contain substantial improvements.

improved land is the residual class, comprised of private lands that do not fall under any of the above categories or any other class. Only a small portion of these lands is reported as "timbered".

Table 13-3
MAJOR FOREST LAND CLASSES CONTAINING TAXABLE FORESTS
IN 1976

land class ¹	total area	mature timber
	thousands of acres	
<i>forest land</i>	768.3	435.2 ²
<i>timber land</i>	670.2	332.2 ²
<i>tree-farm land</i>	1,331.2	266.8 ³
<i>wild land</i>	219.8	118.5 ²
<i>improved land</i>	120.5	37.4 ²

¹ As defined in the Taxation Act. These figures do not correspond precisely to forest inventory statistics because of differences in definitions and the exemption from tax of many parcels of forest land.

² Area reported as "timbered".

³ Area reported as "mature cover".

Source: Timber Appraisal Section of the British Columbia Assessment Authority.

Much of the *wild land* and most of the *improved land* is valued primarily for purposes other than forestry, but available data do not permit identifications of the relevant proportions, and so the totals are included here for completeness.

Timber is assessed and taxed as part of the land, rather than as an improvement. Improvements on a parcel of land may determine its classification, but they are assessed separately, and privately-owned improvements are subject to tax whether they are located on Crown or private land. The only privately-owned improvements exempted are those that are for purposes of forest management on Taxation Tree Farms.

A major category of improvements on forest lands is roads, which are much more important to forestry than to most other land uses. As explained in Chapter 12, roads located on either private or Crown land are generally regarded as private property for tax purposes unless they are built or maintained at government expense (directly, or indirectly through offsets against stumpage assessments), and they continue to be liable to tax as long as they remain in use.

The procedures for determining the taxable values and the tax rates applied to each class of property are described in Appendix C. For lands other than *tree-farm land*, Area Assessors of the British Columbia Assessment Authority estimate values for land and timber from observed sale prices of properties with similar characteristics. Where market information is lacking, the timber is valued on the basis of the previous year's stumpage prices for Crown timber in the region, reduced by the amount of any royalty payable; and this is combined with either the Area Assessor's estimate of the bare land value or a nominal land value.

Tree-farm land is evaluated by a special procedure which provides a fiscal incentive for private forest land owners to practise sustained yield forestry according to an approved management plan under the Taxation Tree Farm system. Each Taxation Tree Farm is evaluated as a unit, which may consist of a large number of parcels under separate title. The value of the unit is the calculated present (discounted) value of the future net revenues it can be expected to yield under the approved plan. Stumpage values are estimated from current Forest Service appraisals in the same region with deductions for any royalty payable and for costs incurred in managing the land. The value of expected future harvests is discounted at 14 per cent per year—a rate which is intended to allow for annual property taxes as well as a reasonable rate of return on the forest investment. This system typically results in lower taxes than on comparable lands in other classes for reasons explained below.

These procedures are used to determine the full or “actual value” of land and timber as determined for tax purposes. For *tree-farm land* this actual value becomes the tax base, or “assessed value”. For other classes of land, the assessed value is 50 per cent of actual value. The assessed value of improvements is also 50 per cent of their actual value, but they are taxed on only 75 per cent of their assessed value so, through this rather tortuous process, the tax is levied on 37.5 per cent of the actual value of improvements. The tax rate is currently 1 per cent on improvements, *improved land*, *forest land*, and *tree-farm land*; 1½ per cent on *timber land*, and 3 per cent on *wild land*.

Assessments are made by the Assessor in each of 27 Assessment Districts in the province; and the taxes are levied and collected by the Surveyor of Taxes in the Department of Finance. Total tax yields are indicated in Table 13-4 for 1974 (the freeze on forest land and other assessments resulted in abnormally high taxes in 1975).

SCHOOLS TAX

The 75 School Districts that cover most of the province levy a tax on property at varying rates to finance the costs of public schools as provided under the Public Schools Act. Liability to this tax differs in three respects from that under the provincial property tax: all Crown land is exempt, including the *forest land* taxed under the provincial property tax; the improvements on Taxation Tree Farms exempted under that tax are subject to schools tax; and the definition of improvements on *improved land* is much broader for schools tax.

The rate of schools tax varies as a result of the complicated arrangements for school financing described in Appendix C. In 1974 the levy ranged from 26 to 41 mills in districts with significant forest lands and averaged about 33 mills. With the assessment freeze in effect, the average rate rose to 41 mills in 1975, and it will rise substantially again in 1976. For rural properties the schools tax is collected by the Surveyor of Taxes in conjunction with the provincial property tax.

OTHER PROPERTY TAXES

In addition to provincial property tax and schools tax, a variety of other taxes are applied to rural property to provide revenue for special purposes.

Table 13-4
PROPERTY TAXES ON FOREST LANDS, 1974

land class	provincial property tax		schools tax		other property tax yields ²	total tax yield
	taxable value ¹	tax yield	taxable value ¹	tax yield		
	thousands of dollars					
<i>tree-farm land</i>	55,623	556	55,623	1,829	324	2,709
<i>timber land</i>	105,066	1,563	105,066	3,531	722	5,816
<i>wild land (forestry)</i>	12,702	374	12,702	413	79	866
<i>forest land</i>	99,702	997	—	—	—	997
total forest land	273,094	3,491	173,392	5,774	1,125	10,389

¹ See text for definitions.

² Includes Regional District taxes, Hospital District taxes and Improvement District taxes collected by the Department of Finance, thus excluding minor amounts levied by Districts themselves.

Source: Comments of Surveyor of Taxes . . ., *op. cit.*

To serve particular functions, the entire province is divided into both Regional Districts and Hospital Districts, constituted under the Municipal Act and the Regional Hospital Districts Act respectively. Improvement Districts and water users' committees have been established under the Water Act and Municipal Act only where a particular need has arisen. The Department of Finance levies and collects the taxes on rural property on behalf of most of these districts, and wherever this is the case the tax base is the same as the schools tax base except where a special statutory exemption applies (notably the special exemptions for the property of B.C. Hydro and Power Authority). The yield of these taxes is a small part of the total on forest lands but it has grown rapidly in recent years.

A special tax on lands within the Esquimalt and Nanaimo Railway Belt was introduced in 1950, and provided for a once-only tax of 25 per cent of the assessed value of lands sold by the railroad company after February 20, 1946. Since all the relevant lands have now been alienated from the company this tax no longer applies, except insofar as some payments remain due from past sales.

PROPERTY TAX YIELDS

The taxable values that constitute the base for the various forms of property tax and the yield generated in 1974 are summarized in Table 13-4 for the various classes of forest lands. *Improved land* is excluded, since most of it is not valued primarily for its forest growth but rather for improvements on it and for its location for industrial uses. *Improved land* and improvements account for more than half the total rural property taxes paid by the forestry sector except in years following very high stumpage prices.

Taxes on forest lands have risen at about the same rate as total taxes on rural properties over the past decade, a rate of approximately 10 per cent per year. They represented about one tenth of this total in 1974. Since the assessed value of forest lands depends on stumpage values which fluctuate widely with the vicissitudes of forest product markets, the taxes on these lands exhibit much greater year-to-year variation than those on most other properties.

Of the \$10.4 million in property taxes derived from forest lands (excluding *improved lands*) in 1974 the largest sources were *timber land* and *tree-farm land*, accounting for 56 and 26 per cent respectively. *Wild land* held for forestry purposes accounted for only 8 per cent, and *forest land*—the old temporary tenures outside Tree-farm Licences—contributed 10 per cent.

The schools tax is easily the largest tax on forest lands, accounting for 56 per cent of the total in 1974 compared with the 34 per cent accounted for by the provincial property tax and the 11 per cent by the other property taxes levied by the Department of Finance. The provincial property tax share was quite stable during the decade prior to 1974, while the schools tax share declined by about one per cent per year and that of other taxes quadrupled.

PROBLEMS AND NEEDS

Property taxes are by far the most important source of public revenue from private forest lands in the province. The existing arrangements treat the different classes of forest land with conspicuous inconsistency, and increasing

rates (especially the sharp increases in the last two years) have made a re-examination of the system more urgent. For the reasons already explained, I direct attention in what follows mainly to the taxes on *timber land*, *forest land*, and *tree-farm land*.

A matter of primary importance is the extent to which the taxes appropriate the value of the taxed property. Land classed as *timber land* is taxed mainly on the value of the standing timber it supports. Landowners who carry an inventory of mature timber soon find that an annual tax levied on this basis accumulates, at even moderate interest rates, to an amount that exceeds the full value of the crop. This is obviously a strong incentive to cut the timber, thereby eliminating this tax burden.

Such a tax is also a strong deterrent to growing new forest crops. Under present arrangements, these lands are held in the *wild land* class until the timber reaches the volume per acre specified for the *timber land* category.

Even if this regime is followed to the best advantage of the landowner the taxes will exceed the crop's value well before it reaches a typical harvesting age. Indeed, the taxes on the last 15 years or so of the growing period are sufficient alone to approach the ultimate stumpage value.

The distortions in forest practices that result from such taxes have been analysed extensively in the forest economics literature. Moreover, forest owners, both large corporations and small landowners, have drawn the attention of the Commission to this serious obstacle to the practise of forestry on lands taxed in this way. As long as property taxes are confiscatory to this degree, owners will have a strong incentive to keep their lands denuded of timber. Rational landowners cannot afford to follow normal forestry practices under such a tax arrangement, unless the forest contributes some other value as well or unless they are prepared to speculate on a very sharp rise in stumpage values at the time of harvest.

This problem results from the method of assessment. Each year the crop is taxed on its current value, as if it were harvested that year. It is so taxed year after year, increasingly heavily if the crop is growing, until it is actually removed. With this sort of a tax system, growing timber to harvesting ages typical in this province is not economically feasible when the cumulative burden of the tax is considered.

I have concluded, as have most others who have analysed the question, that this form of taxation is inappropriate for commercial forest lands. I recommend that it be revised to take account of the periodicity of forest yields, and in such a way that these lands can bear their full share of property taxes without interfering with efficient forest management. My proposal is described in more detail below.

The tax on *forest land*—the old temporary tenures outside Tree-farm Licences—is similar in form, but it presents a less serious problem. First, the total weight of property taxes is much lower, because the schools tax and other minor levies do not apply, leaving only the one per cent rate under the provincial property tax. Second, since these lands revert as the original timber is removed, the disincentive to growing successive crops does not apply. Like the taxes on *timber land* it creates an incentive to liquidate mature timber, but its impact is much less and probably insignificant in relation to the interest cost implicit in carrying an inventory of such timber. Finally if royal-

ties on these tenures are in future based on full appraised values, the property tax base will be effectively eliminated. For these reasons I recommend that this tax be abolished; or, if the present fixed royalties are retained, it remain unchanged.

The tax on *tree-farm land* is the only one that recognizes the time pattern of yields from forest crops and the large inventory that must be carried to produce timber on a continuing basis. In contrast to the treatment of other classes of land where taxes are based on the current market value of the standing timber, *tree-farm land* is assessed by calculating the present (discounted) value, net of management costs and royalty, of the crops to be harvested in the future, according to the management plan approved for the Taxation Tree Farm. The discount rate used in these calculations is 14 per cent, which allows for the present average tax rate of about 5 per cent and an allowance for a return on capital of roughly 9 per cent.

Although the assessed value of *tree-farm land* is the full estimated value (rather than half this amount as for other land classes) this tax system typically yields substantially lower assessed values, for two reasons. One is that any values this land may have in uses other than forestry are always ignored, in contrast to the market-indicated values normally used for other classes of private land. This is a concession of some significance, since much of this land is in relatively well developed areas of the province. The second reason is the evaluation procedure, which effectively anticipates the future harvests from presently mature or immature timber, applies current stumpage values to the volumes estimated, discounts the indicated future values at 14 per cent per annum, and sums these present values to get the assessed value. For management units with most mixtures of age classes, this procedure results in significantly lower taxes than the land would bear if classed as *timber land* and *wild land*. This is particularly true for those with mature timber to be harvested over several decades.

Today, 26 of the 48 Taxation Tree Farms are taxed on the basis of a constant, sustainable, annual harvest. For these, the current average tax rate applied to *tree-farm land* will take approximately 35 per cent of the value of each year's harvest.⁵ This remains true whether the volume of mature timber is just sufficient to maintain present harvests or is greatly in excess of this amount. Taxation Tree Farms with a high proportion of immature timber, which currently yield harvests well below their ultimate sustainable capacity, have tax burdens considerably higher than 35 per cent of the unit's present and prospective revenues. While the tax burdens on lands in the *tree-farm* class represent a concession in comparison with those they would bear as *timber land* and *wild land*, the burdens are not light; and taxes absorb a fraction of anticipated timber revenues that is higher than corresponding figures for other rural properties.

In principle, this method of taxing forest land has much to commend it. It allows an owner to manage his lands for continuous production and to spread his harvest of mature timber over time in an orderly manner, a practice which is severely penalized under *timber land* taxation. It also reduces incentives to harvest new timber before it reaches its most valuable cutting

⁵ Since the value of the present harvest is projected unchanged into the indefinite future, this 35 per cent is simply the ratio of the tax rate (in per cent) to the 14 per cent discount rate used to capitalize the value of the annual harvest.

age. But the Taxation Tree Farm system as it is presently administered suffers several shortcomings which should be rectified.

One is that the assessed value depends critically on the planned harvesting schedule. Owners are permitted to vary their harvests only within prescribed limits, described in Appendix D. Within the limits allowed, they can be expected to cut more when timber markets are strong and less when they are weak; to the extent that they do this their effective tax burden is reduced, because their revenue over time will exceed the estimates used in assessments. A serious inequity can arise if an owner cuts more than is specified in his plan: he obviously pays less tax than if the assessments were based on his actual behaviour; and if his cutting reduces the planned future harvests when working plans are revised he is further rewarded by a tax reduction. Thus plans, and performance, must be kept under close scrutiny. Proper adjudication calls for a difficult combination of sensitivity to the tax implications of harvesting plans, to the possibility of tax avoidance and abuse of the system, and to the costs that compliance with the plans imposes on the landowner. Currently, those who must administer Taxation Tree Farms do not seem to have either the power or resources to protect adequately the Crown's fiscal interest in the system.

The administrative complexity of the system is also a deterrent to its widespread adoption beyond the large corporate owners. The necessity of preparing working plans, obtaining Forest Service approval of them, complying with their requirements and filing annual reports undoubtedly dissuades those with small holdings from taking advantage of the *tree-farm land* class, even if they understand its tax benefits.

All this raises a fundamental question about the necessity of enforcing sustained yield plans on these lands. Many Taxation Tree Farms are managed as integral parts of Tree-farm Licences; most others are held by companies with other timber holdings as well; and some of the small ones are not suited to continuous harvesting. Elsewhere in this report I have argued that forest policy should be directed toward maintaining forest lands in a productive condition, and that it should be less concerned with rigid controls on harvest scheduling within areas that comprise only a fragment of a meaningful timber supply region. Indeed, adjustments in harvesting that will increase the value of forest yields should be encouraged rather than constrained.

The Taxation Tree Farm system is much too restrictive: its rules impede the flexibility needed to manage and harvest in the most beneficial way. The 1956 Sloan Report expressed a similar concern:

. . . present tree-farm legislation is, in my opinion, unsuitable and its detailed requirements unnecessary. Both this Commission and that of 1944-45 were informed by competent witnesses that in Scandinavian countries such owners are required merely to maintain their forests in continuous growth, without any restriction or regulation of cutting on a sustained-yield basis, but prohibiting devastation of mature forest and cutting of immature forest except in such a way as will improve its condition.

. . .

It seems evident that the requirements of certification and assessment need revision and simplification if improved forest management on privately owned forest lands outside management licences is to be encouraged.

. . .

In place of the (present statutory) definition of "tree-farm land" . . . I would suggest any land which (a) has been included in a forest management licence [i.e. Tree-farm Licence], or (b) is being used by the owner for the continuous growth of trees of commercial value.⁶

The Commissioner considered it redundant to include formal provisions for reforestation and protection since they are implicit in his definition above. With deference to the Commissioner I would go further, and suggest that his second definition, (b) above, is all that is required, since it clearly covers his first definition (a) by the very purpose of Tree-farm Licences.

My proposals for tax reform therefore involve eliminating both the dependence of assessments on a long-term harvesting plan for each unit and the restriction of owners to the predetermined harvesting schedule. I am concerned also to rectify three other shortcomings of the present arrangements. First the tax is very sensitive to the more or less arbitrary rate of interest used to discount the value of future harvests. Even if the rate used is appropriate at some moment, it will not remain so as economic conditions change. Second, the present Taxation Tree Farm system can be used as something of a tax shelter. Owners may enjoy tax advantages on this land by virtue of its commitment to continuous forestry under a plan approved by the government; but when its value in other uses rises they may withdraw land from this commitment without penalty, which prejudices the public's interest in the arrangement. Third, the present weight of the tax is excessive in relation to the tax burden on other rural properties.

TOWARD AN IMPROVED FOREST TAX SYSTEM

The above shortcomings of the present tax arrangements force me to conclude that the objectives in my terms of reference can be met only if the system is substantially revised. I therefore propose modifications to the *tree-farm land* tax provisions that will permit this class to be used for all private lands that find their best use in timber production. For reasons already explained I am particularly concerned that the tax system avoid tax-induced distortions in forest management, and that forest lands bear their fair share of taxes in relation to other properties.

The tax base. The best tax arrangement for forest lands is undoubtedly one which does not depend upon the particular spectrum of age classes in any year or the prescriptions of a preconceived harvesting pattern. As long as the land is kept in a productive condition and minimum requirements to protect environmental values are met, owners should be encouraged to manage and harvest their lands flexibly to realize their full economic potential. I therefore propose a tax base that rests entirely on the productivity of land for forestry purposes.

The only field information required is the site quality of the land—data that are already compiled for Taxation Tree Farms under a well-established classification system. With this information, the tax can be based on the average annual growth of timber over the accepted growing cycle, according to the detailed growth patterns that have been identified by the Forest Service for different sites throughout the province.

As now, assessors could identify stumpage values obtained in the area being assessed; but I propose that instead of using only the last year's stumpage

⁶ *Sloan Report 1956*, pp. 142-3.

value an average of the previous five years be employed, to reduce the volatility of the tax base from year to year and because a longer averaging period is appropriate in estimating the value of the land's output over the long term. The annual growth should simply be multiplied by this stumpage value to indicate the long-term value of timber growth on the land. The tax each year should be some fraction of this annual growth in value.

The tax rate. I hesitate to specify the fraction of this annual value that should be appropriated by property tax, because in my opinion that should relate to the tax burden imposed on other rural properties. The present property tax imposes burdens that vary among land use classes, a system which I do not favour because it results in inequitable treatment of properties of equal value and in distortions of land use patterns. If this discriminatory policy is retained, and to the extent that property taxes are seen as payments for public services to property, it should be recognized that forest land typically receives much less benefit from public works and services than other lands. I cannot predict the outcome of the present review of provincial property tax policy and it would be inappropriate for me to make recommendations beyond its application to forest lands.

Whether all rural properties are to bear an equal burden or not, the tax imposed on forest land should be compared with that on other lands. The present burden on Taxation Tree Farms taxed on a sustained yield basis is 35 per cent of the estimated annual revenue (which would correspond to 35 per cent of the tax base proposed here). This rate is well above the burden on non-forest rural lands, and the rate on other Taxation Tree Farms is even heavier. Moreover, a tax that would take the same fraction of the average annual value from forest lands as it takes from other lands will result in a heavier burden on forest lands that must be held for many years before a yield is realized, because of the cumulative weight of taxes on timber. For this reason a tax of only a few per cent of the annual growth on a property consisting largely of young trees will accumulate to a large proportion of the eventual revenues. I understand that the tax on agricultural land now lies in the range of 15 to 25 per cent of the implied annual revenue; and I suspect that some analysis would reveal that an equal burden would be imposed on forest land by a tax that appropriated something less than 15 per cent of the average annual value of timber growth.

Whatever fraction is decided, it can be exacted by applying the mill rate imposed in the area to an assessed value that reflects the annual growth. To introduce the system, the appropriate assessed value can be determined by simply multiplying the annual value by the ratio of this fraction to the going mill rate. Application of this same ratio to subsequent annual values will result in a tax that varies with trends in stumpage values and any changes in mill rates.

It will be noted that this arrangement will enable tax authorities to exact a consistent share of the productive value of forest land without reference to a predetermined harvesting plan or the age distribution of stands at any time. The tax will not distort the owner's management incentives, and it will significantly reduce the needed field data and the administrative burden. Tax yields will also be more stable.⁷

⁷ Stability of tax payments is advantageous to both the tax payer and receiver, although only one School District depends much on taxes on forest land separate from improvements.

In some cases the tax calculated by this method is likely to be much lower than present levels, even though it will yield a more consistent and equitable share of the land value. It may be desirable to fix a minimum tax, of say \$1.00 per acre, but I would advocate this only if such a minimum were applied to other rural lands also.

Transitional problems. As noted earlier, sudden changes in tax liability tend to generate windfall gains or losses for property owners. I therefore propose certain transitional arrangements that will minimize such effects through gradual introduction of the new system, and accommodate the special features of the present land tax classes.

For Taxation Tree Farms, I suggest a 10-year transitional period, during which the difference between the tax base in the year the new scheme is adopted and the new tax base is eliminated in equal annual increments. During this period, owners should be held to current plans or modifications of them approved by the assessor, and the Taxation Tree Farms taxed as a unit. This will cushion any windfalls, permit the Crown to share in them, and soften owners' incentives to suddenly alter plans.

The transition of *timber land* into this new system is more troublesome, since the present *ad valorem* levies on mature timber in this class mean that owners would enjoy substantial windfall gains if they could immediately shift to the proposed regime. I propose therefore that land in the *timber land* class continue to be taxed under the present arrangement until owners remove the timber volumes that qualify the land for this class, up to a maximum of 10 years. This ultimate limit will not only reduce sudden windfalls, but should also smooth changes in public revenues, by eliminating some of the existing tax-induced incentives for rapid harvesting. I would also suggest a concession to owners of small properties, by allowing them to have their lands classed as *tree-farm land* immediately.

In the case of *wild land* best suited for forestry, the transition would not usually be very significant, since this land by definition contains little taxable timber. Unless there are problems which I cannot foresee, this land could be taxed under the new scheme without special transitional arrangements.

CLASSIFICATION AND WITHDRAWALS

With the above qualifications, I recommend that any private land which is deemed by the British Columbia Assessment Authority to be best suited for timber production should be classed as *tree-farm land*. If these recommendations are adopted, the *tree-farm land* class will be expanded in the future, and the present varying treatment of private forest lands will gradually be eliminated. All these lands can thereby be taxed equitably and consistently, bearing their full share of the property tax burden. In the following chapter I propose certain mechanisms to ensure that private forestry does not conflict with the public interest. With these, I have no doubt that public control will be adequate, and that the new system will have a significant effect in releasing incentives for the practice of silviculture on much forest land that would otherwise be used less productively.

As conditions change with time, land classed as *tree-farm land* will sometimes take on a higher value for other purposes. It will be the responsibility of the British Columbia Assessment Authority to recognize such changing

values, and to classify land accordingly. An owner should not be permitted to have his land reclassified merely to suit his advantage, but neither should the tax authorities impede beneficial changes in land use. Thus whenever a higher use emerges for *tree-farm land* the Assessment Authority should reclassify it, regardless of the use the owner actually makes of it. The problem of withdrawals under the current Taxation Tree Farm system arises because the owner can abuse his commitment to the Crown for continuous forestry with the tax benefits that this implies, by removing it from the tax class (and thereby release himself from his forestry plan) at his discretion. Under my proposal this problem will not arise. The tax class will be decided by the tax authorities, as is now the case with most other tax classifications.

FOREST PROTECTION TAX

Under provisions of the Forest Act, the Forest Service levies a tax on private forest lands and occupied Crown forest lands to defray some of the public costs of fire protection and suppression and to a lesser extent for control of insects and disease as well. Thus, unlike property taxes which provide funds for general governmental activities, the forest protection tax is ear-marked for a specific purpose related to the resources from which the revenues are raised.

The forest protection tax applies to private land classified as *timber land* and to Taxation Tree Farms exceeding 640 acres, as well as to most forms of tenure over Crown forest land. It has traditionally been levied at a fixed rate per acre without respect to the value of the timber, its exposure to hazards, or the protection provided. A rate of 12¢ per acre applies to private *timber land* and to occupied Crown lands except for lands included in Tree-farm Licences, and tenures that do not specify a geographical area in the licence document. Tree-farm Licences and Taxation Tree Farms bear the tax at a rate of 10¢ per cunit of the approved allowable cut, which usually amounts to a significantly lower charge than the per acre levy even if applied only to productive acres. Nevertheless, roughly half of the total receipts from the tax is raised by levies on Crown lands covered by Tree-farm Licences.

Timber Sale Harvesting Licences and most Timber Sale Licences do not define the area to be occupied by the licensee during the term of the contract, and so the tax is based on the authorized annual harvest in this case also. The rate of 2¢ per cunit appears to have been selected to make the tax burden on these tenures roughly equal to the "ordinary" Timber Sale Licences they replaced.

The revenue from the forest protection tax covers only a small fraction of the cost of forest protection in the province. Its yield in 1973 was only about \$1.25 million, whereas Forest Service expenditures on fire suppression alone were \$8.6 million in that year and the recorded suppression costs incurred by private parties were an additional \$2.3 million. Moreover, fire suppression is only one of the costs—albeit a major one—of forest protection: costs of fire protection and insect and disease control are also incurred by both the Forest Service and private parties, as explained in Chapter 11.

The costs of fire suppression fluctuate widely from year to year in response, primarily, to summer weather conditions. During the 4 years prior to 1974

the Forest Service's suppression costs have varied from about \$2 million to more than \$10 million, and those incurred by others have fluctuated between \$1.3 and \$2.3 million. Total private and public spending has averaged about \$9.5 million per year over the same period, and the yield of the forest protection tax has risen slightly from less than \$1 million to the \$1.36 million collected in 1975.

Suppression costs should be viewed together with protection costs since they are, to some extent, alternative means to the same end. The costs of forest protection are much more difficult to identify, however, because protective measures often take the form of modifications to equipment, logging practices, road building standards, and alterations to the location and time patterns of industrial operations. For operations in Crown timber subject to appraised stumpage, most of these costs are meant to be recovered by the operator through lower stumpage charges.

In short, both the forest industry and the government incur substantial costs in protecting forests from fire, insects, and disease, and the respective shares of each in the total varies widely among timber properties depending upon their tenure status, their vulnerability to fire and other damage, their accessibility to public and private control equipment, and a host of other factors. The forest protection tax represents a compulsory contribution from owners and occupiers of forest land to the cost of providing a public protection and control capability wherever needed.

The forest protection tax no longer appears to serve a constructive purpose. To the extent that it is levied on Crown lands where the timber is subject to appraised stumpage (which will be all Crown lands if the recent royalty legislation related to the old temporary tenures is proclaimed) and offset in the stumpage levies as any compulsory charge should be, it is essentially a bookkeeping complication. On private lands the tax is largely arbitrary, bearing no consistent relation to the value of the assets protected or the cost of protecting them. It has no apparent advantage over any other means of raising this revenue and the property tax offers a ready alternative mechanism without additional administration cost.

I therefore recommend that the forest protection tax be abolished. In Chapter 24 I offer a suggestion for Forest Service financing of suppression costs to accommodate the irregularity of necessary expenditures.

RENTAL AND RENEWAL FEES

Annual rentals and renewal fees are among the oldest forms of revenue derived from Crown forest resources. One or the other of these charges is payable annually under most forms of tenure that convey rights over Crown timber. Since the fees apply to tenures that are annually renewable, and rentals to those of longer term, the two charges are similar in impact and are usually considered together.

Annual rentals and renewal fees apply only to Crown land, and the rates, which vary among different forms of tenure, are fixed variously by statute, regulation, or the terms of individual contracts. The form of the charge and the rates currently applicable to each form of tenure are summarized in Table 13-5. Rates are fixed on a per acre basis except for licences that do not

designate an area, and in those cases the rate is set in terms of the allowable annual harvest authorized under the licence.

The wide variation in rates is summarized in Table 13-5. In total, they generated approximately \$1.4 million in 1975, nearly half from the old temporary tenures. This revenue is quite stable from year to year.

Table 13-5
RENTALS AND RENEWAL FEES BY TENURE

tenure	form of levy	annual rate
Timber Lease	annual rental	50¢ per acre
Pulp Lease	annual rental	11¢ per acre
Timber Licence	renewal fee	50¢ per acre
Pulp Licence	renewal fee	25¢ per acre
Timber Berth	annual rental	50¢ per acre
Timber Sale Har- vesting Licence	annual rental	4¢ per cunit ¹
Other Timber	annual rental	50¢ per acre or
Sale Licences		4¢ per cunit ¹
Tree-farm Licence	annual rental	1¢ per acre
"Schedule B" lands		

¹ Based on the number of cunits in the allowable annual cut for licences that do not designate a geographical area.

Source: Forest Act and Regulations, and tenure documents.

The present rate structure is anomalous, and rates are generally too low to be meaningful. Nevertheless, there are strong arguments for a charge related to the occupancy of Crown land, in the form of a rental on the resources reserved to the licensee. The values of such an occupancy charge are mainly threefold. First, unlike a charge based only on what is harvested, it provides an annual assertion of the Crown's interest in its resources under licence, and compensation for reserving them from other uses in favour of licensees. Second, it imposes some measure of deterrent to the acquisition and holding of rights over land and timber in excess of those required to meet the licensee's foreseeable needs. And third, like the property tax on private lands, it offers a potential means whereby local government authorities might share the financial return from, and have an interest in, forest resources that fall within their jurisdiction.

I propose, therefore, that legislation be amended to provide for a minimum annual rental on all licensed Crown lands of \$1.00 per acre. An exception should be made for Tree-farm Licences in recognition of the fact that licensees have a right to harvest only a part of their "Schedule B" lands during the term of their licences, and for these I recommend a rental of half this amount.

I have recommended that all licences should designate an area in which the rights are to be exercised, but as long as licences that specify only a volume remain, they should bear a minimum rental equivalent to the \$1.00 per acre recommended here. This should be determined on a cunit basis with reference to the average area of productive forest that supports the licensed volume in the relevant Forest District.

The rental should not be offset in stumpage appraisals, because it should be regarded as the Crown's charge for reserving the resources in favour of the licensee and his payment for that security, rather than as payment for timber actually harvested.

In Chapter 6 and elsewhere I have proposed provisions for competitive sales of timber rights. Traditionally, competitive bids have taken the form of bonuses above the minimum appraised price for each species of timber in the sale. This arrangement is unnecessarily complicated and leads to some distortions. Stumpage charges are varied over the term of the licence but the bonus portion is held constant, which reduces the responsiveness of stumpage assessments to market conditions, particularly when minimum rates are binding. Moreover, it is not necessary to encumber the stumpage system in this way. Instead, I recommend competitive bidding simply as bonuses on the annual rental charge. This will avoid consideration of several values (species) simultaneously, eliminate complications to the stumpage assessments, and permit the price for the licence itself to be paid for without reference to the rate of harvesting.

OTHER LEVIES

The Forest Service charges licensees for certain services related to the disposal of Crown timber, namely cruising and advertising timber sales and log scaling. These charges differ from those already considered insofar as they represent costs of administering the disposition of Crown timber and collection of revenues.

SCALING CHARGES

By far the most important are the charges for official scaling. The Forest Act now requires the Forest Service to scale all timber cut in the province, including that harvested on Crown-granted lands whether it is subject to royalty or not. The original purpose of scaling all timber appears to have been to ensure that all logs were identified by source so that none could escape legitimate royalty or stumpage charges.

The Forest Service takes responsibility for arranging these official scales and subsequently bills the licensee or owner for the cost. However, wherever the timber is subject to stumpage, scaling costs are recognized as administrative expenses in the appraisal, and so the licensees recover at least some of the amount they are billed by the Crown. For timber subject to fixed royalties or no levies, the scaling cost is akin to a tax on the harvest.

As I pointed out earlier in this chapter, the cost of scaling is rising very sharply, having more than doubled on the Coast over the last couple of years. In 1975 the total charges were \$6.1 million which, for comparison, is more than the total royalty revenue collected from old temporary tenures in that year.⁸

My review of this matter leads me to the conclusion that policy should be redirected toward minimizing the necessity of log scaling and rationalizing the manner of its financing. Scaling has become expensive, and the information it yields is often of little value other than providing data for stumpage and royalty assessments. In some cases it does not even serve that purpose. Certainly it yields much less useful information for forest management pur-

⁸ The cost is roughly equal between weight scaling and piece-by-piece (or "stick") scaling, the latter being the common method on the Coast. Until this year, the cost of weight scaling was met from appropriated funds and the amounts billed reappeared as Forest Service revenues. The costs of piece-by-piece scaling were paid out of a special scaling fund, and charges were paid into this fund (and hence did not appear as Forest Service revenue). In April 1976 the scaling fund was abolished and all scaling now appears as a budgetary item.

poses than efforts devoted to forest inventories or cruising.⁹ I have made several recommendations in this report that would reduce the need for official log scaling: elimination of royalties on those Crown-granted lands where it is now charged; assessments of stumpage on the basis of cruise data in some cases; and modifications to cut control procedures.

To reduce unnecessary expenditures on scaling, I recommend that the provisions in the Forest Act requiring the Forest Service to scale all timber be removed, and replaced by a provision that will permit the Forest Service to scale any timber or to require of any owners or licensees a statement of the timber they cut. The latter avenue should be used wherever the Crown does not have a direct financial interest in the scale or some other compelling reason to maintain close official surveillance.¹⁰ The rigour and detail of such scales should not exceed the minimum requirements for information.

Where the Forest Service undertakes official scales, the cost should be recognized as a necessary cost of public administration. The present levies to recoup them are anachronisms. Clearly, if they are compulsorily imposed on licensees they should be recognized in stumpage appraisals. But if this is done the billing and reimbursement reduces to an accounting complication and an impediment to the sensitivity of the stumpage system. If the recent legislation relating to royalties on old temporary tenures is proclaimed, all Crown timber will be appraised and hence subject to this circular reallocation of scaling costs to the Crown. In short, charges levied on licensees for the cost of scaling Crown timber should be abolished. The only exception I would advocate is in the case of the old temporary tenures, and then only if they are not made subject to appraised royalty.

CRUISING AND ADVERTISING CHARGES

The cruising and advertising costs associated with the sale of Timber Sale Licences are paid for by the Forest Service and billed to the licensee to reappear as Forest Service revenue. This item is relatively small, currently amounting to about \$150,000 annually, and it has been declining over the past decade.

Again, these properly should be regarded as costs of public administration. They are relevant only to new allocations of rights to Crown timber where they are recognized (or should be) in the appraised stumpage; so again they are little more than an accounting complication. I therefore recommend that the present policy of charging licensees for costs of cruising and advertising be abandoned.

⁹ For a discussion of problems relating to scaling, see *Task Force 2nd Report, 1974*, Chapter 10.

¹⁰ Already, the Forest Service sometimes allows owners of royalty-free Crown-granted lands to undertake official scales on its behalf, by appointing a company scaler as an "Acting Official Scaler".

PART IV

PRIVATE FORESTRY AND SPECIAL RIGHTS

Chapter 14. Regulation of Private Forestry

Chapter 15. Small Scale Forestry

Chapter 16. Special Forms of Rights

REGULATION OF PRIVATE FORESTRY

Early in this report I noted that only a small proportion of forest land in British Columbia is under private title, but it is more important than its relatively small acreage suggests. While less than 5 per cent of the province's total forest land is Crown-granted, this private land is in the more developed regions, and often includes very productive sites, so that it accounts for 14 per cent of the provincial harvest. Its position in forest policy is further heightened by its geographical incidence, since much of it is located near concentrations of population where values other than timber production tend to be greatest and conflicts in land uses most acute. The public policies directed to the use of private forest land (other than taxation arrangements, which were dealt with in the preceding chapter) are the subject of this chapter.

Throughout the industrialized parts of the world there is a distinct trend toward increased public regulation of activities on private forest land. Most European countries have well-established mechanisms of control over private forestry—the crystallization of centuries of innovation reflecting each country's historical needs and ownership patterns. More recently, governments in the United States, including the northwest states, have introduced a variety of regulatory arrangements. Some of the provinces of eastern Canada, as well, have embarked on ambitious private land programmes.

In British Columbia, however, there is conspicuously little public involvement in private forestry except under property tax arrangements, and in spite of its importance in some parts of the province there has been virtually no policy development in this area during the last two decades. Yet during this time public attitudes and needs have changed considerably and a reassessment of policy is overdue. Accordingly, for the purpose of this inquiry I have tried to acquaint myself with arrangements elsewhere, through available literature and visits to several other countries, in order to assess the usefulness and suitability of alternative approaches to private forest land regulation in the environment of this province. A fortuitous result of our passive stance towards this aspect of policy is that we can now approach the issue in the light of a wide variety of experience elsewhere.

CURRENT CONTROLS ON PRIVATE FORESTRY

There is no single code directly governing activities on private forest land in British Columbia, but rather a number of provisions scattered among several provincial and federal statutes. Many parts of the provincial Forest Act apply to practices on Crown-granted land; in rather general language, they prescribe obligations relating to fire suppression, hazard abatement, and

insect and disease control, as explained in Chapter 11. The Act also empowers the Minister to order a private owner to reforest his land, although this power has never been exercised.

Other statutes may affect the conduct of forest operations on private land. The provincial Water Act and Pollution Control Act, and the federal Fisheries Act and Navigable Waters Protection Act are the most important of these, all restricting the deposition of debris into streams. In addition to these legislative provisions, traditional common law rules define the liabilities of landowners for damage to others. The latter are for the most part only remedial, providing avenues for compensation for damage or injuries already suffered.

Undoubtedly the most deliberate attempt to affect the management of private forest lands is the Taxation Tree Farm arrangements. Introduced as an amendment to the Taxation Act in 1951, this scheme offers property tax incentives to owners who undertake to manage their lands according to principles of sustained yield, as described in the preceding chapter.

In short, the present policy affecting activities on private forest lands is fragmentary. The major device—the Taxation Tree Farm system—applies to only some (typically large) forest holdings and does not deal with non-timber resource values. For the rest, the regulations concern only a narrow range of matters, mainly protecting forests from agents that can impose risks or damage on others and preserving waterways from physical degradation. The relevant provincial legislation and the common law rules are couched in very general language, and are mainly only remedial. As a result, private owners have little guidance in the conduct of their forest operations and the Crown has little authority to ensure that private activities do not impinge on important non-commercial values that may be affected by forest operations.

ISSUES IN POLICY AFFECTING PRIVATE FORESTRY

Discussions about the need for public regulation of private forestry, here and in other countries as well, tend to generate debate about whether the standard of forestry practice is superior on public or private lands. The evidence available to me does not permit a simple answer to this issue; standards of performance vary so widely on both Crown and Crown-granted lands in different regions of the province and under different tenure arrangements that it is futile to attempt a generalization. However, it is probably safe to say that the quality of resource management varies more widely on unregulated private lands, and that more attention is given to non-commercial values in the management of Crown lands. But discussion of this issue in general terms tends to miss the point, for there are unquestionably some private lands where the activities of the owners are not consistent with the public interest in protection of land and water resources, or in general environmental quality. This can result from either the ignorance of the owner or more often the absence of incentives for him to recognize values that do not contribute to his private economic gain. Most observers can cite obvious cases in point, and in the absence of controls they can be expected to occur more frequently in the future.

The crux of this problem is the delicate balance that must be struck between recognizing the owner's property rights on the one hand and protect-

ing the public interest on the other. As a general matter, regulation of his actions are warranted where the damage he would otherwise cause to social values exceeds the cost of protecting them, although this is often an exceedingly difficult criterion to interpret in practise. But the existing legislation and private remedies now governing activities on private forest land are inadequate to protect the public interest even in obvious cases.

Policy toward private forestry in British Columbia should focus on preserving the integrity of the environment and protecting neighbouring forest owners (including the Crown), other resource users, and the general public from adverse effects of private activities. These are the so-called "externalities" or spill-over effects of an owner's actions, which he cannot be expected to consider fully in pursuing his private interest. They take a variety of forms. Clearly, others have a legitimate interest in the precautions an owner takes against fire and other agents that do not recognize ownership boundaries, and in his efforts to control outbreaks. These matters are already touched on in general provisions of the Forest Act described in Chapter 11, but those arrangements are rather piecemeal and do not form part of a systematic approach to private forestry.

Similarly, a private owner has no natural economic incentive to protect wildlife, fisheries, water resources, and æsthetic values beyond complying with the fragmentary requirements of other legislation noted earlier. Beyond this, the public interest in preservation of the productivity of land and water resources generally may sometimes be threatened by an owner's actions as a result of his lack of technical sophistication or short-sightedness.

While the public interest may thus call for certain minimum controls on private forestry, it does not, in my opinion, warrant many of the regulations common elsewhere, particularly in central Europe. There, controls often extend to prescribing the age at which trees can be cut, the time pattern of harvesting plans, and even (as in Austria) requirements to employ professional foresters. Sometimes these measures appear to reflect a paternalistic effort to protect private owners from their own decisions, and others appear designed to achieve rather abstract forestry objectives that have little relation to protection of either the resource base or the welfare of others.¹ I therefore emphasize that, in the present context of British Columbia at least, the need for governmental control of private landowners is limited to measures that will ensure protection of the resource base itself and compel recognition of important non-commercial values where they might otherwise be ignored.

In particular, I see no justification for extending over currently unregulated private land any general requirements regarding the long-term scheduling of harvests. As long as the productivity of the forest is maintained, the time pattern of cutting can be left to the individual owner; since the Crown is the dominant supplier of timber throughout the province no strong case can be made for public regulation of all private timber flows. Government should not artificially inhibit silviculture as a private activity, nor discourage owners' experimentation and variations in practices. In Chapter 13 I dealt with

¹ In some European countries, public authorities apply rules of forest management that invoke judgments about the landowner's continuity of income, and the appropriateness of cutting in light of the growth rate of stands. These are inevitably contentious matters, and in the circumstances of British Columbia, at least, can be left to the self-interest of landowners. See R. E. Marsh, *Public Policy Toward Private Forest Land in Sweden, Norway and Finland*, Charles Lathrop Pack Forestry Foundation, Washington, D.C., 1954, 80 pp.

the most serious present constraint on private forestry—the property tax arrangements—and recommended reforms that would avoid the rigidities of government-approved harvesting plans. Beyond providing an environment in which owners have incentives to engage in long-term silviculture, it is necessary to ensure that natural resources are not impaired by their actions and that non-timber values are respected.

Some jurisdictions, such as the State of Oregon, have undertaken to regulate private forestry by legislating forest practices codes—standards which owners are required by law to observe.² I do not consider this to be a suitable approach in British Columbia with its widely divergent forest conditions and public needs. It would be a formidable (if not futile) task to articulate legally enforceable standards, specific enough to be a useful guide to owners yet flexible enough to take account of the diverse operating conditions and non-timber values of different sites.

Moreover, any innovation in policy respecting private forestry should also avoid burdensome intervention and planning requirements in the majority of situations where the public interest is not jeopardized by the private landowner's actions. Private landowners in the states of Washington and California, and in some European countries, for example, must prepare detailed formal plans for approval and inspection by public authorities in advance of all operations, placing a heavy and often unnecessary burden on both administrators and landowners alike. Such a general requirement for all private operations in this province would not only be wasteful but quite unmanageable at the present time. Instead, attention should be focused on those particular operations where the owner's activities may seriously impinge on the public interest, as described above.

Certain additional considerations should guide the development of policy in this area. First, experience elsewhere suggests that regulations should emphasize the desired results, rather than procedures to be followed or techniques used. Second, they should be as clearly defined as possible, to provide maximum guidance for owners and to minimize the burden on discretionary interpretation. Third, the widely ranging resource conditions in the province imply a need for decentralized institutional arrangements for designing and enforcing any controls. And finally, in view of the limited public personnel and resources available for the task, a high priority must be placed on administrative simplicity and opportunities for gradual introduction and development.

AN APPROACH TO PRIVATE FORESTRY POLICY

I have tried to embody these needs in a set of proposals for an approach to private forestry policy in the province. The proposals are designed to provide an administratively simple arrangement that will oblige private forest landowners to achieve certain minimum, general standards of performance appropriate to regional conditions, and enable the public to introduce more stringent constraints in those particular situations where important non-commercial values are at stake.

In order to accommodate regional needs and conditions, the controls should be designed and administered by regional authorities. However, it

² The Oregon state-wide code is supplemented with other regulations applicable in each of three regions, recommended by regional forest practices committees.

should not be necessary to create a new institutional structure for this purpose (as has been done in the northwest states). The Regional District Boards established throughout the province already offer potential scope for regulating activities on private lands and appear suitably structured for this responsibility. The Municipal Act requires each Board to appoint a Technical Planning Committee, which may include representatives of government agencies such as the Forest Service, the Lands Service, Water Resources Service, Fish and Wildlife Branch, and representatives of any federal agencies designated by the Minister of Municipal Affairs. With such broad participation, Regional District Boards should be ably equipped to design and administer minimal forestry standards for private lands within their jurisdiction.³

Whether a Regional District should involve itself in prescription of such standards, and their particulars, should be left to the discretion of its Board. But the scope of such involvement should be restricted to the matters mentioned in the preceding section, viz., protecting the quality of watercourses, conserving fisheries and wildlife resources, ensuring soil stability, and preserving particularly sensitive æsthetic amenities. It will be important to ensure that the controls do not unnecessarily inhibit silviculture and harvesting, but only assure that forest practices do not seriously damage these other values.

The Forest Act already provides that private owners may be required to reforest their lands after logging, and makes some provisions for slash disposal, as described in Chapter 11. The standards of Regional Boards might supplement these province-wide requirements in order to meet local conditions.⁴ Indeed, any standards respecting watercourse and fisheries protection should be designed to supplement other legislation as well.

The form of the standards, and the procedures governing their application, should be designed to permit the needed flexibility I described earlier. Regional District by-laws should require private owners to simply notify the Board of their intention to undertake harvesting operations of significant size: such as removal of 50 per cent or more of the timber in stands five acres or larger. This notification need not be complicated: a description of the area to be harvested, the techniques to be used in logging and slash disposal, and a sketch showing the location of proposed roads and their relation to watercourses should be sufficient. Unless the owner is notified by the Board within, say, 60 days that his proposed operations are not acceptable without further safeguards, he should be free to proceed.

The notification should be reviewed by the Board's Technical Planning Committee, and if it considers that the proposed operations threaten to contravene the regional standards it should so advise the Board. The Board should be empowered by by-law to require the owner to submit for approval a more detailed plan for any aspect of his proposed operation, providing he is so advised within 60 days of his notification. To avoid excessively burdensome and unnecessary planning, Boards should require these detailed plans

³ For the Gulf Islands, the Islands Trust might well perform the functions I hereafter recommend be taken up by Regional District Boards and Technical Planning Committees.

⁴ Any reforestation requirements must permit exemption when land is being converted to a non-forestry use. The Oregon system seems to provide suitable criteria: improvement or evidence of actual use of the land for the other purpose within the period required for regeneration.

only in cases that portend special problems, and plans should be required only in respect of those problems, such as stream crossings, slash disposal methods, road location, and so on.

Regional Boards that adopt these procedures should publish a statement of objectives with respect to the standards required, to guide owners in submitting proposals and preparing plans required by the Board. Guidance should be sought from the Forest Service in designing these objectives; but it must be recognized that many of the requirements applied to operations on Crown lands are not warranted for this purpose, and the controls should be as permissive as possible consistent with protecting the values noted above. Such objectives will necessarily be general to be applied flexibly to particular circumstances and with recognition of the costs and benefits associated with their enforcement. In the event that the Technical Planning Committee recommends that a plan required by the Board should be rejected, the owner should have the right to appeal his case to the Board before a final decision is reached. This procedural safeguard should ensure that the objectives are not applied too rigidly or in a way that will inflict unnecessary hardship.

A few supplementary suggestions should be added to these proposals. First, it should not be necessary for the Regional District Boards to extend their jurisdiction over Crown-granted lands included in Tree-farm Licences. The planning procedures recommended for the Forest Service in Chapter 19 will apply to these lands and will be more rigorous.

Second, the special circumstances of the lands within the Greater Vancouver and Victoria Water Districts deserve attention. These extensive Crown-granted forest lands have extraordinarily high recreational potential, being on the doorsteps of the province's two largest cities, containing a mixture of forest, water, and mountains, and having developed road systems. Presently, public access into these areas is tightly restricted, apparently to protect water quality; but expert opinion suggests that withholding recreational access on these grounds cannot be easily justified, and that municipal watersheds should not be regarded as "sacred groves" from which recreation must be excluded.⁵ Certainly water supplies in other cities in British Columbia and elsewhere are not drawn from watersheds from which all other uses are precluded, and I suspect that as recreational demands grow these unique restrictions will be relaxed.⁶ The relevance for the present discussion is that these two watersheds contain some of the last remaining stands of old-growth timber within easy reach of these population centres, and a strong case can be made for preserving examples of these stands for public education and enjoyment. In both cases, however, the old-growth timber is being liquidated under harvesting plans. I strongly recommend that Regional District Boards initiate a reassessment of both the restrictions on access to these lands and the liquidation of the remaining old-growth timber.

Third, as I have already implied, the Forest Service should retain its present jurisdiction over private forest operations with respect to fire protection, hazard abatement, fire suppression, and insect and disease control. These provincial arrangements will protect the public interest where Regional

⁵ For an expert review of this problem, see *Municipal Watershed Symposium Proceedings*, U.S. Dept. of Agric., Forest Service, Northeastern Forest Experiment Station, Gen. Tech. Report NE-13, 1975, 196 pp.

⁶ Indeed, the Greater Victoria Water District itself draws part of its water supply from Elk Lake, one of the most highly developed and intensively used recreational lakes in the area.

Boards do not concern themselves with these matters, and provide a minimum standard where they do. With these qualifications, the arrangements I have proposed should lend themselves to gradual introduction and development over time, responsiveness to regional and local needs, and minimal governmental encroachment on the rights of landowners.

SMALL SCALE FORESTRY

I have already remarked on the conspicuous trend toward larger and fewer enterprises in the forest industry of the province, and the concomitant consolidation of rights to timber. This has proceeded to the point where the very small operators, who were formerly an important component in the industrial and social structure of the province, have largely disappeared, except as contractors for large firms. Moreover, few of the large number of small forest land holdings are being managed specifically for wood production. This situation stands in sharp contrast to that observed in many other major wood-producing jurisdictions. In Scandinavia, a large and vigorous industry depends substantially upon tens of thousands of small forest holdings; and the same is true in many other western countries, conspicuously in the rapidly developing pine regions of the southern United States. The development of modern industrial operations in most of these cases has been accompanied by expansion in large company-controlled holdings, but small scale tree farming and production is rarely overshadowed to the extent that it is in British Columbia.

The scant opportunities for small scale forestry have emerged as an issue in the inquiry. In this context I refer not to the typical industrial operations I deal with in other parts of this report, but to small family and part-time silviculture and rudimentary timber processing. I have concluded that the scope of opportunities available for these enterprises is unduly restricted in British Columbia, and that forest conditions and changing social attitudes offer a promising potential for extending them in future.

The scope for small scale forestry activities is now limited to operations on modest parcels of Crown-granted land, and on Crown land licensed as Farm Wood-lots, but heretofore these avenues have not produced significant opportunities. There are several explanations for the absence of small scale forestry in the province, having to do with patterns of land ownership and deficiencies in public programmes.

Private forest land. Throughout this century grants of forest land have been largely precluded as a matter of public policy. Although there are still some two million acres of Crown-granted forest land actually used for forestry purposes, these parcels are heavily concentrated on Vancouver Island and a large proportion of them is in extensive tracts owned by major forest companies. Through their private holdings in the form of unregulated forest land, Taxation Tree Farms, and portions of Tree-farm Licences, these firms own over 90 per cent of the total, leaving only a few thousand acres in small holdings used primarily for timber production. On the basis of Forest

Service estimates, some 4.5 million acres of other private lands are considered to be well suited for forest production but are not managed for this purpose.

Thus the scope of small scale forestry on private lands is severely constrained by the paucity of small forest land holdings, but even on these limited areas policy and circumstances have conspired to suppress this activity. Partly because of its limited availability the price of private forest land in recent years has inflated to levels which exceed its earning power in silviculture. This apparently paradoxical market situation in turn seems to stem from two influences. The price of forest land has been determined by uses valued more highly than timber production, most notably recreational demand and speculative pressures. The value of such land to those who can incorporate it into an existing sustained yield unit (a Tree-farm Licence or Taxation Tree Farm) is usually much greater than simply the present worth of the forest crops it can be expected to yield, because it permits an immediate increase in the sustainable rate of harvesting in the unit as a whole. This is one of the anomalous results, examined in Chapter 17, of the criteria used to determine allowable cutting rates in privately managed sustained yield units: the value of increments of forest land to holders of these units being considerably higher than their inherent worth in timber production.

Fiscal arrangements also help to explain the failure of small forest landowners to engage in silviculture. The most serious, the property tax arrangements discussed in Chapter 13, effectively renders long-term timber production uneconomic. The relief offered by the Taxation Tree Farm system has not attracted many small forest landowners, because the constraints and responsibilities it imposes are too demanding and eligibility has been restricted to substantial acreages. Both the provincial property tax and the federal income tax systems treat agriculture much more favourably than silviculture, and this has undoubtedly resulted in much forest land being (ostensibly, at least) shifted into farming. Indeed, grants and favourable loans are provided to clear land for agriculture, which usually means removing the timber and withdrawing land from forest production, a policy that has become a subject of much criticism for the alleged misuse of land.

Finally, it can safely be said that interest in silviculture has not, in the past, been widespread. For timber supplies, we have hitherto been accustomed to look almost exclusively to the frontier of vast virgin tracts that were here before British Columbia was settled. Unlike older forestry-oriented societies, we have not thought of timber as a crop to be grown, and with nature providing us with abundant good timber we have had little economic incentive to undertake the investment and effort to grow it. Even farmers have tended to regard timber as a fortuitous cash opportunity. Keen interest in growing timber has been restricted mainly to the large forest companies and the Forest Service. These conditions are now changing quickly.

Crown lands. In 1948 amendments to the Forest Act introduced the Farm Wood-lot Licences to enable farmers to establish small sustained yield units over Crown land. Under these provisions the Minister is empowered to grant this form of tenure to a *bona fide* farmer over an area of Crown land large enough to yield 100 cunits in annual timber production, to a maximum 640 acres. Any forest land owned by the farmer must be included in the Wood-lot; the extent and productivity of his private holdings correspondingly

reduce his eligibility for tenure over Crown land. The Crown retains title to its contribution, and the farmer is required to manage the whole unit according to a sustained yield plan approved by the Forest Service. A licence does not carry a fixed term, but may continue in force until its holder either disposes of his farm or dies.

The Wood-lot Licence becomes appurtenant to the farm and is not transferable. No rental or taxes are levied on the Crown land portion of these tenures, but appraised stumpage is charged on timber harvested. The scheme was intended to assist small farm operators, by providing them with a source of fuel, posts, and other material requirements, and a supplement to farm income.

Response to the Farm Wood-lot Licence programme has been disappointing. There are only 37 licences currently in force, covering a modest 8,871 acres of Crown land and producing an almost insignificant harvest. The explicit restriction to farmers has excluded participation by others interested in silviculture. Even for farmers, the licences are so limited in size that they often cannot support an economic operation; their average size is only 280 acres of productive forest land. The sustained yield regulations, transferability restrictions, and administrative burdens are such that they seldom appear worthwhile. In short, the Farm Wood-lot system is so restrictive that it cannot be expected to meet the growing demands for small scale forestry.

NEW POSSIBILITIES

Today, there appears to be a significant and growing number of people seeking opportunities for small scale forestry throughout the province. This new interest has been generated by several factors, including the recent growth of concern for the natural environment and resource conservation; the resurgent interest in rural living; anxieties over new, large scale forms of industrial logging operations; and a reaction against the centralization and consolidation of control over resource rights and forestry operations.

It can also be said that forest conditions in many parts of the province are now well suited to small scale operations. It is surprising that small scale agricultural enterprises are far more ubiquitous than their silvicultural counterparts, even though the scope for the latter is much wider and its economic potential often greater. For example, investigations conducted by the B.C. Land Commission indicate that some 75 thousand acres of public and private lands on the lower mainland Coast, the Gulf Islands, and eastern Vancouver Island which have been included in the Agricultural Land Reserve hold only marginal agricultural potential but have high forestry capability. But of this, only 19 per cent can be said to be under recognized forest management programmes. Other regions in the province offer similar examples of this land use anomaly. Undoubtedly, there are significant areas of both private and Crown land in the province suitable for small scale forestry enterprises.

Forest lands in the most settled areas now support advanced second-growth and uneven aged timber that can begin to yield values very quickly. Typically, the needed access in the form of public roads and restorable logging grades is already in place. Moreover, market and transport conditions are more favourable than ever before. A high proportion of fragmented private and Crown parcels of forest land in these areas is now suffering from

neglect, and its productivity could be substantially enhanced through purposeful management on a small scale. Small, isolated pieces of Crown forest land are exceedingly difficult for the Forest Service to manage, and there is much to be gained by having them occupied for forestry purposes, with management and development assigned to licensees under approved plans.

Other characteristics of such lands make them highly suitable for small scale operations. The climate (particularly in coastal areas) allows year-round operations. The topography near valley bottoms where many fragmented parcels are located is generally gentle, and the stands are generally of good quality, containing smaller timber which is manageable with light equipment. Commercial thinning of similar stands in some private lands has already demonstrated that such operations may be undertaken profitably while significantly improving the forest crop.

Finally, it is important to note that intensive forest management on these lands would generate particularly significant environmental benefits. Silviculture on these natural forest areas has the potential for enhancing watershed management and conserving fish and wildlife resources; it also offers scope for outdoor recreation and for improving aesthetic amenities. Indeed, forestry is undoubtedly the land use which is most complementary to these other values, and they are especially important in these most developed and densely populated parts of the province.

Many have argued that the priority given to industrial development of Crown forest lands has suppressed opportunities for local residents to participate in forestry. It is also contended that small enterprises can be more efficient in making the best use of individual forest tracts, in recovering the full range of product values, in meeting the needs of local communities, and in providing a more stable base of employment. On the other hand it is argued by some that economies of scale in today's forest industry have rendered small operations obsolete. Consideration of that argument calls for a careful distinction between scale and concentration in manufacturing, and the size and structure of resource rights. That they are separable is evidenced by the wide variations elsewhere in the links connecting manufacturing enterprises and their timber supplies; manufacturers often depend on timber produced by others. With respect to manufacturing, our investigations suggest that the economies of scale, and complex technology needed to produce our major export commodities—pulp and paper, dimension lumber, veneer and plywood—largely preclude small scale enterprises of the kind considered here. But such enterprises are capable of producing normal timber, and are especially well adapted to produce specialty products such as poles, posts and piling, shakes and shingles, railroad ties, Christmas trees, and hardwood. In the next chapter I suggest that the recovery of such special products has been shaded in the great wave of expansion in industrial forestry, and I propose measures that would enable such operations to be better accommodated on lands managed by the Forest Service and licensees. In addition to these initiatives the scope for small scale forest management shows promise.

AN EXPANDED WOOD-LOT POLICY

My main recommendations for facilitating silviculture on private lands concern reforms in the property tax and royalty arrangements, discussed in Chapter 13. A new Wood-lot policy should have two features. First, it

should offer encouragement to owners of small parcels of forest land to bring them under management; and second, it should make Crown forest land available to small enterprises wishing to engage in silviculture and timber production activities. It would be feasible to meet this second objective by simply granting outright title over Crown forest land, although that is not essential. Suitable arrangements for conveying rights to manage and harvest the timber can accommodate a robust small scale forest industry, and offer more scope for ensuring that it develops in the desired pattern.

Accordingly, I propose that the Farm Wood-lot policy be substantially revised to permit more small scale forestry on Crown land. There are several potential problems that a new Wood-lot system must be designed to circumvent. One is that since the scheme is not intended to serve the needs of typical industrial operations, licences should be structured specifically for small scale enterprises. They should therefore be limited in size, but large enough to support economically viable forest farms. I envisage small enterprises with little capitalization (such as a farm tractor, saws and necessary hand tools) employing one man or a family, or part-time or seasonal help. I see no need to restrict eligibility to farmers or even landowners, although residence in the area is a desirable qualification.

A potential danger is that the system may attract applicants who are more interested in obtaining the use of Crown forest land for recreational or other purposes than in practising silviculture, with the result that instead of enhancing forest productivity the programme may effectively withdraw land from forest production, thus defeating the purpose of the scheme. (Whatever the desirability of new arrangements for enabling private recreational development on Crown lands, this issue is not addressed here.) Moreover there should be no implication of a subsidy for any particular group. The licence should therefore be explicit in its silvicultural purpose, and require adherence to an approved plan of operations that involves both management and harvesting.

Finally, the extent to which such a programme will be successful is extremely uncertain. Potential applicants are undoubtedly fewer than the number of people who advocate such arrangements, and it is probable that some who will be attracted by the scheme will fail to maintain the degree of commitment required over the long term. It is therefore necessary to approach this programme cautiously and with appropriate safeguards.

I propose that legislation empower the Minister to issue Wood-lot Licences over Crown land under the following arrangements. Holders of current Farm Wood-lot Licences should be given the option of converting their tenures to the new system.

Size. The maximum size of Wood-lot Licences should be fixed at 1,000 acres with no additional formal criterion based on productive capacity. I expect that most will be smaller than this, but in evaluating applications the Forest Service should ensure that they will produce sufficient timber to support an enterprise of at least minimum viable size. In some cases the licence might apply to two or more separate parcels that are sufficiently proximate to permit efficient management as one unit.

Rights and responsibilities. The licensee should be required to manage the land solely for purposes of silviculture, according to a plan approved by the Forest Service. If the licensee owns any forest land in the area he should be

required to incorporate it into the unit for management under a single plan and his contribution should be deducted from the 1,000 acres of Crown land he will be eligible to manage. He should not be permitted to construct any permanent structure on the allocated Crown lands for purposes other than forest management. The licence should be appurtenant to any of the licensee's private land incorporated in the Wood-lot, and not be transferable without Ministerial consent except through the licensee's estate to members of his immediate family.

Term. Licences should carry an initial probationary term of three years within which licensees will have the opportunity to demonstrate their commitment by preparing an inventory of the area, designing and obtaining approval of a management plan, and developing any access required. If this work is satisfactorily completed, a licence should be granted for a basic term of 15 years, with "evergreen" arrangements for renewal and extension every 5 years as I have proposed for Tree-farm Licences.

Eligibility. To qualify for a Wood-lot, applicants should be Canadian citizens resident in the province who have attained the age of majority. Properly constituted societies, community organizations and Indian bands should also be eligible. Individuals owning a significant interest in a manufacturing facility within the region, as well as all corporations, should be excluded. As this form of tenure is intended to promote intensive management, priority should be given to applicants who maintain full-time residence close to the licence area, but ownership of land should not be a qualification.

Allocation. When the Forest Service receives an application for a licence over a specific parcel of Crown land, it should conduct an inspection to establish its suitability for a Wood-lot. Then the proposal should be advertised and if competing applications are received, they should be screened; priority should be given to applicants who reside near the proposed Wood-lot or propose to integrate it with their private forest land holdings. In the event that more than one application meets the criteria, the licence should be allocated by competitive bid as described for Forest Licences in Chapter 10.

Charges. Products removed from licensed lands should attract stumpage but individual appraisals of the small volumes to be harvested will not be warranted; instead the Forest Service should simply levy the current average rate in the area, which is already compiled for tax assessment purposes. Approved management costs should be compensated through stumpage credits, as under other licences. Licensees should also pay an annual rental at the same rate provided for "Schedule B" lands in Tree-farm Licences.

Administration. Responsibility for administering these units should be assumed by the Forest District offices. The required management plans should be simpler and more flexible than those required of industrial licensees but should provide for rehabilitation and reforestation, orderly harvesting, and an assurance that the unit will be maintained in a productive state. Generally, the same rules with respect to fire protection and hazard abatement, utilization standards and so on as apply to other tenures on Crown land should be required. Licensees should be encouraged to experiment with management and operational techniques, to produce special and minor forest products, and to develop new products. Forest Service field officers should be available to provide advice to Wood-lot owners, similar to that provided to farmers

by the Department of Agriculture. A simple annual report to the District Forester should be made, indicating activities during the year and proposing any amendments to the plan.

SPECIAL FORMS OF RIGHTS

In this chapter I turn to the miscellany of rights and privileges designed to accommodate needs beyond the normal run of industrial operations. Although these do not account for a large portion of forest production their scope is wide, covering emergency salvage operations, recovery of special products, on-site uses of timber, grazing, and marine log salvage. And while these are of relatively minor significance in the total sweep of forest tenure policy, each is important in particular areas and to particular groups.

Moreover, the evidence available to the Commission leaves me concerned that in the attempt to cope with the pressures of industry for the conventional types of timber rights, the arrangements for minor products may not be receiving the attention they deserve. These special rights play an important role in forest management and utilization, and they permit recovery of timber and other resources that would otherwise be used in less valuable ways. Moreover, as demands on the resource base grow more intense and diverse, special forms of rights for special purposes will become increasingly important.

EMERGENCY SALVAGE

The term "salvage" receives wide usage in forestry circles, in reference to the recovery of damaged timber, material left on the site after logging, logs lost in transport, and even standing timber of very low value. For purposes of exposition I use the term "emergency salvage" to describe operations precipitated by unpredictable events and calling for fast action, mainly damage by fire and insects but sometimes by disease, windthrow and other causes as well. These give rise to special problems, requiring especially flexible arrangements and quick administrative response.

CURRENT ARRANGEMENTS

Certain statutory and contractual provisions oblige the licensee to take action when timber is damaged in his licensed area; but these, reviewed in Chapter 11, emphasize actions to control outbreaks of fires and insects rather than to salvage the timber. Licensees have no automatic legal obligation to conduct salvage operations outside their Cutting Permits, and special arrangements have been developed for this purpose.

When salvage operations are required in Tree-farm Licences, the Forest Service simply issues Cutting Permits to authorize the recovery, and this is often the procedure used under Timber Sale Harvesting Licences as well. Some Tree-farm Licensees hold a blanket Cutting Permit for salvage purposes, and simple approval is required to recover specific timber. In all these cases, no separate licence is required.

On other lands managed directly by the Forest Service, Timber Sale Licences are used to confer rights to salvage timber. The usual procedures—location of the area by survey, an operational cruise, various government clearances, advertising, bidding (if any), and award of the licence—apply. Salvage sales are normally made outside the “quota” allocation system.

Salvage timber is subject to appraised stumpage but frequently rates are set at some fraction of prevailing stumpage levels; with Ministerial approval statutory royalty may be discounted up to 75 per cent. Any bonus bid is added. Where timber to be salvaged has a value of less than \$2,000, direct sales may be executed by means of a streamlined procedure provided in the Forest Act, which dispenses with advertising and bidding.

PROBLEMS AND NEEDS

The basic policy objectives in these emergency circumstances should be twofold: first, to control and contain the damage, and second to ensure recovery of valuable timber before it deteriorates. In the case of fire, these involve quite separate activities, because fire suppression requires immediate, specific action, while recovery typically follows later. In dealing with insects and disease, however, control and salvage may be linked, insofar as the containment of the outbreak often involves removing infected timber.

A variety of problems frustrate the speed needed in implementing salvage operations. Insect and disease infestations are often detected only after they are well advanced; and then identification of the causal pest, evaluation of remedial measures in consultation with the needed specialists, and organizational planning and approval all take time. In licensed areas much depends on the voluntary co-operation of the licensee, who may be reluctant to disrupt his normal operations to concentrate on salvage. Difficulties in marketing the salvaged timber arise when it is of a species or quality unsuited to the mills in the area, or when the damage restricts its use (such as the difficulty in utilizing burnt wood in pulp mills).

The main problem appears to be the delays that sometimes occur in authorizing salvage operations. I understand that the problem arises not only from the arrangements for authorizing operations but also from the low priority they are often given by the Forest Service.

PROPOSALS

As a preliminary point, therefore, the Forest Service should be urged to expedite salvage authorizations in order to maximize the recovery of valuable timber and to clear growing sites. The needed arrangements for salvage operations within licensed areas can best be considered separately from others.

To ensure prompt action in licensed areas, future contracts should empower District Foresters to require licensees to prepare a plan for recovering timber that needs salvaging, and this power should be exercised where the volumes are significant. Further, where the licensee prefers not to recover the timber the District Forester should waive the requirement and sell the timber to others by means of salvage Timber Sale Licences. The licensee should be exempted from the requirements only where the salvaging offers sufficient scope for a separate operation.

Until this provision is introduced in all contracts, the Forest Service should require that licensees give priority to serious salvage problems by including the relevant areas in operational plans submitted for approval. Finally, licensees who respond to requests for emergency salvage operations should be eligible for relaxation of normal cut control limits, as is now frequently done.

To streamline the procedural requirements for emergency salvage outside licensed areas, I suggest that legislation transfer to District Foresters the present power of the Minister to dispose of such timber without competition through direct sales. The \$2,000 ceiling on such sales is awkward to administer insofar as the maximum volume it involves is dependent upon stumpage values prevailing from time to time. I recommend, therefore, that this limit be re-established at 2,000 cunits.¹

In cases where competition for salvage sales is unlikely, this power should be exercised by District Foresters to dispose of damaged timber in a summary fashion. In instances where two or more parties appear interested in a smaller sale, or where the volume exceeds the 2,000 cunit limit, salvage rights should be sold through the sealed tender bidding procedures I proposed for Timber Sale Licences in Chapter 10. The proposals I make in Chapter 18 for cruise-based sales may be especially useful in disposing of salvage timber.

SPECIAL TIMBER PRODUCTS

Under special arrangements, a variety of minor products is recovered directly from the forest (as distinct from specialty products manufactured by mills). The most important of these are listed in Table 16-1.

Table 16-1
RECOVERY OF MINOR FOREST PRODUCTS IN 1974

product	unit of measure	quantity produced ¹		total estimated value
		Interior	Coast	thousands of dollars
poles & piling	lineal feet	4,682,792	3,150,627 ²	13,600
fence posts	pieces	1,013,432	8,885	1,500
fence rails	lineal feet	934,348	—	85
Christmas trees	pieces	955,383	63,138	1,500
shakes	pieces	971,759	3,267,759	735
shakes & shingle bolts	cords	419	1,672	127
mine props & lagging	cords	503,474	—	202
mine timbers	lineal feet	364,297	666	70
building logs	lineal feet	177,897	—	27
cordwood	cords	2,671	88	95
pickets	cords	691	—	55
car stakes	pieces	55,251	4,802	15
				18,011

¹ Production of some products is reported in differing units of measure and in those cases rough conversions to a single unit have been made.

² Includes only production in Vancouver District that was exported; data for poles and piling used domestically were not available.

Source: B.C. Forest Service *Annual Report 1975* and supplementary information supplied by the Forest Service.

¹ The rate now most commonly levied on salvage timber is currently 55¢ per cunit, which implies about 3,600 cunits; but salvage sales of this size are rarely if ever sold without competition.

Some of these products carry a considerably higher value than timber used for lumber and pulp. Often, they are recoverable in largest quantities from stands that are least desirable for normal industrial timber or, as in the case of shakes, from decadent old-growth and dead trees which are frequently broken in logging and burned as slash. It is alleged that potentially recoverable special products often go unrecognized by the Forest Service or the licensee, with the result that instead of being utilized for its unique purpose, the special product timber is cut, with the rest of the stand, into lumber and pulp chips.

Special products operations often afford unique opportunities for new, small entrepreneurial activity and locally based manufacturing. Moreover, their markets are often steadier, or fluctuate in different cycles from those of major products, so that these special forms of products can contribute an element of stability to the industry.

PROBLEMS AND NEEDS

The circumstances of special product utilization vary greatly, making generalization difficult, but some of the major obstacles that have been brought to my attention are the following:

- i) Almost always, special products comprise only a small fraction of the timber in any stand, and their recovery in isolation from the rest of the timber often gives rise to management problems. For example, if an operator selects only the trees that are suitable for piling in a second-growth Douglas fir forest, the residual stand may be degraded. Such selective logging can do physical damage to remaining trees, create difficult slash disposal problems, and generate fire hazards.
- ii) Specialized enterprises sometimes acquire rights to harvest whole stands that contain a high proportion of the relevant special product. Although this arrangement circumvents the problems associated with selective cutting, it requires that the operator find a suitable market for the other material, and sometimes necessitates his operating on a scale beyond his capabilities.
- iii) To avoid the above difficulties, a special products operator can sometimes work together with a normal industrial operation. This, however, puts heavy demands on logistical planning and co-operation between the two separate enterprises and with the Forest Service. Whenever separate operations are involved, joint arrangements must be made for road access, stumpage and royalty liability, slash disposal, and so on. Also, where special products are removed by a separate operator in a licensed area, the licensee is normally debited for these volumes removed under his allowed annual harvests, thus reducing the volume of timber he can produce for his normal needs. Apparently some large licensees are further discouraged from these arrangements because of the nuisance and risk entailed, and their apprehensions about the reliability of small special products operators.
- iv) Administrative obstacles may impede special products operations just as they impede other small operations. Road construction costs often exceed the value of the special products recovered from an area; and at present there is no mechanism enabling the government or a subsequent licensee to share in these costs. Finally, because of the comparatively

small volumes involved, arrangements for special products call for a disproportionate amount of administrative time and effort in comparison with the values and volumes involved in normal industrial activities, and hence do not claim high priority in the Forest Service.

- v) Related to the above is a general lack of knowledge about the location and availability of materials suitable for these special products. They are not identified in the forest inventory or in other Forest Service records. The best source of information is the personal knowledge of local Rangers and zone foresters, but personnel turnover and higher administrative priorities limit the assistance they can offer to prospective users.

While there is little empirical evidence to go on, I am left with the impression, shared by several knowledgeable participants at my public hearings, that all these problems combine to restrict the recovery of special products well below the level consistent with the fullest utilization of the timber harvested and the realization of its potential economic value.

The overall policy objective should be to ensure that wherever timber potentially useable for special products occurs in sufficient quantity to permit profitable recovery—or yield a return at least equal to logging it as part of the entire stand—provision should be made for that recovery. The general impediments I have listed above impinge on the recovery of each category of product in a different way; here I can touch on only some of the major difficulties relating to the more important products.

Poles and piling. British Columbia contains a substantial proportion of the continent's cedar pole timber, for which there is a strong and steady demand from electrical and telephone utilities. Traditionally, the Forest Service has issued pole sales in the form of Timber Sale Licences over stands that contain high proportions of cedar pole material. This practice has declined sharply in recent years because selective logging of poles is often inconsistent with the current high standards of utilization and silvicultural practice required by the Forest Service. Thus, the Forest Service has tended to rely increasingly on ordinary licensees to make arrangements with pole operators to recover this material where it occurs in significant quantities in their licensed areas.

While piling is usually made from fir and pine (because of the strength characteristics needed in pile driving), and is usually found in younger stands, the operational problems associated with poles and piling have much in common. The two comprise easily the most valuable category of special products, and several changes in policy seem desirable to better accommodate their recovery.

- i) On unlicensed Crown lands, pole and piling sales (including thinning) in the form of Timber Sale Licences should be given priority in suitable stands as long as they will not frustrate general development planning and stand improvement objectives. Where there are no other immediate plans for logging the rest of the timber, silvicultural considerations may sometimes require that all the timber be cut in these operations. This is the current practice, though such sales are now ordinarily available only to pole licensees with a "quota position".
- ii) In developed areas, selective recovery of poles from firebreaks, leave strips, and other patches of old-growth timber should be encouraged wherever this can be accomplished without damaging the remaining tim-

ber or creating hazardous forest conditions. For this purpose, Timber Sale Licences with appropriate specifications can be used to convey the necessary rights.

- iii) Currently, pole and piling operators are required to adhere to the same utilization standards as other operations. For operations involving selective cutting, recovery standards should recognize that only portions of trees are useable for these purposes, and licensees should not be required to remove useless material from the forest. Emphasis should be shifted to slash disposal.
- iv) The stumpage treatment of poles and piling should be revised to treat pole operators more equitably in relation to other licensees, and to encourage recovery of this material. Today, special pole and piling sales carry stumpage rates that reflect the high value of these products, while timber uniquely suitable for these products which is found in areas covered by standard forms of tenure is assessed at lower rates as sawtimber. As the quality and reliability of cruising improves, timber suitable for poles and piling should be identified in all cases, and appraised at rates that reflect its special value. Where timber is scaled for stumpage assessment purposes, this material should be evaluated separately from sawtimber. The timber suitable for these products should be assessed, in cubic feet, like other timber, rather than in lineal feet and grades recovered as is now the practice in some regions.
- v) For pole and piling operations in areas licensed to others, the Forest Service should design contractual arrangements to transfer responsibilities for fire protection, slash disposal, stumpage, and royalty to the pole or piling operator, supported by appropriate performance deposits.
- vi) Under such arrangements, and whenever licensees make small amounts of timber available to pole or piling operators, the Forest Service should sympathetically consider licensees' requests that the volumes be excluded from their cut control accounting.

Recovery of these special products is concentrated in certain regions, and these proposals should be interpreted in light of the special circumstances in each Forest District. Elsewhere in this report I recommend abandonment of the practice of linking harvesting rights to licensees' mill requirements and advocate measures to stimulate log marketing. These should further encourage licensees to recover special products like poles and piling, either by themselves or through arrangements with specialized operators.

Shakes. Shakes are typically cut from old cedar logs and stumps by small one or two-man operations. The shakes are either split in the forest by hand, or manufactured from bolts transported to small mills. This industry has been concentrated in the lower Fraser Valley where early logging left large pieces of suitable cedar, but as supplies in this area have become scarce, shake cutting has spread to other parts of the province. Production typically fluctuates between 4 and 6 million shakes per year, with a value in the order of a million dollars.

Timber Sale Licences are used to confer rights to cut shakes on Crown land. On privately owned and licensed lands, shake cutters make arrangements with owners and licensees to cut shakes in their logged areas. Arrangements for shake cutters and surveillance of their operations unquestionably put a heavy demand on the Forest Service in relation to the values involved.

Certain other problems associated with shake cutting parallel those encountered by pole and piling operators and often are even more restrictive. One is the exigencies of timing; with modern silvicultural requirements, shake recovery must often be fitted in between the main logging operation and post-logging slash abatement and reforestation. When shake splitting is conducted in the woods it creates hazardous accumulations of highly inflammable debris, and in licensed areas the licensee is responsible for slash abatement and fire control. As well, the presence of shake cutting operations may pose some inconvenience in road useage; and being an itinerant industry, the operators are regarded by many licensees as undependable.

The latter, according to evidence presented at my public hearings, is a particularly serious matter, and should be faced in any revised policy relating to the shake industry. Certain changes may alleviate this problem and help to promote the development of this industry.

- i) In areas not otherwise licensed, Timber Sale Licences authorizing shake cutting should be issued and administered by zone foresters or Rangers under the general authority of the District Forester and under standard rules prescribed for the District. These permits should contain clear provisions regarding the disposal of slash and other necessary requirements.
- ii) In areas not otherwise licensed a condition for obtaining Timber Sale Licences authorizing shake cutting should be a significant performance bond to ensure compliance with its terms—perhaps not less than one thousand dollars, and higher for larger operations. While this may weigh heavily on some very small operators, I believe it is justified and necessary to protect this industry's reputation from the minority of irresponsible shake cutters. With this governmental requirement, licensees who can provide shake cutting opportunities may be encouraged to do so with similar protection.
- iii) In licensed areas, arrangements should be devised to permit shake cutters to deal directly with the Forest Service with respect to stumpage and royalty liability and absolve the licensee from any impact of shake operations on his cut control accounting.

Hardwoods. Hardwood species² account for some 75 million cunits of mature timber in the province; consisting mainly of Interior aspen (46 million cunits), cottonwood (16 million), birch (8 million) and coastal alder (3.5 million). Though a relatively small fraction of the province's timber—about 2.6 per cent—hardwoods are very important in certain areas.

At present, with the exception of cottonwood, the hardwoods of the province represent more of a problem than a resource. In several instances the Forest Service has granted Timber Sale Licences or Timber Sale Harvesting Licences exclusively for hardwoods; but these have failed, partly because of difficulties in locating suitable stands comprised predominately of hardwoods, and partly because of difficulties in production and marketing. Though hardwoods have gained increasing acceptance in certain pulp mills, producers have complained that anything beyond a small proportion of this fibre reduces the quality and thus saleability of their finished product (although similar producers elsewhere appear to be able to use large proportions of hardwood fibre).

² I use the term "hardwoods" to refer, rather imprecisely, to all broad-leaved species.

Today, as general policy, the Forest Service requires hardwoods to be felled with other timber in the interest of proper site preparation and to prevent them from regenerating. To a degree, licensees are required to recover hardwoods also, but these obligations have varied. Being short-lived species, their early utilization is often essential if large losses to decadence are to be avoided.

In short, hardwoods pose serious problems for resource management, processing, and marketing; and these are becoming increasingly urgent as higher proportions of these species are encountered. The primary policy objective in this area should be to develop markets for hardwood timber.³ Certainly the long-term prospects are promising enough: similar timber is used extensively elsewhere, both as special products and as pulp furnish; new techniques of kiln-drying and treatment to prevent discolouration are emerging; and extensive markets for hardwood products appear to exist in the United States, if they can be provided with suitable supply contracts. I therefore propose several measures toward this end.

- i) The government should announce its intention to exempt all hardwoods from stumpage charges for an explicit period—perhaps 5 or 10 years—to encourage the industry to develop technology, build necessary processing facilities and find markets for this material. (As I explain in Chapter 18, the exemption of material having negative values should actually raise total revenues.) Toward the end of the announced period, this policy should be reassessed in light of developments.
- ii) Further, licensees who recover hardwood timber in the course of normal operations should have the option to have it included in or exempted from their cut control accounting during the term of any licence.
- iii) The Forest Service should be receptive to applications for Timber Sale Licences over stands of more than 50 per cent hardwoods for such operators. But unlike past hardwood sales, the licensee should be permitted to harvest the softwood species as well, just as primarily softwood operators may harvest hardwoods, under normal stumpage arrangements.
- iv) When approving harvesting plans submitted by licensees, the Forest Service should ensure that logging in stands with high proportions of currently valueless hardwoods is postponed, pending improvement of their marketability.

These initiatives should be taken for all hardwood species except cottonwood. Finally, all relevant government agencies should be encouraged to continue their efforts in promoting the use of hardwood species and in exploring new markets.

Railway ties. In the early years, Crown timber was allocated directly to railway companies through special "Tie Licences" under railway legislation and through Timber Sale Licences, for manufacturing railway ties required for railroad construction and maintenance. A good deal of timber was wasted under these specialized tenures, so they were eventually phased out. Today, railway ties are produced by normal sawmills from timber harvested under conventional forms of tenure.

³ A recent federal study examines marketing problems: "Marketing British Columbia Hardwoods in North America", Economics Section, Pacific Forest Research Centre, Environment Canada, Victoria, 1974, 14 pp. + App. (mimeo).

Tie production is strongly influenced by the market for dimension lumber because the same timber can readily be manufactured into both products, and lumber is favoured whenever it yields the higher return. In the early 1970's when the Dease Lake extension of the B.C. Railway called for large quantities of ties, the Forest Service was pressed to issue special Tie Licences. Reluctant to do so for the reasons noted, the Forest Service made alternate provisions by requiring licensees to make specified quantities of ties available to the railroad companies. This provision remains a condition of some licences.

This arrangement proved to be an expedient means of meeting an emerging crisis; but the crisis no longer exists, and recent market conditions for ties and lumber make such measures unnecessary. As long as tie production obligations are imposed through licences, they constitute an unnecessary subsidy to the railroads at the expense of forest revenues and licensees. Railroad construction is generally planned well in advance, and the railroads should be capable of competing for timber products through normal contractual arrangements, like other buyers.

Christmas Tree Permits. Christmas tree operations are concentrated in the southern Interior, where they are mainly an export industry, and on the lower Coast where they serve domestic markets. Commercial production of Christmas trees typically amounts to approximately one million trees per year, valued at about \$1.5 million. About 35 per cent of these originate on Crown land.

For Christmas tree operations on Crown land, the Forest Service administers Christmas Tree Permits (as modified forms of Timber Sale Licences) with terms ranging from one to five years, which entitle the licensee to grow and harvest the trees subject to payment of a stumpage levy. In the Nelson District, special 5-year permits are issued to farmers and other residents, and these oblige their holders to enhance stand productivity by means of tree improvement practices.

Through a co-operative arrangement between the Forest Service and the B.C. Hydro and Power Authority, Christmas Tree Permits are issued on power line rights-of-way, but very few of these have been authorized to date. Such an arrangement provides an opportunity for useful forest production and can assist in the control of forest growth on rights-of-way.

Unlike the other special products discussed in this chapter, much of the Christmas tree production involves long-term, continuing forest culture and relatively stable, labour intensive, entrepreneurial activity. Moreover, because it yields returns over much shorter crop cycles than other forest products, it can be a particularly valuable use of forest land. Christmas tree farming also ensures that the forest is maintained under management control.

The growing acceptance of artificial Christmas trees and plantation production has made substantial inroads into the traditional market for natural trees, but there is a continuing demand for natural trees that can be produced from well managed lands. To the best of my knowledge the permit programme is advancing satisfactorily, and I have no specific proposals to make in relation to it, except to recommend that, in future, the special rules governing administration of the unique form of tenure be set out in regulations.

MISCELLANEOUS RIGHTS

Several other administrative devices are used to confer rights to forest land or timber. By far the most important and versatile are the *Special Use Permits* issued by the Forest Service in Forest Reserves for purposes ranging from quarrying, hay cutting, ski development installations and home sites, to roads, pipelines, lodges, campsites, and landing strips.⁴ Outside Forest Reserves, such uses of Crown land are administered by the Lands Service or other appropriate agencies.

Special Use Permits are designed to authorize occupation of Crown land; they do not convey rights to timber. These permits are annual, and are renewable for a maximum of twenty years. Where the authorized use necessitates clearing timber, such as in road or home site construction, or where the permittees require timber for purposes such as agriculture or mineral projects, a *Licence to Cut* is issued with the Special Use Permit. This simple form of licence conveys cutting rights without advertising or tenders, for a period of one year with a possible one year extension. Where small volumes are involved, as is usually the case, stumpage rates are fixed at nominal levels, rather than by appraisal. Such timber may also be disposed of by Timber Sale Licence.

The present division of responsibility for administering Special Use Permits between the Forest Service for permits within Forest Reserves, and the Lands Service for those elsewhere, should probably be rationalized. For simplicity and consistency, it would be preferable if all land uses not associated with logging—both inside and outside Forest Reserves—were authorized by the Lands Service, which as a matter of course would refer those affecting forests to the Forest Service. I understand that both agencies would welcome this as a constructive reform.

Free Use Permits authorize timber cutting, free of stumpage or royalty, for certain specific purposes such as cordwood for schools, fence posts to be used on the permittee's own land, domestic fuel, scientific purposes, and mining. The permits are annual, and cover a maximum of 160 acres. This device has limited application today and is used mainly for mining and fuel wood purposes.

Annual Cash Sales are used to extend rights to minor quantities of timber for commercial cordwood and building logs, and to guides, trappers, and other such users. Technically, Cash Sales are Timber Sale Licences sold by District Foresters without competition under the statutory ceiling of \$2,000. In practice, Rangers administer most of these sales, which typically have a value of a few hundred dollars.

The Cash Sale is a highly flexible and convenient device for providing timber for a host of minor purposes. Apparently, a major difficulty encountered by local Forest Service officers is that they are often faced with demands for rights to cut such products as firewood and building logs from people who have little appreciation of the silvicultural implications of such selective cutting, or of the stumpage value of the timber. The Forest Service should be receptive to these special uses, but should not placate local demands at the expense of forest management or the public purse.

⁴ Forest Act, s. 33, and Regulations.

A special issue that warrants attention in connection with this miscellany of minor authorizations concerns the use of Crown timber by the mining industry. Mineral rights in the province take three forms: Crown-granted mineral claims, recorded mineral claims, and mineral leases. Until recently, the Mineral Act provided that all mineral rights carried with them the surface rights to cut any timber on the claim or lease area, for mining purposes. However, in 1973 and 1974, amendments to the Mineral Act and Forest Act qualified these privileges. Holders of Crown-granted and recorded mineral claims are now required to obtain a Free Use Permit to cut timber for mining purposes, and mineral lessees must obtain a Licence to Cut.

These changes have given rise to some anxieties within the mining industry insofar as mining operations are now subject to two legislative policies, the Mineral Act which governs mining rights and the Forest Act which regulates the use of surface timber. Any reluctance on the part of the Minister of Forests to grant authorizations to remove or use timber could frustrate or delay mining activities.

This controversy raises two separable issues: one is the right of miners to cut and use Crown timber, the other is the charges levied on timber removed. With respect to the first, it appears to me that in view of the modest areas of forest land required for mineral exploration and development, mining enterprises should have the assurance that they can remove or use for mining purposes any timber found on Crown lands covered by mineral rights, at the time of application. The government therefore should be obliged by statute to grant cutting authorizations to holders of mineral rights within a stipulated period, say 60 days following application. However, since the Forest Service has responsibility for ensuring proper management and use of timber, that agency should retain the power to regulate harvesting, to avoid unnecessary waste and the creation of hazards. Any relevant conditions or precautions required of a mineral operator in respect to his removal or use of timber should therefore be inserted in his cutting authorization. As is presently the case, prospectors should be entitled to locate claims on Crown forest land without any special authorization.

With respect to the charges levied by the Forest Service on the timber, the policy should recognize the value of the resource in alternative uses. In some cases, mining operations are in remote locations far from developed transportation routes and timber utilization facilities, where the small volumes of timber encountered by mining enterprises are of little or no value. Regular stumpage charges are obviously not appropriate in such circumstances, so the cutting authorization should take the form of a Free Use Permit. But wherever the timber has positive value the Crown should be compensated for it, and so in these circumstances a Licence to Cut should be used to confer rights to harvest Crown timber, and it should be subject to normal stumpage charges. These proposals should go a long way toward meeting the concerns of the mining industry, while ensuring that forest resources are properly used and that the public receives fair value for its timber.

GRAZING RIGHTS

Of the 18.3 million acres of useable natural forage land in British Columbia, nearly 90 per cent is forested—primarily in the drybelt areas of the Kamloops and Cariboo Forest Districts. These rangelands are the focus of

some of the most intense pressures of multiple land use; in addition to supporting about half of the province's beef-producing industry they are under heavy demands for wildlife, timber, and in varying degrees for water management, recreation, and other uses.

As in many other parts of the continent, range management in British Columbia has always been contentious. Here, it has been aggravated by early mismanagement (or lack of management) that resulted in the deterioration of rangelands. Governmental grazing policy and administration have also been issues of controversy, and have attracted the attention of public inquiries such as the second Sloan Commission.

Under renewed criticism of range administration, the Minister of Lands, Forests and Water Resources in 1974 appointed a Rangeland Management Task Force to review the government's rangeland policy, and the *McLean Report*,⁵ which contains its findings and recommendations, is still under study. Accordingly, I do not attempt a detailed examination of range policy here, but because it falls within the ambit of my terms of reference and in view of the evidence made available to the Commission, I shall make several general suggestions for consideration in any revision of range policy.

A relatively small proportion of the province's rangelands, some 2.3 million acres, is privately owned. This is mostly open grassland, strategically located in the valleys of the ranching districts, and it typically provides the base for cattle enterprises that depend on Crown range as well. Rights to use Crown range are provided under several tenure arrangements, the most important being Grazing Leases and Grazing Permits.

GRAZING LEASES

Grazing Leases cover a relatively small fraction of rangelands—about 1.1 million acres. These rights are administered by the Lands Service under provisions of the Land Act. Leases typically cover better grasslands close to private ranchlands and are integrated with them in ranch operations. Traditionally, they have been issued for terms up to 21 years and renewed upon application providing the lessee has met his obligations, which include annual rentals, property taxes, and minimum management standards. In the past, leases have carried a strong implication of a proprietary interest. Their long terms and provisions for renewal; their operational link with private ranchlands; the discretion left to lessees with respect to their management and their exclusive rights to use them; and perhaps also their susceptibility to property taxes have produced a tendency for ranchers to regard their leased lands as part of their ranch property. Certainly, leases have contributed substantially to the market value of ranches bought and sold.

In recent years the implication of a proprietary right in leases has been weakened by changes in policy. Some leases have been renewed for shorter terms to permit more frequent review. The *McLean Report* recommended that they, along with other existing forms of grazing rights, be abolished in favour of a new type of contract that would convey a right to a prescribed amount of livestock grazing (in terms of animal unit months).⁶ Since then

⁵ Alastair McLean, *Administration of British Columbia Ranges*, (mimeograph), December 1974, 74 pp. (hereinafter, *McLean Report*). My description of ranges and their current administration draws heavily on this document.

⁶ An animal unit month is the forage requirements of one mature cow and young calf, or the equivalent, for one month.

the Lands Service has refrained from renewing expiring leases in most cases, and instead the Forest Service has issued Grazing Permits to the lessee.

GRAZING PERMITS

Rights to use most Crown rangelands are conveyed through Grazing Permits, administered by Forest Service range management personnel under the authority of the Grazing Act.⁷ Permits authorize their holders to graze a prescribed number and species of livestock during a specified period of the year in a certain area, subject to other terms and conditions. They are issued annually, with preference given to established permittees, and carry a nominal fee based on the animal unit months of grazing authorized. The permittee has no exclusive right to the use of any land, and typically shares rangeland with other permittees and other users.

Responsibility for range improvement on permitted lands falls on the Forest Service. Half or more of the annual permit fee revenue is devoted to range improvement, and some approved improvement projects are carried out on a cost-sharing basis with ranchers.

DEFICIENCIES OF GRAZING RIGHTS

These arrangements are deficient in several respects from the point of view not only of graziers but also of public administrators; and as pressures on rangelands increase, the system's shortcomings are becoming more serious. The *McLean Report* emphasizes the inadequacies of range resource management and the weaknesses of present administrative structures—criticisms that have been supported by evidence put to this Commission. Here, however, I want to draw attention to some implications of the tenure system used to regulate the use of Crown rangelands.

Grazing Leases, as they have traditionally been administered by the Lands Service, have left so much discretion to the lessee that there has been no assurance of adequate range management. As a result, some leased lands have been well managed, while others have been seriously abused. Moreover, these rights have left little scope for accommodating other uses, such as wildlife or even public access, on leased land.

Permits convey only annual, non-exclusive permission to graze livestock on Crown range, an arrangement which offers little security to graziers and leaves them with few incentives to improve their performance or to encourage better range management. Grazing policy has not, therefore, fully developed the potential contribution of resource users in range management and this has put a heavy burden on the public agencies.

Grazing Leases are unsatisfactory for reasons already mentioned, but they do have some valuable features that should be recognized in designing new arrangements: their identification of rights and responsibilities with a defined area, their scope for enabling the lessee to accept management responsibilities and to take advantage of improvements without interference from other graziers, and terms of sufficient duration to enable and encourage graziers to plan, manage, and develop the range in both their own and the public's interest. The permit system has none of these valuable attributes. Permittees

⁷ Not discussed here are certain minor forms of rights administered by the Forest Service, including Grazing Special Use Permits issued in Forest Reserves, hay cutting permits in native meadows, and community pastures. See *McLean Report*.

have only annual and uncertain rights from year to year; they have no exclusive right to the forage on any land area, and so are left with weak incentives to take a managerial interest. In short, neither leases nor permits are satisfactory; but the weaknesses of leases are mainly in the details of their terms and conditions and the historical lack of control and surveillance over their use, while the shortcomings of permits are more inherent in their structural form.

One approach to improved range management is a massive increase in range management staff, sufficient to enable the government itself to develop and manage Crown ranges. Thus, the *McLean Report* proposes a fourfold increase in professional personnel and an even larger expansion in technical support staff for a restructured agency that would manage rangelands and allocate their use under a new permit-type arrangement. I have no doubt that administrative resources are presently inadequate, but in my judgment more emphasis should be put on designing a system of rights that would muster the energies of range users to manage and improve the rangelands they use. Given the circumstances of range management needs and public administration in this province, I am convinced that the most practicable and effective means of attaining a high standard of range management, meeting the needs of the ranching industry and protecting other rangeland interests, is a tenure system that will provide users themselves with incentives to manage the resources within a suitable framework of public ownership and control.

In my investigation of these problems I have been very favourably impressed with a new programme known as Co-ordinated Resource Management Planning, initiated in mid-1975 to provide an integrated approach to resource management on rangelands. This informal process was launched on the sensitive ranges of the East Kootenay, and has since been adopted in the Cariboo and Kamloops regions as well. It involves bringing together representatives of all interested resource agencies and resource users to design an integrated resource management plan and to obtain commitments from each under the plan. Judging from my observation of some of the results, and from testimony heard by the Commission, this is one of the most promising experiments in multiple use resource management in the province. The achievements are particularly remarkable because they have been made in areas where rangelands have suffered from deficient management for decades, where conflicting resource interests have been particularly acute, and where relations between graziers and government agencies have been especially strained. The constructive co-operation that has emerged under this programme deserves strong encouragement and support. In designing my proposals for improving the system of grazing rights I have been anxious to ensure that they will complement and strengthen this kind of management endeavour.

TOWARD IMPROVED GRAZING RIGHTS

For reasons I have already explained, the present system of Grazing Leases and Permits is not well suited to the modern needs of Crown range management. I suggest that a revised rangeland tenure policy be based on new Grazing Licences which would overcome the deficiencies of the present leases and permits and encourage graziers to participate in the manage-

ment of rangelands.⁸ These licences should convey to the licensee the right to use the forage on designated tracts of rangeland subject to an approved plan which, in most cases, would complement the Co-ordinated Resource Management Planning described above. Depending on local conditions, the terms of these contracts should vary up to 10 years, and provide advance renewal arrangements similar to those I have proposed for Forest Licences. The licensees may be individual ranchers or ranch companies, and in many cases they are likely to be local grazing associations which are already well established in ranching districts.

As with timber rights, I consider it important to provide for an element of competition in the allocation of grazing rights over Crown land. With most ranges already heavily used and depended upon by established users, the allocation of licences will call for some discretion; but where it can be done without serious disruption, licences and renewals should be allocated by competitive tender with matching bid privileges to established users. The charge for the licence, determined by tender or elsewhere fixed by the range authorities according to the estimated value of the forage provided in each case, should be collected in the form of an annual rental.

The use and development plan appurtenant to each licence should describe grazing schedules and approved improvements to be undertaken, such as fences, trails, cattleguards, water facilities, and so on. These plans should be designed in consultation with licensees and other resource agencies involved in resource management planning, to ensure that they provide adequately for values other than livestock grazing. Range improvement projects might be undertaken by the range authorities directly, or through explicit contractual arrangements with licensees. It should be the licensee's contractual responsibility to meet the requirements of the approved plan under general government surveillance, and he should be subject to penalties, suspension, or cancellation of the licence for non-performance.

These arrangements should provide the ranching industry with much clearer and more secure rights to use Crown range, as well as incentives to adhere to resource management plans and to actively participate in range improvement. They should also provide resource administrators with effective mechanisms to regulate the use of rangelands in order to realize their full potential in forage production and other values.

The administrative structure for rangeland management is also in urgent need of rationalization. Today it is divided between the Lands Service and the Forest Service, and there has been considerable debate over its most suitable place in the public service. In view of the alternative departments that *might assume responsibilities for range administration, their interests and field capabilities*, I have no hesitation in recommending that the Forest Service should administer the Crown rangelands. This agency is already responsible for Crown ranges other than those under lease, and the Forest Service is inevitably deeply involved in their management through its responsibility for the forests covering most rangelands. But the Forest Service's range management component clearly has not had the strength and status it deserves, and because it must administer a separate system of resource rights involving

⁸ A useful distinction can be drawn between leases, licences, and permits. Technically, a lease, unlike a licence or permit, confers a right to the exclusive use of land, subject to specified terms and conditions. In the context of this province's natural resource policy, permits usually do not confer sole rights to a particular use of a resource, but licences do.

different users and a more or less separate staff, I recommend in Chapter 24 that a special Assistant Chief Forester be appointed with responsibility for range administration.

MARINE LOG SALVAGE

The final issue to be considered in this chapter is the policy relating to marine log salvage. I am reluctant to attempt a thorough review of this matter here, for three reasons. First, it is an issue that is, to a large extent, separate from the main focus of this investigation, namely rights to standing timber and forest land. Second, it is exceedingly complicated, and a comprehensive review would require a very lengthy discourse. Third, like grazing policy, log salvage arrangements are currently being reviewed by the government through other means.⁹ I therefore intend to confine my discussion here to certain general problems relating to log salvage rights which, on the basis of presentations at my hearings and other documentation of the problem, seem to me to warrant consideration in revising this policy.

Marine log salvage policy touches on a remarkably wide range of laws and institutional arrangements. It involves fundamental legal issues relating to the rights of those who lose logs on the one hand and of those who recover them on the other: matters of safety in navigation; pollution control; special provisions of the Criminal Code and the Forest Act; and complicated arrangements for marketing salvaged logs and controlling log spills at sea. The history of log salvaging has been marked by friction between salvors and logging companies and it has put a disproportionate strain on public administration.

Log salvaging has evolved with the coastal forest industry, where logs have traditionally been transported in towed rafts or booms from which logs sometimes break loose and go astray, to be washed up on the beaches.¹⁰ In addition, logs often escape from booming and storage areas, log dumps, and foreshore millsites. In recent years the increasing practices of barging logs rather than floating them, sorting them on land rather than in the water, and bundling them before booming have reduced log losses to some extent; the government, concerned with pollution and hazards to navigation, has encouraged these trends. On the other hand, the increasing quantities of small and irregular logs and pieces recovered under close utilization regulations aggravate log losses and add to debris.

In any event log losses remain significant, and beachcombing can be expected to continue as an adjunct to the coastal forest industry for the foreseeable future. In recent years salvaged volumes have risen to about 50 thousand cunits, with a gross value sometimes exceeding \$4 million.

ARRANGEMENTS OUTSIDE THE VANCOUVER LOG SALVAGE DISTRICT

Outside the waters between Vancouver Island and the mainland (where the special arrangements described below apply) anyone, except a Log Salvage District permittee, is free to gather up logs that have gone adrift without special permission. The main instrument of control is the federal Criminal

⁹ As background for its policy review the Forest Service contracted an external assessment of some aspects of its log salvage policy, and the description of current arrangements here draws on that report. B.C. Research, *Review of Operations of Gulf Log Salvage Co-operative Association*, Vancouver, September, 1974 (mimeo) 37 pp. + App.

¹⁰ Logs are moved by water in some parts of the Interior also, but there no separate salvaging industry has developed and there are apparently few problems in log recovery.

Code, which prohibits fraudulent taking of logs and defacing of timber marks, and compels anyone to "deliver up" any logs in his possession to their owner upon request. Thus the owner of a log, if he can identify it by its timber mark (a brand embossed with a hammer on the end of a log), can require a salvor to hand the log over to him. He is not legally obliged to pay the salvor anything for his effort, but some payment is usually made to maintain goodwill.

Regulations under the Forest Act require that salvaged logs be officially scaled. The owners of any marked logs are notified of their whereabouts and given 10 days to claim them; but more often than not, owners find it is not worthwhile to retrieve their logs in this way. In any event most logs do not have identifiable marks. On these, the salvor is required to pay stumpage as well as the cost of the scale. He is permitted to sell these, and any marked logs not claimed, as he sees fit.

The most serious problem with these arrangements seems to relate to the payment salvors receive for recovering marked logs when they are claimed by owners of the mark. Another question is the logic of the present policy of charging stumpage on logs beachcombed or found adrift. I return to these issues below.

LOG SPILL RECOVERY ARRANGEMENTS

Within the Vancouver Log Salvage District (between Vancouver Island and the mainland) the Forest Service has statutory authority to order closures on log salvaging over specific areas for periods up to 10 days in the event of major log spills. This is to enable the owner to retrieve his logs in the closed area without interference.¹¹ In such cases, the owner may recover his logs through direct contractual arrangements with salvors, but the task of directing recovery operations is usually assigned to the B.C. Log Spill Recovery Co-operative Association, a non-profit organization that acts on behalf of owners and insurance companies and operates anywhere on the Coast. Recovery operations are managed by the Association, which often supplements its resources by employing a selected group of salvors known as "pennant holders" on a contractual basis when they are required.

In general, I find these arrangements satisfactory. Log owners should be given an opportunity to retrieve logs lost in major spills, in an orderly manner. Some salvors have complained about the payment they receive for recovering spilled logs under arrangements with their owners, but in my opinion that is not a matter for government intervention. Others have argued that salvors engaged in spill clean-up recover other logs as well, which local beachcombers might otherwise obtain, but I see no justification for the government to reserve to particular salvors logs which they have not yet taken into their possession. But closures inevitably interrupt normal salvage operations, and so they should be imposed with restraint.

ARRANGEMENTS WITHIN THE VANCOUVER LOG SALVAGE DISTRICT

For many years timber companies and insurance firms complained of legal problems in resolving disputes with salvors, and a 1954 amendment to the Forest Act led to new Regulations which govern log recovery in the region of

¹¹ Apparently closures have been ordered, at the request of owners, outside the Vancouver Log Salvage District also, although there is no legislative authority for doing so.

most intensive salvaging—the Georgia Strait and adjoining waters.¹² First, the Minister was empowered to designate log salvage districts, and within them to licence persons to operate regulated log-receiving stations on a non-profit basis. Only one log salvaging district has been created—the Vancouver Log Salvage District¹³—and for it one licence for a log-receiving station has been issued—to the Gulf Log Salvage Co-operative Association (hereinafter Gulf Co-op) the members of which are timber companies, log brokers, a towing company, and insurance underwriters and agents. In effect, these arrangements give Gulf Co-op an exclusive right to receive logs salvaged in the District, except those delivered directly to owners.

The second thrust of the new legislation was aimed at regulating salvors. Under the Regulations only salvors who hold permits issued by the Forest Service may operate in the Vancouver Log Salvage District. Permits are issued annually for a fee of \$100; they are not transferable and are not issued to companies. Restrictions on permittees confine each to a single boat and tender, and to one assistant. Some 500 salvors now hold permits to operate in the District, but many are inactive or only casual so that roughly one-third of the total number account for 80 per cent of the value of logs recovered.

In the District, as elsewhere, owners of marked logs can claim them directly from salvors under the provisions of the Criminal Code, but this is not usually done. Salvors are required to deliver to Gulf Co-op any such logs not claimed and all unmarked logs. The Regulations require an official scale of all salvaged logs before they are sold. Stumpage or royalty is assessed on marked logs at the rate applicable to the property or Cutting Permit identified by the mark; other logs bear stumpage of either \$2.00 or 55¢ per cunit.¹⁴ The cost of scaling is also assessed, and these costs are deducted by Gulf Co-op as operating expenses in calculating the net value of logs for payments to salvors.

Salvors are paid a fraction of this value net, of operating costs, according to a schedule set out in the Regulations, ranging from 40 to 100 per cent (100 per cent is paid only on low-grade logs). In the case of marked logs, the residual funds are paid to the owners of the marks. The residual from unmarked logs—by far the largest portion—until recently was also distributed among timber companies in proportion to their share of marked logs recovered. Now, however, these receipts are held in a fund by Gulf Co-op to provide capital for expanding its network of log-receiving stations, to cover operating costs, to provide loans to salvors, and to contribute to debris control, as well as to provide for distributions among owners of marked logs. Allocation of these funds requires the approval of the Chief Forester. In 1975, salvors were paid some \$2.2 million—58.6 per cent of the value of logs sold. Logging companies received 2.2 per cent for logs bearing their marks

¹² The first Regulations pursuant to the Act were passed in 1958 and there have been subsequent amendments, the most recent in 1974. New revisions are currently being considered.

¹³ The Vancouver Log Salvage District covers the waters between the mainland and Vancouver Island: from Otter Point, near Sooke, to the northern tip of the Island, across to Cape Caution and south to the U.S. border. It includes the Fraser River to Hope, but excludes certain harbours.

¹⁴ Marked logs may be exempted from these charges if it can be proven that they have already been scaled *on land*. The \$2.00 rate is levied on unmarked logs, except deadheads and low floating logs which bear 55¢.

and another 9.5 per cent from the "no mark visible" fund. The remainder was used to cover the costs of Gulf Co-op's operations, stumpage and royalty payments, and debris control.¹⁵

A pervasive problem is the high proportion of very low grade logs delivered, which are difficult to sell to the satisfaction of salvors. Salvors have the right to have their logs sold by a broker of their choice (rather than the Gulf Co-op's broker) and they sometimes exercise that right, particularly for their better logs.

OBJECTIVES IN POLICY REVISION

It is apparent, even from the foregoing sketch, that the arrangements governing marine log salvage are exceedingly complex. In my opinion, the government's policy on this matter should be thoroughly re-examined in the context of its basic objectives.

First, it must be recognized that those who allow logs or debris to go adrift do a public disservice. Apart from wasting raw material, they create serious hazards to navigation and to the boating public, impose significant costs in maintaining public and private beaches, cause pollution, and infringe on æsthetic and recreational values. Log losses can be reduced through improved log handling and transportation practices, and those who continue to lose logs have presumably found that their losses do not justify additional costs in improved practices.¹⁶ Public policy should be directed toward discouraging log losses; those who permit escapes should, if anything, be penalized.

Present arrangements are obviously not designed to provide incentives to minimize losses. The Criminal Code enables owners to reclaim marked logs from salvors, technically without compensation for the salvors' trouble. Within the Vancouver Log Salvage District where all logs must be delivered to Gulf Co-op, owners are given a portion of the value received for their marked logs, and some of the receipts for unmarked logs as well. In my judgment this involves excessive protection of the interests of those whose logs go adrift.

Second, log salvaging is in the public interest and salvors should be given incentives to retrieve lost logs by allowing them a large portion of the values they recover. The provisions of the Criminal Code clearly do not ensure that salvors will be fairly compensated for logs claimed by owners, and in the Vancouver Log Salvage District they do not receive full value for all the logs they must deliver to Gulf Co-op whether the original owner can be identified or not. Moreover, the Crown levies stumpage and royalty on all logs even though they have already been paid on most.

Third, there is a serious danger of piracy, and so policy should be designed to minimize incentives to steal logs or to obliterate marks, and to promote the development of a responsible, stable log salvage industry. In the Vancouver Log Salvage District the incentives to deface marks are substantially reduced, but the arrangements tend to generate friction and distrust between salvors and others who claim a financial interest in recovered logs.

¹⁵ Stumpage and royalty accounted for 5.4 per cent; the operating and administration costs of Gulf Co-op absorbed 16.1 per cent; 4.0 per cent went to subsidize sorting grounds, and 4.2 per cent was used for debris control. Figures cited were obtained from Gulf Co-op.

¹⁶ For a useful analysis of the economic trade-off between log losses and improved log handling and transportation techniques, see B. Fairburn and K. Peterson, "Controlling Sawlog Debris in the Lower Fraser River", Westwater Research Centre Tech. Rep. No. 5, Univ. of British Columbia, 1975, 35 pp.

Finally, marine log salvaging should be seen in its proper perspective as a valuable but relatively minor adjunct to the coastal forest industry, and governmental regulation should be the simplest necessary to achieve the above objectives. It is my impression that, in creating the present arrangements, particularly those in the Vancouver Log Salvage District, the government has given rise to marketing structures and procedures that are unnecessarily complex, and that depend excessively on public regulation. The Forest Service is involved not only in scaling, levying stumpage and royalty, and regulating salvors and log receiving operations, but also in fixing salvors' rates of compensation and approving the disbursement of Gulf Co-op's funds. Moreover, by establishing Gulf Co-op in a monopolistic position, controlled by those whose interest conflicts with that of salvors, the government has created a structure that inevitably tends to aggravate relations between the two groups, in turn increasing the pressure for governmental control. And in recent years, Gulf Co-op's role in log salvaging has become confused with pollution control, financed in part by logs recovered by salvors.

In reviewing these arrangements, the government should take account of certain additional considerations. As long as the present provisions of the Criminal Code obtain, there will be a need for an official scale and an opportunity for log owners to claim marked logs. But while I have referred to "owners", it must be recognized that in many cases the marks do not identify their last owners, because logs have often been sold to others before they go adrift. Moreover, there is an obvious need to provide assurance of equitable compensation to salvors for logs claimed. I see no compelling need for maintaining the monopolistic position of Gulf Co-op in receiving logs, or for salvors to be paid less than the full value of any logs which are not claimed as the property of others. Certainly, it seems inappropriate to maintain a system in which debris control is subsidized from salvaged logs, while logging companies, which cause much of the problem, receive financial gain from salvors' operations.

All these considerations lead me to suggest a number of basic revisions in log salvage policy.

- i) Following an official scale, owners of marks should be notified of marked logs held by salvors, and given 15 days to claim them. The notification should also impose a penalty on the owner of the mark, of, say \$5 or \$10 for each log, which he should be obliged to pay unless he can prove that he is not the last owner. In that case the penalty should be levied on his successor in title. This measure should strengthen incentives to minimize logs losses.
- ii) When owners claim logs directly from salvors under provisions of the Criminal Code, salvors should be assured of reasonable compensation. A portion of the value of comparable logs in the Vancouver Log Market, similar in form to the schedule now used by Gulf Co-op to compensate salvors, should be adopted for this purpose throughout the Coast. The rates should be a substantial portion of the market value, to minimize incentives to obliterate marks.
- iii) Once salvaged logs have been scaled and owners given an opportunity to claim those that are marked, salvors should be free to sell them and all unmarked logs to Gulf Co-op or otherwise, as they see fit. A copy of the dated notification sent to owners of marks should provide salvors

with the necessary proof of their right to sell marked logs. If this proposal is adopted, Gulf Co-op should be released from its obligation to accept all logs delivered to it.

- iv) The Forest Service should charge salvors for official scaling costs, but should reconsider the present policy of assessing stumpage on salvaged logs, in recognition of the fact that they are not a drain on the timber supply and in most cases applicable stumpage or royalty has already been charged.
- v) The organization and functions of Gulf Co-op should be thoroughly reviewed. In particular, consideration should be given to providing for representation of salvors in its management, separating it from its financial involvement in debris control, and eliminating distributions of proceeds from unmarked logs to owners of timber marks.
- vi) Consideration should be given to a bonding arrangement for salvors, to promote an orderly and disciplined salvage industry. Incentives to deface marks will be minimized by ensuring that salvors can obtain close to the full value of all logs recovered, thus facilitating surveillance by log owners and police. Stiff penalties should be imposed on offenders.
- vii) To promote orderly and efficient salvaging, to reduce friction among salvors, and to facilitate policing, the government should experiment with designated salvage areas for individual salvors.
- viii) The government should avoid imposing artificial restrictions on the technology of salvage operations.¹⁷ Nor do I support the restriction of salvors' licences to individuals.
- ix) The government should consider the desirability of extending the provisions for ordering closures in the event of spills beyond the Vancouver Log Salvage District.

The problem of debris, which might be defined as driftwood that has no value, is important; but as I have suggested it is inappropriate to finance its control with receipts from salvaged logs. About two-thirds of the volume of debris originates from the forest industry; undoubtedly one of its major contributing causes is the regulations requiring removal from the forest of unmerchantable wood which log owners have no incentive to keep secure in their possession, a problem I discuss in Chapter 18. The Council of Forest Industries and the Forest Service are engaged in several projects relating to debris control, and the forest industry should be encouraged to make vigorous efforts to ameliorate this problem.¹⁸

My suggestions imply a much less critical role for Gulf Co-op. I consider it important to separate its involvement in log salvaging (at least with respect to financing) from pollution control, and to temper its monopolistic position. Later, I discuss the roll of the Forest Products Board of B.C., and eventually that body should assume responsibility for government-controlled log marketing functions.

¹⁷ Restrictions such as those on the number of salvors' boats, tenders and helpers are reminiscent of the tragic history of gear restrictions in fishery regulations; in both cases such restrictions result in compulsory inefficiencies in industrial operations.

¹⁸ The Forest Service, the Council of Forest Industries, the Towboat Owners Association, the Truck Loggers' Association, two Harbour Commissioners and research interests are represented on the Committee on Uncontrolled Waterborne Wood (*sic*) which is mainly a forum for discussion of these problems.

PART V

TIMBER UTILIZATION AND MULTIPLE USE PLANNING

Chapter 17. Regulating the Timber Supply

Chapter 18. Cut Controls and Recovery Standards

Chapter 19. Resource Planning

Chapter 20. Special Management Problems

REGULATING THE TIMBER SUPPLY

Of all the decisions facing forest policymakers, probably the most critical in terms of its economic importance concerns the rate at which timber is to be made available for harvesting. Before sustained yield policies were introduced in British Columbia in 1947, public policy on this matter was mostly passive. Timber owners and holders of rights to Crown timber were for the most part free to harvest at whatever rate they chose, and new Crown timber tenures were made available in response to applications. Sustained yield policies reflected a perceived need for more orderly use of the timber resource, through controlled harvests related to the yield capacity of the forest. As the industry has expanded these controls on harvest rates have become increasingly binding, and today forest tenure policy is heavily influenced by efforts to reconcile harvesting with predetermined target levels.

The importance of yield regulation policy can hardly be overemphasized because it effectively constrains the size and rate of growth of the province's predominant industrial sector and influences its geographical pattern of development as well. It is also a contentious aspect of forest policy, with debate ranging from the technical procedures used to determine the cutting rates to the basic objectives of the whole policy. Nevertheless, it is only in the context of the forestry inventory and its yield capacity that I am able to deal with that part of my terms of reference that instructs me to investigate ". . . the extent to which the forest resources of the Province are committed to use and to users. . . ."

This chapter offers a review and critique of current yield control policy. It begins with a commentary on the forest inventory of the province, which provides the basic data for planning harvest rates. The criteria used to determine harvesting limits for regulated forests are then reviewed with special attention to their limitations and implications. This leads to a discussion of the rationale of yield control and of opportunities for improving the present arrangements.

In view of the importance I attach to this area of forest policy, I feel compelled to deal with it at some length. Many of the problems and procedures involved in regulating timber harvests are complicated and technical, to a degree that cannot be easily accommodated in the body of this report. I therefore present an expanded and somewhat more esoteric documentation and critique of it in Appendix D. But readers should be forewarned that I have not been able to deal with the subject matter in this and the next two chapters without a sometimes arduous review of procedural and technical matters.

THE FOREST INVENTORY

The Inventory Division of the Forest Service has developed a sophisticated forest inventory programme, based on field sampling and photogrammetric techniques. Continuous surveys result in periodically revised estimates of the forest cover and volumes of timber in each management area, as well as estimates of growth rates for each forest type (i.e. each combination of tree species and site productivity).¹ The detailed inventory statistics are not easy to summarize in a meaningful way, but Table 17-1 shows the major categories of forest cover, in each of the Forest Districts, that occupy the 129 million acres of forest land referred to in Chapter 2.

This consolidation of the inventory data is nevertheless sufficient to draw attention to several features of the forest inventory that are particularly relevant to the present discussion. One is the high proportion of mature forest cover. The table indicates that nearly two-thirds of the forest lands on the Coast and in excess of 40 per cent in the Interior are occupied by mature timber. Much of this is very old and decadent, static, or declining in useful volume. But even the stands classified as immature contain timber beyond the harvesting age planned for future crops; for inventory purposes mature timber is somewhat arbitrarily defined as stands older than 120 years,² while the planned rotation period varies between 70 and 120 years. Extensive tracts

Table 17-1
FOREST COVER BY DISTRICT¹

Forest District	mature timber ²	immature timber	non- productive ³	total forest land	mature volume ⁴
	thousands of acres				millions of cunits
Coast:					
Vancouver	7,465	4,276	977	12,717	727
Prince Rupert (Coast)	6,061	579	184	6,824	457
total Coast	13,526	4,855	1,161	19,541	1,184
Interior:					
Prince Rupert (Interior)	13,706	7,417	2,777	23,900	487
Prince George	18,596	20,867	5,465	44,927	591
Cariboo	7,798	7,306	914	16,018	213
Kamloops	5,973	5,941	915	12,829	217
Nelson	3,787	6,702	1,046	11,535	163
total Interior	49,860	48,233	11,117	109,209	1,671
Total province	63,386	53,088	12,278	128,750	2,855

¹ All forest land is included: both Crown and Crown-granted lands, federal lands, and lands in parks and other reserves.

² Defined as timber older than 120 years, with the exception of lodgepole and whitebark pine and broad-leaved species which are considered mature at 80 years.

³ Includes lands "not satisfactorily restocked", "non-commercial cover", "residual" stands, and lands identified as "disturbed, stocking doubtful".

⁴ Includes all mature volumes in trees larger than 7 inches in diameter (d.b.h.) to a 4-inch top diameter (d.i.b.) net of decay.

Source: B.C. Forest Service, *Forest Inventory Statistics of British Columbia*, op. cit.

¹ See B.C. Forest Service, *Forest Inventory Statistics of British Columbia*, op. cit.

² Excepting stands of lodgepole and whitebark pine and broad-leaved species, which are considered mature at 80 years.

of thrifty Interior forest, created largely by uncontrolled fires during the gold mining and railroad periods of the last century, are thus classed as immature although they are already beyond the age considered appropriate for harvesting. The current stock of merchantable timber—some 2.9 billion cunits—can be compared with the average annual harvest during the last ten years of 18.8 million cunits, or 0.7 per cent of the total.

Table 17-1 shows that a significant area of some 12 million acres is currently non-productive. About half of this is described in the inventory statistics as “not satisfactorily restocked”, meaning that it is probably inadequately reforested after logging or forest fire; some 40 per cent is “non-commercial cover” consisting of brush and weed trees; and the remainder is “residual” or remnant stands and disturbed areas where the state of reforestation is uncertain. The state of these lands is discussed further in Chapter 20.

The current forest inventory encompasses all lands and all volumes according to uniform technical standards, without reference to their harvestability in economic or environmental terms. The “all sites, all types, all access” policy means that lands of all degrees of growth capability are included; all species including unmerchantable varieties are accounted for; and there is no attempt to distinguish stands that are inaccessible or otherwise unharvestable. The volume of timber in all stands and their rates of growth are measured according to a uniform standard of recoverability.³

The inventory is, therefore, purely a physical accounting, and inferences about the current or potential volume of useable timber must be made with extreme caution. Obviously, the area of harvestable forest and the volume of recoverable timber fall far short of the inventory figures, and some allowances are made for relevant constraints in calculating the limits to harvesting (see below). In view of the time horizons involved in forest planning, ranging over more than a century in many cases, it is essential to recognize not only the difference between the physical inventory and its recoverable portion but also the changing relation between the two over time. Thus, a retrospective examination of estimates of merchantable timber in the province during the present century shows enormous variation, which bears only a rather random relation to estimates of the extent of forest cover.⁴ Generally, economic and technological trends in logging, transport, and manufacturing have expanded the merchantable portion of the inventory, although in recent years environmental constraints and withdrawals of land for non-timber uses have worked in the opposite direction.

THE ALLOWABLE CUT POLICY

The Forest Service attempts to determine, for each management unit, the volume of timber that should be cut at a constant level each year over a full growing cycle in order to harvest all the growth during that period. The relevant management units are the Public Sustained Yield Units, Tree-farm Licences, and Taxation Tree Farms. The harvest rate determined is the “allowable annual cut” for the unit. The calculation embodies constraints to ensure that at the end of the growing cycle (or “rotation”) there will be a more or less evenly graduated distribution of age classes in new stands capable

³ i.e., the “close utilization” standard, which includes the volume of wood measured between assumed stumps of 1 foot high and 4-inch tops in all trees more than 7.1 inches in diameter in the Interior and 9.1 inches on the Coast. See Glossary.

⁴ See Appendix D.

of a continuous yield thereafter. This calculation is revised periodically. The procedures involved in determining the allowable cut, sketched briefly below, are explained in detail in Appendix D.

A critical first step in the process is to determine the rotation period—the number of years that new crops are expected to be grown. The immediate relevance of this is not to the harvesting of the new crops themselves (because this is typically not expected to occur for many decades) but to the number of years over which the harvesting of mature timber must be spread. The solution is found by estimating, for each forest type in the unit, the age to which new stands should be grown to maximize their average annual rate of wood growth.

The volume of timber expected to be harvestable in each forest type is then simply divided by the number of years in the rotation indicated by this criterion. In the case of mature types the volume assumed to become available is the current volume in the inventory, and for immature types it is their estimated yield at the planned rotation age. The resulting annual yield is then adjusted to reconcile it with the existing age structure of the forest to ensure that there will be no hiatus in stands of suitable cutting age during the rotation. The result is a first approximation to the allowable annual cut for the rotation period.

At this stage several important adjustments are made in recognition of the obvious limitations in the inventory data used in the calculation. Thus deductions are made for estimates of:

- i) withdrawals of land or reservations of timber from industrial use during the rotation, and elimination of productive areas to permanent roads and other rights-of-way;
- ii) delays in regeneration of lands following logging;
- iii) losses from fires;
- iv) blowdown on the periphery of cut areas, seed trees not recovered, and other losses associated with cutting regulations;
- v) breakage during logging;
- vi) deviations from the utilization standards assumed in the inventory.

These so-called “non-recoverable losses” range up to a third of the calculated allowable cut and are deducted from it to arrive at the *indicated net allowable cut*. For Public Sustained Yield Units all these calculations are made by the Resource Planning Division of the Forest Service with data from the Inventory Division. The indicated allowable cut is then referred to the relevant District Forester and the Administration Division for review in light of special local conditions and administrative problems. After any necessary corrections the allowable annual cut is recommended to the Chief Forester for approval; once endorsed by him it becomes the basis for limiting cutting rights in the relevant management unit. For Tree-farm Licences and Taxation Tree Farms the calculations are made by the private holders, subject to the approval of the Chief Forester.

BIASES IN THE ESTIMATES

In a later part of this chapter I raise some fundamental questions about allowable cut policy, but first I will make some comments on the procedures

described here. Accepting for the moment the objective of identifying the maximum harvest that can be taken each year over a full rotation period, a number of sources of error and bias in the system should be noted.

First, the estimating procedure used by the Forest Service for Public Sustained Yield Units tends to exaggerate the potential allowable cut in at least two important respects. One relates to the inventory data base. Including as it does all forest land and timber (with minor qualifications) within the management unit, the inventory clearly overstates the harvestable timber supply. To a degree that varies widely across the province, some lands are inaccessible with current and foreseeable technology; some stands are of such low quality or meagre volume, or in such small isolated parcels that they are unlikely to be harvestable in the foreseeable future; and some sites are so sensitive because of their high elevation, steepness, or non-timber values that they offer little prospect for industrial operations. The other upward bias is in the uniform, close standard of utilization assumed in the inventory, which probably cannot be achieved in many of the overmature, decadent timber stands in the province.

On the other hand, there are numerous conservative biases in the allowable annual cut calculation:

- i) The best inventory data available for some units are very old, having been compiled in some cases more than fifteen years ago when different standards of utilization were accepted. Revisions of such old surveys almost invariably indicate higher volumes of timber.
- ii) The somewhat arbitrary exclusion since 1974 of all stands on "low" sites (and those producing less than 11 cubic feet per acre per year) from the allowable cut calculations undoubtedly eliminates some harvestable timber.
- iii) In the dry Interior, merchantable volumes of old-growth timber in uneven-aged-growth stands are often ignored, even though it is logged through selective cutting.
- iv) Advanced understories of second-growth that will produce the next crop are typically ignored on the assumption that all areas logged will revert to bare land.
- v) Technological and economic trends, and the conversion of old-growth forests to second-growth stands that are more uniform and sound, suggest that standards of utilization will be closer than the current standard by the end of a full rotation.
- vi) Growth rates tend to be underestimated in several ways:
 - no growth is recognized on mature timber, although many mature stands continue to add increment;
 - for new stands beyond rotation age no account is taken of growth during the period in which it is planned to harvest them, which is often more than a decade;⁵
 - growth is estimated from samples of natural stands, although managed crops are expected to add volume considerably faster in many cases;
 - estimates of the productivity (or site quality) of land occupied by mature timber often fall short of its capabilities in new crops (according to some experts, at least).

⁵ See Appendix D.

- vii) The rotation periods selected tend to be too long as a result of these under-estimates of utilization and growth, and in addition by:
 - selecting the age of maximum average growth appropriate for the species currently on the site, although the species that will replace existing old-growth stands often call for shorter rotations;
 - determining the rotation without reference to economic factors in the timber production process which, if considered, would typically indicate shorter rotations. Numerous economists have emphasized the unduly long rotations that result when interest on capital and other relevant economic considerations in the production of timber are ignored.⁶
- viii) The deductions made from the calculated allowable cut to provide for losses of land and timber during the course of the rotation are generous, but even if the predicted losses occur, the reductions in the allowable cut are excessive because:
 - allowances for withdrawals of land from timber production such as parks, land alienations, and permanent roads and rights-of-way are made in such a way as to imply that they have all already been lost from the productive area, even though they are not expected to be withdrawn until later during the rotation period;
 - no recognition is made of timber to be recovered from rights-of-way, logging roads, and burned areas, although salvage of such timber is, increasingly, the normal practice;
 - losses attributed to delays in reforestation are based on the unrealistic assumption that the full allowable cut will be harvested each year, and hence the area actually denuded is overestimated.⁷
- ix) Some timber harvested and included in the accounting of the harvest is excluded from the harvestable inventory, such as dead trees lying on the ground, timber recovered from roads and other rights-of-way, and from land clearing. In result, the recorded harvest, which is subject to the allowable cut limits, exaggerates the depletion from the inventory.⁸

Although generous allowances are made for non-recoverable losses in arriving at the approved allowable cut, the government rarely allocates harvesting rights sufficient to realize that rate of harvesting. Table 17-2 shows that in 1975, licence contracts authorized only 63 per cent of the approved allowable cuts in Public Sustained Yield Units, although the proportion varies considerably among units. In addition, the actual harvest usually falls short of the authorized harvest; in the last three years the scaled harvest in Public Sustained Yield Units amounted to only 79 per cent of the authorized cut. Obviously, the programme of forest conversion implied in the allowable cut calculation procedure cannot be realized unless the full allowable cut is actually harvested. And insofar as harvesting has never reached the allowable cut fixed for Public Sustained Yield Units, it follows that the accumulated shortfall leaves a further substantial margin of surplus timber in terms of the harvesting objectives.

⁶ Curiously, the rotation period adopted is referred to as the "economic rotation" (*Inventory Statistics, op. cit.*, p. 210). A recent example of economic analysis of this problem is the work of the American Nobel prize-winning economist P. A. Samuelson, "Economics of Forestry in an Evolving Society", Proceedings of a seminar on the Economics of Sustained Yield Forestry, University of Washington, November, 1974.

⁷ See Table 17-2.

⁸ This problem is examined in Chapter 18. Other exaggerations in the allowances for non-recoverable losses are noted in Appendix D.

Table 17-2
ALLOWABLE CUTS, HARVESTING RIGHTS, AND HARVESTS IN SUSTAINED YIELD UNITS BY FOREST DISTRICT

Forest District	Public Sustained Yield Units					Tree-farm Licences		
	allowable cut ¹	outstanding harvest rights ²		current annual harvest ³		allowable cut ⁴	current annual harvest ⁵	
	thousand cunits	thousand cunits	per cent of allowable cut	thousand cunits	per cent of allowable cut	thousand cunits	thousand cunits	per cent of allowable cut
Vancouver	2,802	2,286	82	1,766	63	4,468 ⁶	4,013 ⁶	90
Prince Rupert	5,515	2,111	38	1,433	26	1,103 ⁷	854 ⁷	77
Prince George	6,739	4,197	62	3,191	47	144	149	103
Cariboo	2,449	1,855	76	1,675	68	45	47	104
Kamloops	2,679	2,226	83	1,832	68	219	231	105
Nelson	2,184	1,502	69	1,304	60	542	456	84
total	22,368	14,177	63	11,201	50	6,521 ⁶	5,750 ⁶	88

¹ Approved allowable annual cut in 1975.

² Allowable annual harvest under licence, July 2, 1975.

³ Average of volume scaled in the three years 1973 to 1975.

⁴ Average of approved allowable annual cut over the five years 1970 to 1974 (the rate having changed for some licences under revised 5-year plans during this period).

⁵ Average of volume scaled in the five years 1970 to 1974.

⁶ Excluding Tree-farm Licence No. 2 which had no regulated harvest until 1974. Includes all of Tree-farm Licences No. 25 and No. 39 which are partly situated in the Prince Rupert District.

⁷ Excluding portions of Tree-farm Licences No. 25 and No. 39 included in Vancouver District figures.

Source: Compiled from data provided by the B.C. Forest Service and Appendix D, Tables D-2 and D-3.

The net effect of these positive and negative biases cannot be reliably quantified with available data, and it undoubtedly varies considerably among Public Sustained Yield Units. The weight of informed professional opinion on this matter leaves me with little doubt that the allowable cut is exaggerated in many (if not most) of the mainland coastal units and in the Kootenay region, because the timber that can reasonably be expected to become harvestable falls so far short of the physical inventory. It is in these areas, particularly, that rough mountainous terrain and relative remoteness restrict accessibility most; where decadence, low quality, and low-valued species in timber stands make recovery most uneconomic and close utilization most difficult; and where environmental damage associated with operations at high elevations, on steep slopes, on unstable soils, and in areas of high wildlife and fisheries values imposes the most severe constraints. Of interest in this connection is a recent study of the resources in the Bella Coola region, indicating that the exclusion of stands on fragile sites and of decadent timber that cannot bear logging and development costs reduces the allowable cut by one-third to two-thirds.⁹ These factors may help to explain the paradoxical allegations of licensees that they cannot find merchantable stands in which to exercise their harvesting rights, even though the approved allowable cuts for the relevant units indicate plenty of available timber (see Table 17-2).

As a result of all these considerations, informed observers have speculated that the present level of commitments may approximate the limit consistent with the sustained yield goal in the difficult Public Sustained Yield Units of the mainland Coast and Kootenay regions, even though commitments have been kept particularly low in relation to the indicated allowable cuts in these areas.

But in most of the Public Sustained Yield Units in the province the allowable annual cut is almost certainly conservative, given the objective of designating the maximum constant quantity of timber that could be removed each year over a rotation. The consistent upward bias in the allowances for losses, exaggerations of the rotation period, underestimates of growth, and other conservative features noted above are so substantial in the aggregate they seem bound to outweigh the reverse exaggerations of the inventory.

In relation to its calculations of allowable cuts for Public Sustained Yield Units the Forest Service has been systematically conservative in allocating harvesting rights, and for the marginal units this may prove fortunate. The emergence of a tenure policy based on bilateral negotiations and indefinite commitments has undoubtedly provided an incentive to err on the conservative side since any cutback in rights would present formidable administrative difficulties. But it should be noted that, in terms of the apparent objectives of allowable cut policy, undercutting and overcutting are equally disadvantageous; and in economic terms undercutting can be expected to impose the highest cost in foregone income and employment.

These conclusions do not hold for Tree-farm Licences and Taxation Tree Farms. In these cases, the licensees typically generate their own inventory data which make allowances for inaccessible and sub-marginal timber. More-

⁹ The gross allowable annual cuts were reduced by 37.1 per cent in the Dean Public Sustained Yield Unit, 37.2 per cent in the Rivers Inlet, and 63.4 per cent in the Chilko. These compare to reductions in the gross allowable cuts for non-recoverable losses, under normal Forest Service calculation procedures, of 19 per cent, 16 per cent, and 30 per cent respectively for these three units: *Bella Coola Regional Study*, Report prepared by B.C. Forest Service, Special Studies Division, Victoria, 1975, 197 pp.+App.

over, the predicted losses from land withdrawals and fire are not exaggerated as they are in the estimates for Public Sustained Yield Units. Indeed, most of these licensees, in calculating their allowable cut for Forest Service approval, have every incentive to err in the opposite direction because of their interest in higher harvest rates. For these tenures, the approved allowable cut is automatically and fully allocated to the holder, who is obliged to adjust his harvesting to the authorized level. It follows that the harvesting in these units more closely approximates the target levels implied in the allowable cut policy, as Table 17-2 indicates.

THE "FALL DOWN" PHENOMENON

It must be emphasized that the current practice does not purport to determine a harvest rate that can be maintained in perpetuity, but only for one rotation period. The calculation is designed to indicate the harvest that can be taken every year during the prospective rotation period, at the end of which a continuous harvest will be balanced by growth. But during this period the current stock of mature and overmature timber must be liquidated. The main issue for the next few decades is to decide the rate of liquidation of the old-growth stock, and under current allowable cut policy this is ostensibly determined as the constant annual rate which will permit the entire volume in a management unit to be harvested over the rotation period predicted for subsequent crops, which varies between 70 and 120 years. Some critics of this procedure point out that this calculated rate is high, because of the present preponderance of high-volume old-growth stands that have grown much longer than the rotation periods planned for subsequent crops. Once these are depleted and replaced by new crops, the calculated allowable cut must fall to be consistent with growth. This is the so-called "fall down" phenomenon.

This argument is quite logical; the allowable cut formula does not identify the rate that can be sustained after the old-growth stock is gone, and the current cut is undoubtedly buoyed up by the stock of old-growth during the transition. The difficulty arises from the usual inference drawn from this observation: that the "fall down" is inconsistent with the principle of perpetually sustained yield, and that therefore, current harvests should be reduced to avoid the eventuality of future reductions.

This conclusion can be disputed on at least three grounds. First, the magnitude of the anticipated "fall down" varies widely among management units, depending on the condition of the current old-growth stands and the productivity of the sites they occupy. In some areas very decadent old-growth timber occupies land that is potentially highly productive, so that the volume in second crops at harvest age can be expected to exceed current old-growth volumes. In such areas the "fall down" will be negative. Second, the full impact of the "fall down" will not be felt for many decades, and it is not unreasonable to expect that in this period silvicultural practices and utilization technology will advance sufficiently to offset the predicted decline.

Third, and more fundamentally, a reduction in current harvesting in order to avoid a future decline cannot be regarded as protection against the costs of adjustment to lower allowable cuts; it will simply shift these costs from the distant and uncertain future to the present. Worse, it will delay the realization

of old-growth values and postpone new growth on lands now occupied by stagnant timber. Such a proposal cannot, therefore, be defended on either economic or silvicultural grounds. It does, however, raise a basic question about the logic of fixing current harvests at a rate that can be sustained for a full rotation (which covers the transition into second-growth harvesting) with the realization that the cut must be predictably altered to some different sustainable rate thereafter. In practice, the implications are even more curious; periodic recalculations of the allowable cut, planned to take place every 10 to 15 years, will frustrate the constancy of harvests even during the first rotation, if for no other reason than because of the changes in the forest inventory that result from the planned harvesting. We are, therefore, left with a rather paradoxical policy of planning steady yields over 70 to 120 years knowing that they will be revised in a fairly predictable way every few years in the interim.

OTHER ANOMALIES

There are even more serious anomalies in the current allowable cut procedure, however. The formula is such that an increase in the productive area or an improvement of the growing stock in the management unit produces an immediate increase in the indicated allowable harvest over the entire planning horizon. This is the so-called "allowable cut effect" of any change in the inventory.

It is logical, of course, that the larger the growing stock the more timber will be available for harvest, but the allowable cut formula seriously distorts the results. Indeed, its effects are in some respects so obviously perverse that the degree of acceptance of the system is surprising. For example:

- i) Under this formula any increase in the timber volume that will become available over the rotation period is spread evenly over each year of the rotation, so a silvicultural investment that will yield more merchantable wood seven to twelve decades hence results in an *immediate* and continuing increase in the allowable cut. The apparent rate of return on such investments can therefore be astronomical, but it has little to do with the value of the additional wood produced by the silvicultural effort.
- ii) For the same reason, the value of even recently logged land is artificially high to someone who can integrate it into a sustained yield unit—well above the productive worth of the land itself—because it will generate an immediate increase in the allowable cut of mature timber elsewhere in the unit.
- iii) This so-called "allowable cut effect" works in reverse as well. Any loss of merchantable timber today is correspondingly spread over the projected cut in future decades, and this substantially lowers the apparent value of protecting timber from fire, insects, and disease.¹⁰
- iv) The larger the inventory of mature timber in a unit, the greater is the gain from producing more inventory, because the leverage in the allowable cut effect is greater. This, of course, is precisely the opposite of what rational investment analysis would indicate. The benefits of a given silvicultural investment thus depend on the inventory structure of the particular sustained yield unit involved.

¹⁰ See E. Bell, R. Fight, and R. Randall, "ACE The Two-Edged Sword", *Journal of Forestry*, 73(10) 1975, pp. 642-3.

- v) A unit with a large inventory of mature timber but with low growing potential will show apparently higher returns from silvicultural investments than one with highly productive lands and low volumes of mature timber.

These and other distortions make an absurdity of the economic consequences of changes to the growing stock. They result from an allowable cut formula that clouds the real implications of a change on a particular part of a management unit, by integrating it into a calculation that can show only the equal annual volume that can be sustained by the whole unit over a full rotation.¹¹ Below, I propose an alternative approach that eliminates these anomalies.

THE RATIONALE OF PLANNING STEADY HARVEST RATES

Notwithstanding the imperfections and irregularities in the calculated allowable cuts, the yield regulation policy currently pursued in British Columbia is clearly based on an objective of nearly constant harvests over very long periods. The limits on the timber supply that this policy imposes have enormous consequences for the level and pattern of timber production. Increasingly, the presumption that the public interest is best served by this policy is being questioned, as is its practicability and the means of implementing it. It is necessary therefore to examine the rationale for a policy directed toward steady yields.

The logic of this policy objective is confused by a variety of popular arguments, some of which reflect a misunderstanding of the issue. For example, it is sometimes suggested that in order to fulfill our obligation to future generations to use forest resources prudently and to pass them on in an unimpaired state, we must adjust current harvesting to the sustainable capacity of the forest inventory. This argument has obvious appeal, but it cannot be concluded that the interests of future generations will be best served by depleting the stock of old-growth timber according to the present allowable cut formula.

Our obligation as *pro tem* trustees of forest resources is to preserve the productivity of forest lands and to avoid unnecessarily reducing the options of future generations. It would be highly coincidental if the best outcome for society a century hence emerged from a harvesting regime based on a rather mechanical formula that ignored likely trends in technology, economic values, and tastes. Just as it would be difficult to contend that we would be better off today if timber harvesting had been hitherto constrained at a level that would have been indicated by such calculations in the last century, so it is questionable whether future generations will be best served by the balance of old-growth and new forests that will result from the current allowable cut limits. Our successors will be at least equally concerned with our efforts to husband the forests, to avoid destructive practices, and to ensure reforestation after

¹¹ For further discussion of this topic see D. L. Schweitzer, R. W. Sassaman, and C. H. Schallau, "Allowable Cut Effect: Some Physical and Economic Implications", *Journal of Forestry*, 70:7 (1972) pp. 415-18; D. Haley, *The Economic Analysis of Activities Designed to Accelerate Stand Growth in the Context of the Managed Forest* (paper presented to the Stand Management Committee, 63rd Western Forestry Conference, Seattle, 1972); D. E. Teeguarden, "The Allowable Cut Effect: A Comment", *Journal of Forestry*, 71:14 (1973), pp. 224-26; D. L. Schweitzer, R. W. Sassaman, and C. H. Schallau, "The Allowable Cut Effect: A Reply", *Journal of Forestry*, 71:4 (1973), p. 227; A. L. Lundgren, "The Allowable Cut Effect: Some Further Extensions", *Journal of Forestry*, 71:5 (1973), pp. 359-60; J. Walker, "Address", in *Ecology, Environmentalism, and Future Timber Supply* (Stuart Rich, Editor), University of Oregon, College of Business Administration, 1975, pp. 6-34.

harvesting. In short, it is a dangerous oversimplification to assume that we can dispatch our obligations to the future by harvesting at a constant rate, or even that the result will be preferable to the forest structure that would emerge from some other regime.

Another spurious justification for steady harvesting is that it protects non-timber values in the form of watershed control, fish and wildlife, and recreation. But the rate of harvesting is much less important to the protection of the forest environment than choices about which timber is to be removed and which preserved, the logging and road building techniques to be used, the pattern of clear-cut openings, and post-logging treatment of the site. The allowable cut calculation does not address these matters, and with appropriate attention to them the protection of other forest values leaves a great deal of flexibility with respect to the volume harvested each year.

The most common *raison d'être* of yield regulation, however, is the promotion of regional economic stability, and this raises more complex questions than the other arguments noted above. In British Columbia, with so many communities critically dependent upon forest-based industries with their pronounced instability, policies aimed at alleviating the dislocating effects of market fluctuations warrant particularly careful examination.

It must be acknowledged at the outset that the circumstances of forestry in British Columbia bear little resemblance to those of France and Germany between the 13th and 16th centuries where the principles of sustained yield management originated. There, wood was an essential material for fuel, building, mining, smelting, shipbuilding, and indeed most other activities as well; and the exigencies of transport meant that it had to be produced locally and continuously. Without any reason to believe that needs would change, silvicultural systems directed toward constant supplies of wood in perpetuity within rather restricted areas had an obvious rationale.¹²

The economic role of timber in British Columbia today is, of course, very different; it is not produced primarily for local consumption but manufactured into products for export. Yield regulation in this context is sought as a means of stabilizing the raw material supplies for an export industry and hence also the income and employment in dependent communities.¹³ The policy must therefore be evaluated in terms of the efficacy of controls on the availability of timber in stabilizing income and employment in the forest industry itself.¹⁴

To examine this issue it is helpful to distinguish between short-run and long-run instability. The former refers to fluctuations associated with cycles in forest products markets, typically only a few years in duration. The latter relates to long-term trends in industrial activity—expansion, decline, or constancy—around which short-term fluctuations occur.

SHORT-TERM INSTABILITY

There is little reason to expect that any attempt to make timber available at a constant rate will ameliorate the impact of short-term market fluctuations on regional employment and income. Short-term instability is largely the

¹² For a discussion of these historical origins of the policy, see D. Haley, "Economic Appraisal of Sustained Yield Forest Management for British Columbia", Ph.D. Thesis, Faculty of Forestry, University of British Columbia, 1966, 313 pp.

¹³ See, for example, F. D. Mulholland, *op. cit.*, p. 126.

¹⁴ The extent to which a society is, or should be, willing to sacrifice economic flexibility and efficiency for stability are important questions which are rarely examined objectively. For an exception, see Anthony Scott, "Policy for Declining Regions: A Theoretical Approach", *Proceedings of Conference on Areas of Economic Stress*, Queen's University, Kingston, 1965.

result of shifts in demand in international markets which cannot be influenced by controls on the supply of industrial raw material in one supply region.

Indeed, constraints on the ability of firms to respond flexibly to market changes may aggravate their impact. If the controls are binding at all, production during market downturns will be held at a higher level than otherwise, adding further downward pressure on prices; and conversely, constraints on expansion of output during strong markets will exacerbate price increases. To the extent that operators are thus forced to harvest at a more constant rate, market swings will put a heavy burden on adjustments in inventories of logs and manufactured products; inventories will be strained during strong markets and accumulations during depressed markets will retard the eventual recovery of prices. Thus, also, the volatility of prices for intermediate products like logs and pulp chips is likely to be aggravated (and hence also the government stumpage revenues based on them). In addition, restrictions on firms' adjustments to changing market conditions undoubtedly aggravate periodic financial strain, particularly for smaller firms.

One further implication of these controls for cyclical stability is that they can be expected to *increase* the swings in production from unregulated sources (which accounted for one-fifth of all timber cut in 1974). The constraints on harvesting rates on regulated lands provide strong incentives for operators who can do so to meet market fluctuations through disproportionate adjustments in production from unregulated holdings, causing even greater irregularity of production in areas where these sources are concentrated.

Empirical research would throw some light on the magnitude of these destabilizing effects. The point here is simply that they exist, and that restrictions on adjustments in harvest rates, far from ameliorating the impacts of short-term market stability, are likely to aggravate them.

LONG-TERM INSTABILITY

The argument that forest yield regulation promotes stability is more often cast in terms of a long-run objective of maintaining existing regional economic structures in perpetuity. Certainly this was the principal rationale for the sustained yield policies adopted in British Columbia three decades ago. It focused concern about the "boom and bust" pattern of industrial activity, the "cut and get out" kind of operations, and the peripatetic logging camps and milling communities.¹⁵ These problems were perceived to be a result of uncontrolled harvesting, and hence could be solved by providing for a steady supply of timber in each region. As they stand, these arguments are persuasive, but with the benefit of hindsight their relation to the harvest control policies subsequently adopted appears tenuous.

To reconcile these policy objectives with the present allowable cut policy requires a number of assumptions, the most critical being the following:

- i) The forest areas subjected to the yield controls adequately delineate the boundaries of timber supplies that will serve the industries of relevant communities, now and in the distant future.
- ii) The level of economic activity, in terms of income and employment, in these communities is determined by the availability of timber from these regions, and the relationship between wood produced and income and employment is more or less constant.

¹⁵ See F. D. Mulholland, *op. cit.*, pp. 10-11 and *Sloan Report 1945*, p. 127.

These assumptions cannot be easily justified, and it is on these grounds that the efficacy of the policy in serving its objectives must be questioned.

The overriding shortcoming of the present control system is that it fails to recognize technological and economic trends. This poses great difficulty, but without some attempt to grapple with the inevitability of change and with the uncertainty surrounding it, especially over the long periods involved in forest planning, decision-makers are in the paradoxical position of projecting results that are inconsistent with their reasonable expectations. While prognostications about future trends in silviculture, industrial technology, and other variables unavoidably involve some speculation, few would argue that the best assumption is that they will remain unchanged; yet this is implied in the present allowable cut policy.

For example, the present sustained yield units, if they were originally designed to represent timber supply regions, do not do so today. Continuously changing conditions in transportation, utilization technology, and industrial structure have left sustained yield units, that may have appeared to be logical supply areas at one time, quite irrelevant to current and predicted patterns of timber usage. Generally, economic supply regions have tended to expand with advances in transportation, economies of centralization, and integration of manufacturing. This is important because the results of the allowable cut calculation depend on the fragmentation of management units; the answer obtained for a region is often significantly different when the number of units into which it is divided for purposes of applying the formula is altered (generally, as long as the inventory is heterogeneous, the more separate units there are in a region the lower will be the indicated allowable cut). In most parts of the province the logical present timber supply regions enclose several sustained yield units.

Supply areas become obsolete not only because of changes in the economic distance from which supplies can be drawn, but also because the demand centres change. The last two decades have witnessed a dramatic concentration of manufacturing activity into a few growth centres in the province. These emerging manufacturing centres have absorbed industrial activity that once supported scores of small logging and milling communities, even though the industry has grown in the aggregate. Two conclusions can be drawn from this: that developments in industrial structure render obsolete the timber supply regions appropriate for an earlier period; and that regulation of regional harvest rates does not secure the continuity of local economic activity.¹⁶

The latter contradicts the essential argument of sustained yield regulation, but it is amply supported by historical observation. Forest-based industries and communities have expanded and declined throughout the province with few if any examples of a constant level of activity, and the pattern appears little influenced by harvest regulation. Indeed, the rise and fall of forest-based communities have almost certainly been as pronounced since sustained yield policies were introduced as before.

¹⁶ Similar conclusions have been reached in the northwest United States. See C. H. Schallau, "Can Regulation Contribute to Economic Stability?", *Journal of Forestry*, 74:4 (1974), pp. 214-16. In California, 62 sustained yield working circles were reduced to 36 in 1973 and are expected to be reduced further to about 17, according to D. E. Teeguarden, "Forest Regulation: The Geographic Base", *Journal of Forestry*, 74:4 (1974), pp. 217-20. These issues are also analysed in J. H. Beuter *et al.*, *Timber for Oregon's Tomorrow: An Analysis of Reasonably Possible Occurrences*, Res. Bull. No. 19, Forest Research Laboratory, School of Forestry, Oregon State University, Corvallis, Oregon (1976), 111 pp.

This is because the other implied assumptions about constant relationships also have been proven faulty. Even if the volume of wood produced or processed in a region were constant, the resulting employment and income would change with trends in technology and productivity. Over the decade prior to 1972, for example, labour employment per thousand board feet of lumber produced in the province has declined 15 per cent; corresponding employment per unit of throughput in logging has declined 25 per cent and in pulp and paper by 28 per cent.¹⁷ A related trend is the increasing ratio of capital to labour in the forest industry, with the receivers of capital income residing increasingly outside the community where it is used.

Other assumptions, such as that future managed forests will be no more productive than the wild stands of today, are exceedingly tenuous. And finally, the implication that utilization standards will remain unchanged over future decades is clearly inconsistent with the persistent trends of the past.

In summary, it cannot reasonably be assumed that the present controls will result in a steady yield of timber, in spite of their implied objective. Repeated revisions of allowable annual cuts in the past testify to the transient relevance of long-term predictions based on assumptions of a constant technological and economic environment, and continuing change can be expected in the future. Moreover, even if the timber supply were constant, it does not follow that industrial activity and the communities based on it would remain stable. In some cases, undoubtedly, the survival of communities warrants action on the part of governments, but history suggests that this calls for measures other than the regulation of harvest rates.

NEW APPROACHES

The preceding critique of current yield controls paints a somewhat bleak picture of their efficacy in protecting the public interest and raises the question of more suitable approaches. Some of the basic requirements for a more appropriate system have already been implied: clear objectives, recognition of economic variables, and reasonable assumptions about future trends.

Any regulatory method that is to take adequate account of all the biological, economic, and social implications of the problem must be exceedingly complicated, and it is therefore not surprising that forest managers have traditionally resorted to simpler methods, which rest on more readily measurable physical criteria. However, new computer technology has led to the development of optimization techniques to deal with precisely this type of problem. These methods of applied systems analysis are being increasingly used by both public and private forest owners in other parts of the world, particularly in the United States, and in other resource fields such as petroleum, fisheries, and water management as well.¹⁸

¹⁷ Statistics Canada, Catalogue No. 72-002 and 72-202. Similar trends have been observed in the western United States. See B. R. Wall and D. D. Oswald, *A Technique and Relationship for Projections of Employment in the Pacific Coast Forest Products Industries*, U.S.D.A. Forest Service, Res. Pap. PNW-189, Pacific Northwest Forest and Range Exp. Station, Portland, 1975, 49 pp.

¹⁸ For example, see F. H. Curtis, "Linear Programming the Management of a Forest Property", *Journal of Forestry*, 60:9 (1962), pp. 611-16; W. E. Kidd, F. F. Thompson, and P. H. Hoepner, "Forest Regulation by Linear Programming", *Journal of Forestry*, 64:9 (1966), pp. 611-13; J. C. Nautiyal and P. H. Pearce, "Optimizing the Conversion to Sustained Yield: A Programming Solution", *Forest Science*, 13:2 (1967), pp. 131-39; Daniel I. Navon, *Timber RAM: A Long Range Planning Method for Commercial Timber Lands under Multiple-Use Management*, U.S.D.A. Forest Service Research Paper PNW-70, Pacific Southwest Forest and Range Experiment Station, Berkeley, 1971, p. 21; Glen O. Ware and Jerome L. Clutter, "A Mathematical Programming System for Management of Industrial Forests", *Forest Science*, 17:4 (1971), pp. 428-45; John L. Walker, "An Economic Model for Optimizing the Rate of Timber Harvesting", Ph.D. Thesis, University of Washington, Seattle, 1971, 117 pp.

The systems developed to date vary in sophistication and complexity, but all have certain features in common. Stated in general terms, an analytical model is cast to achieve an explicit managerial objective or goal within the confines of a number of constraints. The goal (or "objective function" as it is usually referred to) may be maximization of volume production, maximization of the value of the resource, minimization of the costs of reaching a certain level of production, or some other. Constraints may vary in number and form, but they commonly consist of the area available for timber production, the volume that can be produced from each forest type under assumed intensities of management, the available budget, and the maximum or minimum volume of timber that can be harvested annually or periodically. The impact of silvicultural measures such as planting, spacing, thinning, fertilization, and genetic improvement can be accommodated and alternative assumptions about capital costs, product prices, interest rates, and so on can be introduced. Such analyses can display the optimum rate and pattern of harvesting to meet the specified objective.

These models also offer a systematic and flexible means for exploring the physical and economic consequences of alternative timber harvesting strategies, land withdrawals, and silvicultural practices. If they are appropriately formulated they permit planners to take account of all the best information available and to test the implications of alternative predictions about the future where assumptions must be made. Indeed, one of their greatest values lies in making explicit these necessary assumptions which, as I have indicated, are submerged and unanalyzed in our present system. Moreover, by analyzing the harvesting schedule indicated by the present criterion they can reveal the economic and other assumptions it implies, and compare these with alternative regimes.

Probably the best known model of this type is that used by the United States Forest Service to schedule timber harvesting in the National Forests. Superior in some respects is the one developed by the State of Washington for harvest regulation on State lands.¹⁹ Both of these have certain technical limitations, and more advanced systems are being developed under several auspices, including one by the B.C. Forest Service in co-operation with the University of British Columbia. These techniques afford a much more effective approach to the prescription of harvest schedules to achieve prescribed public objectives.

YIELD REGULATION POLICY FOR THE FUTURE

During the last three decades a great deal of progress has been made in developing the administrative capacity and institutional arrangements for yield regulation in British Columbia. The urgent need today is a redefinition of the objectives of this policy, and a reformulation of the criteria used to achieve these objectives.

¹⁹ The operational models mentioned here are based on linear programming, which is subject to certain limitations, and they invoke certain constraints on yield flexibility over time that appear neither necessary nor appropriate. See Daniel I. Navon, *op. cit.*; and C. J. Chambers and E. R. Summerfield, *Sustained Harvest Analysis: Fiscal Years 1976 and 1977*, Harvest Regulation Report No. 6, Department of Natural Resources, Olympia, 1975, 115 pp. For a discussion of techniques, see John L. Walker, *op. cit.*, and K. N. Johnson and H. L. Scheurman, "Techniques for Prescribing Optimal Timber Harvest and Investment Schedules Under Different Objectives: Discussion, Evaluation and Synthesis", Oregon State University, Corvallis (unpublished manuscript), 1974, 94 pp.

My terms of reference instruct me to formulate recommendations with a view toward ensuring that ". . . the full contribution of the forest resources to the economic and social welfare of British Columbians is realized . . .". It is already obvious from the preceding discussion that the current allowable cut controls are not consistent with this policy objective. Being based on a formula that simply spreads the harvestable volume evenly over time, they cannot (except by unlikely coincidence) permit realization of the maximum benefits from forest resources. It is therefore essential to improve the available data, to take explicit account of the values involved in alternative patterns of harvesting, and to relate the biological and economic constraints to each other in a systematic and practicable way. In the remainder of this chapter I outline my proposals for improvement in each of these areas.

OBJECTIVES IN YIELD REGULATION

The main deficiencies of the present allowable cut policy are its preoccupation with timber in terms of its physical volume and its single-minded concern for constancy in harvest rates. Enough has already been said about the practicality of the present system in the face of a preponderance of old-growth timber and constantly changing economic, technological, and silvicultural conditions, as well as about its ultimate purpose. It is no longer adequate to fix the goal of yield regulation as a more or less constant flow of timber volume over very long periods. Present circumstances call for a more flexible approach to yield regulation, with greater emphasis on protecting and enhancing the productivity of forest land and on the economic, social, and environmental implications of harvesting. Forest management policy for the future should be directed toward two related objectives: protection and enhancement of the capacity of forests to produce their potential range of industrial and environmental values; and within that framework the regulation of harvesting to produce the maximum long-term economic and social benefits from the timber resource.

These objectives imply a shift in emphasis from steady harvests of equal volume to protection of the resource base and providing for its best pattern of use in the interest of society at large. More specifically, they imply that deliberate efforts must be made in several areas. First, the best use or combination of uses for the foreseeable future of each tract of forest in terms of its natural capabilities and human values should be identified. In some cases this will involve exclusion of timber harvesting, sometimes exclusion of other uses, and sometimes a transition from one use to another, but more often a reconciliation of compatible uses with some compromise.

Second, the harvesting of timber should be planned in such a way, and with sufficient flexibility, that full advantage can be taken of market fluctuations and economic and technological trends, providing that silvicultural standards and non-timber values are not jeopardized and future forest productivity is not impaired. Yield regulations must embody reasonable expectations about future trends in forest growth, values and tastes, and recognize the uncertainty surrounding long-term forecasts.

Finally, government should ensure that areas logged, or otherwise denuded, are reforested adequately and promptly and in a way which will gen-

erate maximum benefits from the total reforestation programme. Investments in silvicultural improvement beyond minimum standards of reforestation should be undertaken wherever it can be reasonably expected that the benefits will exceed the costs (see also Chapter 20). With these objectives in mind, I now turn to a number of proposals aimed at initiating this shift to a more appropriate yield regulation policy.

REVISION OF THE FOREST INVENTORY

For reasons already explained, the inventory data used in allowable cut calculations are most deficient for the Public Sustained Yield Units. Even in these cases the main deficiency is not in the physical inventory itself, for although some data are badly out of date, the present inventory system appears to be of an adequate standard for long-term planning. Rather, the problem lies in the *interpretation* of the inventory for purposes of yield regulation.

Most urgent is the need for a systematic method of identifying that portion of the physical inventory that can reasonably be considered harvestable in the foreseeable future. This calls for modifications to the inventory to recognize forest lands that will probably not be operable, at least with present technology and under prevailing economic conditions, because of excessive costs relative to the recoverable values, unacceptable environmental damage, or silvicultural difficulties. In addition, the inventory of lands considered harvestable should recognize those circumstances where other values and uses will constrain the rate and degree of timber recovery and their suitability for intensive silviculture. All this implies a system of classifying forest lands based on social and economic, as well as physical considerations.²⁰

As a first step, I propose that the forest inventory be revised by classifying forest lands into four broad categories, reflecting their suitability and availability for timber production, as follows:

- i) *Unharvestable lands.* This category should include lands that are recognizable as being unsuited for timber production now and in the foreseeable future, such as:
 - lands that are clearly sub-marginal, by virtue of their inaccessible location, elevation, topography, or because of the low value of the timber or small size of stands;
 - lands that are so steep or unstable that they cannot be logged without serious and irreversible damage to the soil or water resources;
 - forest lands that are designated for parks, wilderness areas, utility rights-of-way, or other uses which are incompatible with timber production. This category should be excluded from the data used in calculating harvesting schedules.
- ii) *Multiple use timber lands.* This should include lands that are currently or potentially suitable for commercial timber production but on which timber management must be modified significantly to protect or enhance other values such as recreation, wildlife, or aesthetics.
- iii) *Primary timber lands.* This category should include lands that clearly have their highest use in forestry and where other values are relatively minor or confined to such small areas that they will not significantly im-

²⁰ For a relevant study on forest land classification in the United States, see J. H. Wikstrom and S. B. Hutchison, *Stratification of Forest Land for Timber Management Planning in Western National Forests*, U.S.D.A. Forest Service, Intermountain Forest and Range Experiment Station, Res. Paper Int-108, Ogden, 1971, 38 pp.

pede realization of full potential timber values. Wherever this category dominates a natural geographic area, it should be designated a Forest Reserve.

- iv) *Unclassified lands*. This residual category should be used for productive forest lands that, because of special features or values that may be impaired by forestry activities, warrant further consideration before being included in either of the preceding two categories. Thus it would include areas under consideration for parks or other reserves, for example. This category should be excluded from the inventory used for yield regulation until its final disposition is decided.

The forest inventory for purposes of harvest scheduling should therefore consist of the second and third categories above, but the distinction between them is important. *Multiple use timber lands*, where other values compete significantly with forestry, will require restrictions on harvesting and silviculture that will constrain the rate and pattern of forest production sufficiently to call for adjustments in yield planning. Moreover, investments in intensive silviculture to enhance future crops will yield uncertain returns.

Primary timber lands will encompass the land base on which timber production can be regarded as the primary objective. It is on these lands that long-term investments in silviculture should receive priority.

These two categories of land should thus comprise the productive forest base for planning purposes, and it should be these lands over which timber rights are issued. It should be noted that both will require recognition of values other than timber: the difference being that in the case of *multiple use timber lands* the constraints of other uses will call for planned yields below the expected levels for *primary timber land*. The arrangements for integrated resource use planning for all forest operations are discussed in Chapter 19.

Stratification of forest lands along the lines recommended here should permit much more reliable yield forecasting using methods I propose below.²¹ Eventually, it should eliminate the serious biases in current methods of providing for expected losses described earlier. Moreover, this sort of classification should facilitate forest administration by identifying priorities for long-term land use planning and silviculture. However, the system must be responsive to changes in social and economic values. While many dominant uses can be expected to remain unchanged for long periods, there will be frequent needs for adjustments to land use at the margin. The classification of forest lands should, therefore, be revised in the light of periodic re-inventories and other new information.

IDENTIFICATION OF TIMBER SUPPLY REGIONS

Before turning to the techniques of harvest regulation, the forest land areas which are to be the units for regulatory control need consideration. Prescribed harvesting limits serve a meaningful purpose only within the context of timber supply regions that serve manufacturing centres and communities. Insofar as public policy is to be directed toward supporting the income and employment base of forest dependent communities, yield controls must be designed to apply to the relevant timber supply areas.

²¹ The Forest Service has recently introduced an inventory procedure to identify areas that are ecologically too fragile to be logged with available technology or where uses conflict. These are to be designated "Environmental Protection Areas" and eventually used in modifying allowable cut calculations. (See Appendix D.) This already incorporates some features of the classification scheme suggested here.

The present pattern of Public Sustained Yield Units and regulated tenures is, as explained earlier, inappropriate for this purpose, since most market and processing centres are served by several units or parts of them. Even if these units are retained for other administrative purposes, temporarily or permanently, new and more relevant timber supply regions should be designated for the purpose of harvest regulation. These should take account of log supply patterns and transportation facilities now and for the foreseeable future, grouping together existing units to circumscribe regions that support identifiable communities and industrial centres. These regions should include all lands from which timber is expected to be harvested, including unregulated lands. The resulting timber supply regions will undoubtedly be larger and fewer in number than the present Public Sustained Yield Units, both on the Coast and in the Interior.

HARVEST REGULATION CRITERIA AND METHODS

With the forest inventory data compiled as I have proposed, and appropriate timber supply regions identified, harvesting limits can be determined for each timber supply region through advanced optimization techniques. For this purpose further development of the Forest Service's fledgling "Computer Assisted Resource Planning Model" is required. Already superior to the allowable cut calculation procedure now used for determining harvest rates, this system can nevertheless be improved in several respects to identify the harvest levels consistent with prescribed economic and silvicultural objectives. In particular:

- i) The model should be designed to portray the rate and pattern of harvesting in the timber supply region that will generate the maximum net long-term return from the timber resource, subject to explicit constraints relating to silvicultural standards, environmental protection, and maintenance of forest productivity. The returns should include the net contribution to both public and private income.
- ii) It should take explicit account of such economic variables as the capital costs of postponing harvests and the initiation of new crops, the cost and returns from intensive silvicultural practices, the implications of the rotation period, variations in the level of utilization, and the consequences of different environmental constraints.
- iii) It should embody estimates of trends in technology, costs, and values, and permit testing of alternative assumptions.
- iv) It should include estimates of expected rates of harvesting from private and unregulated lands and under all existing harvesting rights (or parts of them, as may be the case for some Tree-farm Licences) in the area.
- v) It should embody constraints relating to the short- and long-term capacity of the industry within the timber supply region, consistent with regional plans.²²

²² The important linkages between timber supply and regional economic development are now well recognized in the United States and are becoming an important component of studies dealing with timber supply alternatives. See, for example, C. Shallou, W. Maki, and J. Beuter, "Economic Impact Projections for Alternative Levels of Timber Production in the Douglas Fir Region", *Annals of Regional Science*, 111:1 (1969), 96-106; and D. R. Darr and R. D. Fight, *Douglas County Oregon: Potential Economic Impacts of a Changing Timber Resource Base*, U.S. Department of Agriculture, Forest Service, Pacific N.W. Forest and Range Experiment Station, Res. Pap. PNW-179 (1974), 41 pp.

- vi) It should be designed to indicate the optimum harvest rate rather precisely for the forthcoming ten years or so, with a more general indication of trends thereafter.

The analytical model will indicate the harvest rate that will yield the highest returns, within the prescribed constraints, for the timber supply region. Such a system is well within the capabilities of existing technology, and many of the features I have suggested here are embodied in operational systems elsewhere.

If the analysis is done as I propose here, it will specify a harvest rate for the timber supply region as a whole, from which expected unregulated harvests can be subtracted to indicate the desired flow of regulated timber, or allowable annual cut. This should be interpreted flexibly as a target for allocations of timber rights; most importantly it will, in light of existing commitments, serve as a guide for gradually increasing or decreasing cutting rights in the area.

IMPLEMENTATION

In an earlier period, the B.C. Forest Service was in the forefront in developing forest inventory techniques. It now has an equal opportunity to lead in the development of optimum yield control methods, and the benefits are likely to be even more rewarding. But this programme cannot be introduced overnight, and in order to initiate it I propose that certain specific organizational steps be taken.

First, an expert timber supply task force should be struck to advise the Forest Service on the implementation of a new yield control policy embodying the features I have described above. This group should include experts from the Inventory and Resource Planning Divisions of the Forest Service, university specialists in statistical and analytical techniques, and experts in logging, environmental planning, and economic analysis. This may therefore be a rather large committee, which could co-ordinate the work of three subcommittees, one each dealing with inventory interpretation, identification of timber supply regions, and harvest planning techniques, as described above. The task force should advise the Forest Service, giving it recommendations for required new procedures and practices.

The development of a new regulatory policy necessarily will be a continuing process, linked to the continuous forest inventory program. A major challenge for the proposed task force will be the development of methods for coping with imperfect information and imprecise techniques at the outset. This is important, because the introduction of revised methods should not be delayed pending new field data and further analytical research. A striking feature of the present allowable cut calculation is its fine analysis of crude data which produces spurious precision in its results. It is preferable to match the rigour of the analysis to the reliability of the data, to quantify the effects of possible error, and to recognize explicitly the probability of continuing revisions.

This new harvest control programme should be introduced as rapidly as possible, beginning with the most intensively developed regions of the province. In identifying the scope for adjustments in the harvest rates in each timber supply region, current approved allowable cutting rates in Taxation

Tree Farms and Tree-farm Licences (or parts of them within a region) should be taken as given for the time being, but the approach to determining the allowable cuts for these units also should be revised as the opportunity arises, along the lines proposed above.

There can be little doubt that this more rigorous method of identifying harvesting targets will indicate scope for expanded operations in some areas, particularly those dominated by Public Sustained Yield Units. As I explained earlier, even under the existing allowable cut formula the exaggerations in estimates of expected losses and the substantial shortfall between the allowable cut and allocated rights in most units leave considerable room for expansion. The new approach proposed here—being based on generally larger regulated units and taking account of the economic implications of the planned rotation period, the capital costs of carrying old-growth timber and postponement of new crops, as well as other variables—will almost certainly increase the indicated harvest level except in those regions where the recoverable inventory has been grossly over-estimated hitherto.

Inventory data, the methods of analysing it, and the planned harvesting targets for the timber supply regions should be public, for use by other agencies and so that the industry can anticipate adjustments in harvest rates. Other parts of this report describe appropriate means of allocating rights consistent with the harvesting goals. However, the whole process of harvest scheduling must be regarded as an instrument for public resource planning, and once harvesting rights are allocated the licensee's rights should be independent of the yield control system. The flexibility allowed licensees in varying their cutting rate from year to year is a separate matter, and is discussed in the next chapter.

CUT CONTROLS AND RECOVERY STANDARDS

The preceding chapter dealt with the determination of harvesting objectives for forest regions. Once these target levels are established, they must be translated into contractual arrangements with licensees that will ensure that the desired levels of harvesting will be realized. These arrangements constitute important rights and responsibilities that must be reflected in the general forms of forest tenure described earlier.

In the following pages I deal with the controls on the level and rate of harvesting on individual licences and the administration of utilization standards. These two issues are interrelated, as I shall attempt to explain. To avoid repeated qualifications I discuss these problems in the context of contractual rights to Crown timber, but what I have to say applies in some obvious respects to regulated private forest lands as well.

Judging from the evidence presented in my public hearings the policies examined in this chapter, especially the administration of utilization standards and related controls on logging waste, give rise to some of the most widespread aggravations among forest operators. Looking at them from the point of view of the public interest I have become, if anything, even more alarmed than the representatives of industry about the present arrangements, though for somewhat different reasons. The current regulations seem to reflect the expedients of a Forest Service under enormous pressure to reconcile the demands of industry with their aspirations for controlled forest development, without sufficient personnel and resources to accomplish the task with the flexibility and discrimination called for.

CUT CONTROL POLICY

Cut control refers to the regulations that constrain a licensee to his total authorized harvest and limit his flexibility to vary his rate of cutting from year to year. All major forms of tenure contracts within sustained yield units specify an annual harvesting rate, and variation about this level is closely regulated by rules and enforcement procedures described in Appendix D. In the case of a Tree-farm Licence the entire allowable annual cut is available to the single licensee, while in a Public Sustained Yield Unit there are usually several licensees whose aggregate authorized harvest rate is kept within the limits of the allowable cut for the unit. Thus the Forest Service requires an accounting of each licensee's annual harvest in order to ascertain the relation between the actual cut and the allowable cut, as well as to determine stumpage assessments and to check on his performance under his contract.

As a general rule, a licensee must harvest within 50 per cent of his allowable annual cut each year and within 10 per cent of the allowable cut in each

5-year period. Salvage sales and minor forms of rights are less rigorously controlled, and for Timber Sale Licences of the "third band" type the specified allowable annual cut is administered simply as a maximum annual limit. In Public Sustained Yield Units, the controls are not applied to the volumes licensed under separate contracts, but rather to each licensee's total licensed volumes in a unit that collectively comprise his "quota". Tree-farm Licensees are given the opportunity to begin a new 5-year control period from any year in which the cut over the preceding 5 years is within 10 per cent of the allowable cut, in contrast to the fixed, sequential 5-year control periods applied under other licences. The controls are enforced through penalty charges on volumes exceeding or falling short of the prescribed limits, and through suspension of rights in the case of continued violations.

These controls obviously require measurements of timber volumes. Before a Cutting Permit is issued pursuant to a licence, the licensee must undertake an operational cruise of the timber to standards prescribed by the Forest Service. These are intensive on-site assessments of the tracts of timber to be cut, and provide the data required for stumpage appraisal and operational plans. Once harvesting proceeds, the logs removed are scaled by an Official Scaler to provide the information needed for assessing stumpage charges and maintaining cut control. The logs scaled must, of course, be identified according to the Cutting Permits from which they originated, because each is subject to different stumpage rates. The scaled harvest is supplemented with additional information for cut control purposes, discussed below.

UTILIZATION STANDARDS AND WASTE CONTROLS

Each Cutting Permit sets out in general terms the standards of utilization that must be observed in logging the timber. With few exceptions, the general rule throughout the province today is the so-called *close utilization* standard, which requires that all trees, living or dead, with a diameter of 7.1 inches or larger in the Interior and 9.1 inches or larger on the Coast must be recovered. All of the stem between a stump 12 inches high and a 4 inch top must be utilized (see Glossary).

Cutting Permits also provide for a penalty assessment of one and one-half times the normal stumpage rates on timber that falls within the specified utilization limits, but not removed. Such timber, left either standing or lying on the ground, is identified by inspections after logging. Concentrations of logs, such as may occur at landings or from spilled truck loads, are usually scaled by the Forest Service and relevant material distributed over the logged area is measured by sampling. In practice, penalty billings have not been consistently used to enforce the utilization standards specified in the Permits; the Forest Service has been flexible in the matter, particularly during adverse market periods.

Supplementing the more consistently applied measurement standards for cut control purposes, there is a separate and overlapping set of controls governing logging waste. These exceedingly complicated arrangements are not set out in licence contracts, Cutting Permits, or regulations, but are contained in a series of Forest Service memoranda and in an "in service" manual. I will not attempt to describe the detailed intricacies of these arrangements here; for present purposes it is sufficient to note that certain material left on the site

is regarded as "avoidable waste", and the licensee may be billed for these volumes at one and one-half times the stumpage rate applicable to the Cutting Permit. The criteria for identifying this material are changed from time to time to reflect current market conditions and frequently differ from the utilization standards set out in Cutting Permits and those used for cut control. These waste controls result in a rigid and uniform standard of recovery which is revised periodically and, like the one used for cut control accounting, is vigorously enforced.

The attempt to control waste to an almost uniform standard has given rise to much friction between the Forest Service and licensees, especially on the Coast.¹ The Forest Service has strived to enforce standards to meet silvicultural, environmental, and æsthetic objectives, and the result is a rigorous standard of utilization throughout the province. But it involves regulations which licensees claim are often inappropriate, economically indefensible, and in some cases counter-productive. The field administration of these regulations, particularly, has become a major source of contention. It is alleged that post-logging inventories of waste are not statistically reliable, that field officers who do the work lack experience, and that interpretation of the rules varies within and among Forest Districts. Their concern is aggravated by federal income tax policy, which does not recognize penalty charges as a cost of doing business.

RECONCILING HARVESTS WITH THE ALLOWABLE CUT

The allowable annual cut is calculated on the strength of forest inventory and growth estimates for the relevant sustained yield unit, while each licensee's actual harvest is measured by log scale. The Forest Service attempts to reconcile these two measures, and because they are not consistent a number of adjustments to the measured harvest are made to assess the depletion of the forest inventory.

The inventory is based on aerial photography and measurements of sample plots on the ground, and is designed to include all timber within the "close utilization" standard. The gross volume exceeds the volume that can be expected to be recovered and scaled as logs to the extent of decay, losses by breakage in logging, and waste; and for each of these an adjustment is made by a different process for purposes of reconciliation. Estimates of the volume of decay are made in the inventory sampling procedure, so that data used in calculating the allowable cut in the first place are net of this loss. A gross estimate of expected breakage is made and deducted in the process of fixing the allowable cut.² Some categories of "waste" are estimated in the operational cruise and others, as mentioned, after logging; and some of this is counted as part of the licensee's harvest for cut control purposes. Thus the scaled harvest, plus certain forms of waste, are the measure of a licensee's harvest for purposes of cut control accounting, and this purports to provide a measure of volume that is consistent with that on which the allowable cut of the sustained yield unit is based.

¹ On the Coast, the waste control standards are not usually achieved. Small logs or pieces are not normally removed unless they meet the licensee's internal company standards of utilization. Until recently, Coast licensees were allowed an average of 250 cubic feet per acre of "avoidable waste" free of penalty charges. Since June 1976, in recognition of the serious difficulties in adhering to the requirements during depressed market conditions, licensees have been given the choice of either a) 500 cubic feet per acre of "avoidable waste" free of penalty, or b) modified utilization requirements that approximate the "intermediate utilization" standard.

² See Appendix D.

There remain, however, important inconsistencies between the data used in determining allowable annual cuts and those used for measuring the harvest (or depletion of the inventory). In the previous chapter (and in more detail in Appendix D) I noted a number of assumptions used in assembling inventory data and in calculating the allowable cut which clearly deviate from reasonable expectations about the recoverable volumes of timber, particularly in the Public Sustained Yield Units. Beyond these, certain volumes excluded from the inventory are harvested and recorded for cut control purposes, such as:

- i) Dead timber, standing or lying on the ground, is excluded from inventory compilations, but as long as it is within the recovery specifications the licensee is required to remove it and it is recognized in his cut control account. According to some industry representatives, this amounts to a significant portion of the volume harvested in some areas.
- ii) All timber on areas expected to be required for rights-of-way of various kinds over a full rotation period is effectively deleted from the inventory in making the allowable cut calculation for Public Sustained Yield Units, although it is almost always recovered and counted as part of the licensee's controlled harvest.
- iii) Similarly, estimated volumes that will be damaged by fire, insects, and disease over a full rotation period are assumed to be lost, while in fact they are often salvaged and explicitly included in licensees' allowed harvests.
- iv) The scaled harvest also includes some material that falls below the utilization standards assumed in inventory estimates, or required under the terms of Cutting Permits.³

All of these exaggerate the depletion of the inventory in relation to the allowable cut and add further conservative bias to yield control procedures.

PROBLEMS IN UTILIZATION POLICY

Adoption of the "close utilization" standard in place of the less rigorous "intermediate utilization" standard has occurred rapidly in recent years. I have already explained that the apparent timber supply was increased very substantially when allowable cuts were recalculated to this standard, and that the government offered strong incentives to the industry to adapt to it. "Quotas" were increased by one-third in the Interior and by half on the Coast where the new standard was adopted, and stumpage incentives were offered as well. Tree-farm Licensees were awarded the total increase in allowable cuts that flowed from calculating their inventory to the closer standards, as well as stumpage concessions on the extra wood included.

In effect, the government has used the "close utilization" policy with its attendant incentives to prod the industry to use the very substantial volumes of small and low-grade timber that were previously unutilized. This effort, aided by the developments in sawmilling technology and the growth of the pulping industry in the Interior, has been remarkably successful. It is now time to reassess the policy, using recovery specifications less as a target to which the industry should aspire and more for ensuring that the resource is most efficiently utilized.

³ Timber removed which falls below the prescribed utilization standard is nonetheless treated as part of the licensee's harvest. However, these exaggerations are compensated to some degree by unmeasured accountable volumes left after logging where no waste measurements are made.

The almost universal application of the "close utilization" standard ignores the complex physical and economic variables that determine the optimum form and degree of utilization for each stand of timber at a given time. This single rigorous standard is now enforced across the whole province in spite of enormous variations in forest stands and logging conditions. The primary objective of utilization policy should be to achieve standards of recovery that will ensure that the full economic value of the timber is realized, modified where necessary to meet silvicultural and environmental needs. This obviously calls for different standards in different circumstances. A single standard—applied not only to the homogenous northern pine forests but also to decadent mixed wet-belt stands; in both the easily-accessible and environmentally-sensitive areas near population centres, and in remote and difficult terrain; in regions accessible to the full range of manufacturing facilities as well as those that can serve only an unintegrated single mill—cannot possibly meet this objective. At best, a uniform standard can approximate the average of the varying standards desirable in different conditions, but it will inevitably be too stringent a standard in some circumstances and too lax in others.

My study of this problem has left me with the impression that the present indiscriminating policy has more serious implications than are generally recognized. First, utilization standards, by their very nature, specify the material of lowest quality and value that must be recovered. The logs nearest those limits are not only lowest in value per cunit, but are also by far the most costly to log, handle, and manufacture. However, the high incremental cost of removing marginal or sub-marginal wood, and the low, or zero, incremental revenue associated with such removal, are disguised by the averaging of revenues and costs used in stumpage calculations.⁴

Requirements to remove sub-marginal material can thus substantially erode the net value of the resource recovered, even if the average stumpage value remains positive. Not only do operators suffer a loss; as well, the Crown's stumpage revenues are reduced. In spite of an apparent popular assumption that the more volume recovered from a stand the higher will be the stumpage returns, once the economic margin of recovery is surpassed the opposite is the case. A relaxation of recovery standards toward the true economic margin will increase the net value of the stand as a whole and hence also potential stumpage returns. This is because inclusion of sub-marginal material lowers the *average* value of the timber removed while increasing the *average* cost of harvesting it.

The argument that recovery of more wood, even at a loss, is justified by higher manufacturing output is also unsupportable, at least without careful analysis. Unless markets are highly distorted or profits excessive, the value of timber in manufacturing is reflected in the price manufacturers can pay for it, and if that price falls short of the incremental cost of producing the extra material its production and manufacture involve a net loss.

Second, while the objective underlying recovery standards may properly include realization of the maximum economic value of the timber, fire hazard

⁴ One study of smallwood recovery which was brought to my attention indicated that the *incremental* cost of yarding and loading 360 cubic feet per acre of residual waste to meet Forest Service requirements was \$289 per acre, or \$80 per cunit, compared to its value at the mill of \$25 per cunit. Pro-rating this added cost over the total volume removed resulted in an increase in *average* logging costs of only about \$3 per cunit. (Correspondence from Mr. R. K. Vivian, R.P.F., Rayonier Canada Limited, February 11, 1976.)

abatement, site preparation for the next crop, and environmental or æsthetic considerations, it must be recognized that these are not altogether complementary nor do they have the same relative importance in different areas. Yet the present policy lumps them together,⁵ and by implication assumes they will be served by uniform rules. Moreover, the issue of selecting the appropriate standard of recovery and utilization is thus confused with the problem of post-logging site treatment. To give appropriate consideration to silvicultural and environmental values in harvesting timber it is necessary to weigh against the benefits to be realized the costs (or reduced revenues) incurred in either altering logging standards or undertaking site treatment measures, and both will vary widely from one site to another. Where other values justify the removal of material beyond the economic margin of utilization, slash disposal and post-logging site treatment offer alternatives to higher recovery requirements. We therefore need to look for a system that will lead industrial operators to extract to the economic margin of recovery, but lend itself to the application of more rigorous requirements where they are beneficial in serving other resource management objectives.

Third, present arrangements tend to blunt the incentives of licensees to recover marginal wood. If the stumpage charge actually reflects the average net value of the timber, as intended, the licensee will incur a loss in removing all logs of less than average value per cunit. Indeed, in some cases he is charged the full stumpage rate on material that he voluntarily removes that falls below the utilization requirements. Thus the stumpage system interferes with his inclination to recover to the true economic margin. This, of course, puts a heavier burden on the prescription and enforcement of utilization standards. The uniform utilization standard also discriminates against licensees in poorer timber, particularly when minimum stumpage rates apply (as they more frequently do in poor stands).

Fourth, the waste assessment procedures effectively establish utilization requirements that are not altogether consistent with contractual recovery standards. These inconsistencies are clearly anomalous and should be rationalized in clear contractual commitments, consistently administered.

Finally, it appears that utilization policy has been dictated by the standards adopted for the forest inventory compilations. Inventory data throughout the province are compiled to reflect recoverable volumes to the "close utilization" standard, which is also assumed for allowable annual cut calculations. If the actual harvest is to be related to the authorized cut, it must therefore conform to this standard. In addition, presumably as a result of the original connotation of "quota" as a share of the allowable cut in a unit, it has been necessary to make the reconciliation adjustments to a licensee's scaled recovery in order to try to measure his depletion of the inventory. These procedures are rather contrived and imprecise. A more clear cut system, in which the contractual rights conveyed to licensees are independent of the particular techniques the Forest Service chooses to adopt in assessing the stock of timber, is called for.

As a general matter, the attempt to reconcile the scaled harvest with the inventory data fails to recognize the essentially different purposes of the two sets of data. The inventory is needed for determining the timber supply in terms of the allowable cut; and this kind of long-term yield regulation, how-

⁵ See, for example, the objectives of waste assessment policy outlined in the memorandum from the District Forester, Prince George Forest District, to all established licensees "Re: Waste Policy", April 22, 1975.

ever calculated, is a strategic planning concept. Its purpose is to set guidelines or targets for the rate of timber removal in order to meet the long-term objectives of forest policy in an efficient and orderly manner. For this purpose the inventory system of the B.C. Forest Service is reputed to be excellent, with the qualifications noted in the preceding chapter. But by design it rests on extensive, low density statistical sampling, and it is therefore inappropriate to use this information for detailed tactical decisions. It is neither proper nor necessary to try to reconcile each licensee's scaled log recovery with the estimated inventory, quite apart from the inconsistencies of the procedures currently used. I emphasize that my criticism is not directed at the forest inventory, but rather the policy which contrives an inappropriate link between it and operational performance under licence contracts.

Insofar as the allowable cut is meant to reflect the availability of timber for future decades, it should be based on reasonable expectations about trends in utilization technology. Indeed, as I emphasized in the previous chapter, the anticipation of economic and technological change is an unavoidable and central element in long-term planning. Over past decades the proportion of wood recovered from stands has increased dramatically; and while the rate of change in the future is uncertain at least the direction of the trend is fairly clear. A successful allowable cut projection three decades ago would have anticipated the change in recovery we have experienced since then, but it would have been quite impracticable to enforce today's standards at that time. Similarly, for any management unit the "close utilization" standard is either too stringent under current conditions or too lax for future projection, or perhaps both. It should therefore come as no surprise that the enforcement of this standard seriously diminishes the net value of some stands today, and even renders their harvesting uneconomic in some cases. And if in other cases it happens to coincide with the optimum level of recovery today the projected future availability of timber is too conservative.⁶ In short, it is improper to force current harvesting to conform to standards of utilization that it is assumed, for planning purposes, will be attained over periods of 70 to 120 years into the future.

ALTERNATIVE APPROACHES

This brief outline of current policies relating to cut control and utilization and their shortcomings is sufficient to indicate that they are extremely complex, costly, and often inequitable. Moreover they are not well designed to serve their apparent objectives. As this report is written there are enormous surplus inventories of low-grade timber congesting storage areas and causing serious production and environmental problems in many parts of the province—unquestionably due in large part to inappropriate utilization regulations. It is obviously in neither the private nor public interests to expend labour and capital to recover non-saleable debris.

I have considered a large number of revisions that would improve these arrangements: by making recovery standards more suitable for different sites, by ensuring that the measured harvest corresponds to the volumes included

⁶ As explained in the preceding chapter and Appendix D, the Forest Service presently estimates changes in the forest land base, but makes no allowance for changes in utilization or silvicultural practices over the rotation period, nor even for the duration of the period between revisions of the allowable annual cut. It is intended that changes in utilization will be reflected in the calculations only as and when they occur, with each periodic revision. This practice makes the reconciliation with inventory data and the allowable cut even more tenuous.

in allowable cut calculations, by removing inconsistencies between waste controls and utilization standards, and so on. But I have concluded that such minor improvements would only serve to perpetuate a system that is inherently cumbersome and inappropriate to the widely varying forest conditions in the province, and indeed reflects some misconceptions. I am convinced that this is an area of forest policy that calls for fundamental change rather than minor revisions to current arrangements.

It should be borne in mind that we are dealing simultaneously with four related aspects of present policies. One is the specification of utilization standards in contracts, which are not now rigidly enforced. The second is the regulation of "waste", administered under internal Forest Service directives that are modified frequently. Waste regulations, enforced through penalty billings and suspensions, have in practice superceded contractual utilization standards. Third, there is the problem of cut control, which is aimed at reconciling allowable harvests with the cutting rights in licences. Fourth, there is the issue of identifying the volume harvested for purposes of stumpage assessments. All of these require measurements, and as I have explained, the measures vary. In designing my recommendations on this matter, I have sought to achieve certain specific objectives, consistent with my terms of reference:

- i) Utilization policy should be directed toward realization of the maximum potential value of timber harvested, subject to such constraints as are necessary to meet other resource management objectives, recognizing that this implies considerable variation among different forest conditions.
- ii) General recovery requirements should be separated from silvicultural and environmental prescriptions designed to ensure that the logged land is left in a proper condition. These measures should be prescribed in light of the costs and benefits of achieving the silvicultural and environmental needs, by alternative means and in different circumstances.
- iii) Full advantage should be taken of potential entrepreneurial incentives to achieve the desired level of timber utilization. The problem of administering appropriate recovery standards in the diversity of logging conditions and timber types is too complex to be solved entirely by direct controls, and entrepreneurial self-interest should be channeled to serve the public objectives as far as possible.
- iv) The licensee's contractual rights and obligations should not depend upon the administrative problem of reconciling the harvest with the inventory data used in allowable cut planning.
- v) Licensees' rights and responsibilities should be clearly specified in their contracts and Cutting Permits.
- vi) High priority should be given to simplicity in utilization and harvesting controls so that they are clearly comprehensible to both licensees and Forest Service personnel, easily administrable, and consistently enforceable without unnecessary resort to discretionary interpretation. In addition, reforms should be directed toward reducing the need for the present multiplicity of systems used to measure timber, logs, and waste.

Present policies fail seriously in respect of all of these objectives. As a result, the procedures followed produce constant and enervating problems of administration and enforcement for Forest Service personnel, and growing friction between that agency and licensees. Moreover, while empirical data

are lacking, I have no doubt that the indiscriminating utilization standard enforced throughout the province dissipates the value of timber harvested by a staggering amount. My studies of alternative possible arrangements, in the light of evidence presented at my public hearings and my observations of policies in other jurisdictions, lead me to propose several innovations.

CRUISE-BASED STUMPAGE ASSESSMENTS

The current method of levying stumpage on each cunit of timber recovered obviously impedes the operator's incentive to remove marginal material; he will not voluntarily recover a log that is just worth the logging cost, because to the latter he must add the going stumpage charge. The higher the stumpage, the more volume it will pay to leave unrecovered, and if he is permitted to behave accordingly the more potential value of timber will be lost. This system, as well as official scaling and waste assessments, has thus aggravated the need for prescribed recovery standards.⁷ It should be noted that these effects result not from the way that the stumpage value of timber is determined, but only from the way the charge is levied (by means of a fixed charge per cunit logged and scaled).

An alternative method of levying stumpage is to base the charge on the standing timber as evaluated by a cruise conducted prior to harvesting authorization. This information is now used to calculate stumpage rates, but the licensee's actual stumpage liability is determined by scaling the logs once they are harvested. Under this proposal, the value of the stand would be determined before cutting on the basis of cruise data, and there would be no need for a scale afterward. In the United States this more direct approach is often referred to as "lump sum" selling (a term which I avoid because it is neither necessary nor desirable to exact the entire stumpage in a single payment before harvesting begins).

Under this system the stumpage payable is independent of the volume actually harvested, and so the licensee has a strong financial incentive to recover every piece that is worth as much as, or more than, the incremental cost of recovering it. The U.S. Bureau of Land Management, which administers extensive federal forest lands in the northwestern states, uses this method exclusively, and finds it unnecessary either to enforce utilization standards or to regulate waste. The incentive for close recovery appears to be effective; studies of residues left on lands logged under these sales revealed less debris than on comparable lands administered by the U.S. Forest Service, which bases stumpage on the log scale, as is done in British Columbia.⁸

This approach is used extensively in Washington, Oregon, and California by both state and federal agencies to the satisfaction (and indeed enthusiasm) of both administrators and forest operators. It has also been advocated by

⁷ The effect of scale based stumpage charges on the behaviour of licensees has been discussed in some detail by J. C. Nautiyal and D. V. Love, "Some Economic Implications of Methods of Charging Stumpage", *The Forestry Chronicle*, 47:1 (1971) pp. 25-8.

⁸ One study found logging residues were more than two-thirds greater on lands where stumpage was levied on the logs recovered than where stumpage had been assessed on the standing timber. J. O. Howard, *Volume of Logging Residues in Oregon, Washington and California—Initial Results 1969-70 Study*, U.S. Department of Agric., Forest Service, Pacific N.W. For. and Range Expt. Sta. Res. Note PNW 163, Portland, 1971. A more statistically sophisticated study, which removed the effects of slope, stand age, and stand defect on the volume of residue, showed less marked difference. T. E. Hamilton, J. O. Howard, and T. C. Adams, *Per-Acre Pricing—Its Effects on Logging Residue*, U.S. Dept. of Agric., Forest Service, Pacific N.W. For. and Range Expt. Sta. Res. Paper PNW 192, Portland, 1975.

the U.S. Public Land Law Review Commission.⁹ In British Columbia, the 1974 Task Force on Crown Timber Disposal recommended that, while it would not be practicable to adopt cruise-based sales throughout the province immediately, the Forest Service should adopt a programme of "vigorous experimentation" with the system. Since then, several such sales have been made, but little information on the results is yet available.

The Forest Service has found it difficult to adopt cruise-based stumpage assessments because it has grown to rely on licensees for cruising and hence lacks sufficient cruising capability within itself.¹⁰ But as the 1974 Task Force emphasized, the Forest Service must expand its cruising expertise in any event.

Public administration of the forests of British Columbia now requires much more detailed information about the resources themselves than ever before, not only for purposes of planning forest management and harvesting but also to accommodate growing demands for environmental protection, recreation, watershed management and other purposes. Scaling contributes nothing to this information (apart from providing data on harvested volumes and some limited guidance to timber characteristics in the relevant area). Timber cruises and forest inventories, in contrast, provide direct information on the forest itself, and can be adapted to yield a wide range of data valuable in multiple-use forest management. A shift in emphasis toward cruising would concentrate more of the Forest Service's efforts to obtaining much-needed information about the natural resources which it is specifically charged to manage.¹¹

The Task Force summarized the advantages of cruise-based assessments as follows:

- i) It would eliminate the necessity of official scaling, and the costs and difficulties associated with these measurements.
- ii) It would provide direct information about the forest resource, which is needed for a wide range of management purposes.
- iii) Determination of the stumpage charges prior to commencement of logging operations (subject to any sliding-scale adjustments) would reduce uncertainty and enhance financial planning.
- iv) With assessments predetermined, operators would have every incentive to remove all wood to the economic margin of utilization (i.e. all material which would bear the cost of removal) thus increasing wood recovery and utilization. Moreover the effect on the amount and quality of the timber assessed would no longer be influenced by the individual licensee's care and attention to bucking and recovery practices.
- v) Since all the material defined as merchantable would be paid for, the cost and confusion associated with waste-scaling and assessment would be eliminated.

For all these reasons, cruise-based assessments appear to offer an approach which is more direct, more conducive to efficient timber utilization, simpler and more productive of useful information than the present system.¹²

My subsequent investigations have convinced me that the benefits of this approach in terms of both logging performance and forest administration have been well demonstrated, and much more than further experimentation is warranted. I therefore propose that the Forest Service begin to assess stump-

⁹ Public Land Law Review Commission, *Report to the President and to the Congress*, Washington, D.C., 1970, 342 pp.

¹⁰ Incidentally, one study found that in western Oregon there was no significant difference between the seller's costs for sale preparation and administration when timber is sold by the "lump sum" procedure and when timber is sold by log scale. J. H. Beuter and J. D. Arney, *Log Scale and Lump Sum Timber Selling on Federal Lands in Western Oregon*, Forest Research Lab, Oregon State Univ. Res. Pap. No. 12, Corvallis, Oregon, 1972, 16.

¹¹ *Task Force 2nd Report*, 1974, p. 122.

¹² *Ibid.*, pp. 123-4.

age charges on the basis of assessments of the standing timber authorized under Cutting Permits pursuant to all the major forms of tenure—Tree-farm Licences, Forest Licences, Timber Sale Licences, and Timber Licences (if appraised royalties are adopted for the latter)—under the following general arrangements:

- i) Stumpage appraisals should be carried out under current procedures, and the total value of the timber established, using the cruise estimates of volume within general utilization standards appropriate for the region (see below).
- ii) The total stumpage should be payable in equal quarterly amounts over the term of the Cutting Permit, the first payable at a date specified in the Permit, allowing a reasonable time for harvesting to begin. An alternative arrangement suggested by the Task Force should also be tried, namely: quarterly charges equal to the same percentage of the total stumpage as the proportion of the authorized area logged during the preceding three months.¹³
- iii) The quarterly levies should be subject to the normal sliding-scale adjustments in stumpage charges.
- iv) The licensee should be permitted to recover all the timber he finds valuable without affecting his stumpage liability. Beyond field inspections to ensure that the terms of the Cutting Permits have been met, no quantitative waste assessments should be made and no specific utilization requirements enforced, except in the special circumstances described below.
- v) Annual depletion accounting should be based on the cruise information and areas logged, obtained from ground surveys and large-scale aerial photographs.

The Forest Service should introduce these arrangements as rapidly as its resources permit. Operational cruises should be undertaken by the Forest Service itself, as more trained staff become available, or by independent Registered Professional Foresters under contract to the Forest Service, who can verify the standard of the work.

The revised Timber Sale Licences I have proposed are particularly well suited to this form of disposition, and initially the programme should be directed to them particularly.

INCENTIVE UTILIZATION POLICIES

Wherever stumpage continues to be based on the scale of recovered logs, utilization specifications will still be necessary to control "high-grading"; as well, special environmental and silvicultural needs may call for such controls in cases where cruise-based assessments are employed. An ideal utilization standard is one which identifies, for each logging site in each set of economic circumstances, the lowest grade and size of wood that will have value upon recovery just equal to the cost of removing it—that is, the marginal log—and lends itself to adjustment wherever silvicultural or environmental gains from closer standards justify the additional costs. Such site specifications are not practicable at present, but a more discriminating policy than the present uniform standard is certainly feasible.

¹³ *Ibid.*, p. 125.

The Forest Service first should modify its utilization standards for conspicuously different forest and production conditions in the province on the basis of individual Public Sustained Yield Units, and provide operators incentives to recover marginal wood. In nearly all Crown forests the inventory data are already compiled to two standards—the “intermediate” and “close utilization” standards—and these are well understood. I propose, as an interim measure, that on those Public Sustained Yield Units typified by decadent timber, remote units with high logging costs, or those in regions where opportunities to utilize low-grade material are restricted, the “intermediate utilization” standard should be enforced as a general rule for the immediate future and that the licensees be permitted to recover any timber below that standard free of stumpage.

In addition, modification to the standard utilization specifications should be made by Public Sustained Yield Unit, as available data permit more accurate identification of the economic margin of recovery. Data relating to marginal costs in logging (and in the Interior, manufacturing) low-grade wood should be gathered and new data generated where necessary, in order to facilitate the refinements of utilization standards. I have no doubt that the industry, and institutions such as the Forest Engineering Research Institute of Canada, will co-operate in assembling the required cost relationships and recovery values.

The objective should be to establish specifications that are within the economic margin of recovery, as previously described, for typical operations within the unit, judged on the basis of the costs and utilization of operators of average efficiency. In the early stages such modifications to diameter limits, minimum sound-wood content, and so on will necessarily be crude and based on uncertain information, but the process will help to generate data which, with time, will produce increasingly site-appropriate standards with corresponding benefits to the industry and public revenue.

Utilization standards thus determined should be specified in the licence document, with the provision that Cutting Permits may specify more rigorous standards for particular circumstances where the Forest Service determines that they are justified on environmental or silvicultural grounds. This supplementary arrangement is necessary to prevent adverse effects of logging on sites that are especially environmentally or aesthetically sensitive, or that present special problems for reforestation. Any such supplementary requirements must, of course, be recognized in the Cutting Permit appraisal, and their cost will thus be reflected in lower stumpage charges. A visual inspection by a Forest Service Ranger should be made to ensure that the licensee has fulfilled his obligations. Such an inspection should be adequate to judge whether an area is left in a proper condition for reforestation or special environmental needs.

Where licensees are found to leave significant volumes of wood that fall within the required utilization standards they should be penalized at one and one-half times the normal stumpage value on that material, as at present. Moreover, the licensee's contract should continue to be liable to suspension or cancellation on grounds of non-performance in cases of repeated, flagrant violations (see Chapter 10).

This more discriminating utilization policy will undoubtedly increase stumpage revenues considerably, reduce inequities, facilitate production planning, and enable much more appropriate attention to silvicultural and environmental needs on specific sites. I return to the latter issues in the next chapter.

CUT CONTROL ACCOUNTING

For purposes of maintaining control over a licensee's harvest rates, the accounting of timber cut should be based on cruise information rather than on logs removed and scaled, and waste estimates. Timber licensed for harvesting should be quantified through operational cruises, and each licensee's annual harvest should be determined with reference to that information, and the areas logged indicated in his annual report.

This will eliminate the present manipulation of log scales and waste measurements to estimate the licensee's harvest for this purpose. It will also remove the present disincentive to recovery of marginal timber through its inclusion in the licensee's cutting limits.

Clearly, this approach will put a heavier burden on timber-cruising relative to log-scaling. In the case of the proposed cruise-based sales the cruise will of course provide the basis of stumpage assessments as well. I therefore endorse the recommendation of the Task Force on Crown Timber Disposal for the creation of a Cruising Section, parallel to the Scaling Section in the Forest Service, ". . . which should be charged with maintaining and improving the standards of timber cruising and developing cruising policy". And that ". . . measures should be taken to provide for training, examination and licencing for cruisers, much like the present arrangements for scalers."¹⁴

Further, with this heavier onus on cruising for determining the scope of their rights, licensees should have an opportunity to appeal an official cruise, in the way that they can now appeal an official scale. That is, when the Forest Service issues a Cutting Permit, the volume of timber it contains should be specified, and regarded as fulfilling the Crown's obligation to provide that much timber pursuant to the licence. If the licensee doubts that the area supports that much timber within the required utilization standards, he should have the right to another cruise. As in the case of re-scales, the cost of the new cruise should be billed to the licensee if it does not result in a significant alteration of the volume originally estimated.

A licensee's rights will thus be independent of any attempted reconciliation of his cut with the data used in the forest inventory. The measurement of depletion of the inventory is properly an administrative problem for the Forest Service, but it is likely to be facilitated by improved cruise information.

FLEXIBILITY IN CUT CONTROL

While there is an obvious need for a public forest management agency to regulate the rate at which the timber resource is harvested, the rationale for imposing constraints on the short-run harvesting strategies of individual licensees, particularly those with short-term licences, is less apparent. Any right to Crown timber should provide an explicit limit to the total timber allocated, but this is normally an essential element in the contract and is a separate issue from the regulation of year-to-year harvesting rates.

¹⁴ *Ibid.*, pp. 149-50.

Probably the most common argument for annual regulation of harvesting relates to promotion of regional stability in employment and incomes. I have criticized the assumptions in this argument in the previous chapter. In any event it is relevant, if at all, on an enterprise basis or in a regional context—not in respect to individual harvesting rights. Some licences, such as Tree-farm Licences, are so extensive and fragmented that regulation of harvesting within them as a whole does not ensure economic stability in any region or community. On the other hand, small licences are often only one of several operated by an enterprise in different management units and it is the harvesting in all of them combined, rather than those in each unit taken individually, that governs the firm's contribution to industrial activity.

A more pragmatic reason for imposing *maximum* limits on annual cutting is to ensure that harvesting is spread over the life of contracts so that the Forest Service does not suffer importunings of licensees for new, unplanned, allocations. In the interests of orderly planning some control of this kind is needed in the case of the long-term tenures.

The principal argument for more flexibility is that the present limits do not permit sufficient response to fluctuations in forest products markets. In order to generate the maximum value from timber harvested, it is necessary to increase production rates in periods of strong markets and to reduce them when prices fall. Short-term cyclical fluctuations in the demand for forest products are of varying periods and amplitude and are impossible to predict with any degree of precision. There is no reason to expect that the somewhat arbitrary 5-year control period, for any licensee, will correspond to forest product demand cycles.¹⁵

It must be recognized that licensees have a strong business incentive to maintain as steady as possible a rate of production in the face of market fluctuations in any event because of the heavy overhead costs in logging and manufacturing, the high costs of shut-down and start-up, and the value of a steady labour force. Given these pressures, additional governmental constraints on his flexibility threaten to impinge on the most valuable pattern of resource use over time.

The usual rule that requires a licensee to harvest within 50 per cent of his allowable annual cut each year and within 10 per cent over a 5-year period is considered by most representatives of the industry to be too restrictive to accommodate needed responses to constantly changing conditions. It should be noted that the short-run flexibility afforded by the relatively wide annual limits is tightly constrained by the narrower 5-year limits, to a degree which depends on the licensee's current position in a 5-year accounting period. If, for example, to take advantage of auspicious markets he cuts to the upper limit of annual flexibility during the first couple of years of a 5-year period, he loses flexibility during the remaining years; to restore balance over the total period he must reduce his cut, to well below his allowable annual cut, even if this is directly contrary to normal market response at that time. Correspondingly, he loses flexibility in later years if he takes advantage of downward flexibility in the early years of a period.

¹⁵ Another current concern of some licensees is that they have such a small allowable cut in a unit that it cannot be efficiently harvested each year. In such cases, instead of having to open up an operation for a few months every year, it would be more efficient if several years' allowable cut were harvested periodically. Elsewhere in this report I have made recommendations that will mitigate this difficulty, and the cut control policy proposed below will alleviate it further.

I am concerned also about the implications of annual minimum harvesting controls in combination with the policy of minimum stumpage rates. These two policies combined can result in compulsory loss operations in a period of depressed markets, and in both the private and public interest such compulsion should be exercised with restraint. It obviously imposes a heavy burden on the industry, and smaller enterprises particularly, and means that the utilization of public resources may generate a negative return.

There are certain other features of the present arrangements that result in inequities. I see no logic, for example, in the differences in the rules relating to different kinds of licences, especially the discretion enjoyed by some licensees, but not others, to choose the administrative control periods. Moreover, because the controls are now applied to all of a licensee's "quota" rights in a unit, taken together, their allowed flexibility under individual licences varies with the number they hold. For all these reasons, I have concluded that cut control policy needs thorough reconsideration.

Control limits. To begin, I see no need to prescribe limits to annual flexibility for any tenure with a term of five years or less. For these, the total limit specified in the contract, coupled with normal business incentives for continuity of production, should provide sufficient control to meet any long-term management objectives. Moreover, delays in planning, obtaining approvals, building roads and starting new operations can easily justify no harvesting for the first two or three years, and any rights not exercised by the end of the term can simply revert to the Crown (subject to penalties described below). Most Timber Sale Licences will fall in this category.

For licences with longer terms, as will normally be the case for Forest Licences and Tree-farm Licences, the need for periodic limits is stronger, but more flexibility than is presently allowed is desirable. Sufficient control would be provided by providing a *maximum* limit of 100 per cent above the allowable cut in any year and 20 per cent in any 5-year period—that is, the excess harvest in any 5-year control period should not exceed one year's allowable cut.¹⁶ *Minimum* limits should be prescribed only for 5-year periods; the licensee should be allowed to harvest 20 per cent less than his allowable cut in any 5-year period without penalty.

Control periods and penalties. The rules governing the choice of 5-year control periods should be more consistent. If I understand correctly the options now available to Tree-farm Licensees, they can legally harvest 10 per cent in excess of their allowable annual cut every year. It also appears that any licensee subject to 5-year control can overcut to the extent of 10 per cent upon termination of the licence without penalty; so, in effect, they can cut more than their licensed volume. I recommend that, for all licences subject to 5-year controls, the control periods be fixed in 5-year discrete increments from the beginning of the licence's term.

I will not attempt to describe here the complicated arrangements for enforcing cutting limits at present (they are described in Appendix D), but I wish to propose simpler and more consistent procedures. Any cut in excess of the allowable cut in a 5-year control period (whether it is within the 20 per cent limit or not) should be deducted from the licensee's allowable cut in

¹⁶ Incidentally, under this formula the volume by which the harvest may exceed the allowable cut will be the same for both annual and 5-year control periods.

the subsequent 5-year control period, to prevent any cumulative overcutting. I do not recommend parallel treatment for any shortfall in cut, because there is no purpose to be served in forcing a licensee to increase his harvest above his initial allowable cut in a subsequent period. I therefore propose that any shortfall from the allowable cut should not be carried forward, but if a licensee's harvest in a 5-year period is less than 80 per cent of his authorized harvest, the allowable cut under his licence should be reduced by an amount equal to the deficiency. Thus, to the extent that a licensee cuts less than 80 per cent of his authorized volume over 5-year periods the timber will become available for disposition to others.

In addition, any amounts cut in excess of the maximum annual or 5-year limits should be assessed at double stumpage. This is consistent with current arrangements, but I see no justification for continuance of the present provisions for reimbursement of penalties upon later performance or for discretionary waiving of liabilities by the Forest Service. If a licensee exceeds the limits of these wider maxima in more than one year, or period, the licence should be suspended for a period long enough to absorb the excess. If a licensee cuts less than the required 80 per cent of his allowable cut in a 5-year period, he should be assessed stumpage on the shortfall, in order to protect the Crown's interest in stumpage revenue and to prevent speculative holding of timber rights. No licensee should be permitted to harvest more than the total volume authorized in his licence. The licence should be suspended if that volume is exceeded, and double stumpage levied on the overcut.

Accounting. From a legal point of view, each licence should be treated individually as far as all its provisions, including cut control, are concerned. The present policy of allowing licensees to group all their licences in a Public Sustained Yield Unit for cut control purposes—a vestige of the "quota" concept—should be abolished. However, if my recommendations for wider cut controls and rationalization of tenure arrangements are adopted there will be little to be gained from such amalgamations in any event.

At present, the Forest Service bases its information relating to a licensee's harvest in any year on the volume scaled and billed by the end of the calendar year. But, since logging typically precedes scaling and stumpage billing by one to several months and the amount logged that is actually billed in a year varies with the speed of stumpage assessments, licensees often have difficulty in accommodating the required adjustments. The problem is aggravated in the northern Interior, where logging activity must be concentrated in the winter months, and hence the cut control year ends in the middle of a logging season. Under the new arrangements proposed for cut control and stumpage assessments, these difficulties will be ameliorated since the annual accounting of harvesting will be on the basis of the area logged combined with volume data obtained from the operational cruise. Annual and periodic control, therefore, will be based on the cruise volume rather than on the volume delivered to a mill or booming ground. Such information should be quite adequate to meet the objectives of cut control.

RESOURCE PLANNING

The search for ways of reconciling industrial forestry with environmental and recreational demands, which has preoccupied resource administrators in recent years, has focused on resource planning processes and procedures. The critical importance of planning in ensuring proper resource management is now acknowledged by both public agencies and forest users. Being an evolutionary process, a variety of planning systems and practices have been tried, and new arrangements are still being developed. This chapter examines the present provisions for planning, reviewing, and authorizing forest development, and offers some recommendations for improving them.

DEVELOPMENT OF PLANNING POLICY

Until recently, operational planning for logging activity was rudimentary and dealt mainly with silviculture, fire protection, and slash disposal. On the Coast, early railroad logging and subsequent truck logging left heavy residues because of the low utilization standards of the time and breakage associated with cable logging and cold decking harvesting systems. Planning controls were aimed at avoiding extensive and contiguous areas of slash, through patch logging and retention of firebreaks of unlogged timber. Gradually, broader protection planning evolved to co-ordinate the firebreaks on adjacent operations, which eventually produced networks of firebreaks over whole watersheds and management units.

Early logging in the Interior usually involved much lighter equipment and often selective cutting of only the larger trees. Planning controls focused on abatement of slash hazards, the protection of the unlogged understory, and means of encouraging natural regeneration. A series of harvesting control techniques were tried: selective marking of the trees to be cut; restriction to a prescribed diameter limit; and clear-cutting in narrow strips and small patches. These transitory systems proved largely unsuccessful and as logging techniques changed and nursery stock became available, they were replaced for the most part by clear-cutting, often followed by scarification and, where necessary, planting.

In the 1960's circumstances began to change rapidly. Thirty-seven Tree-farm Licences were already issued by the end of the 1950's and each required a sustained yield plan. Public Sustained Yield Units were being established progressively over the remaining forest lands, and in the Interior—especially where the existing stands are less consistently identifiable as “old-growth”—the system of regulating harvest rates focused attention on the sequence of harvesting stands of various ages, and later also on the potentiality of different sites for increased new growth through replacement of older stands. But the

design of plans for Public Sustained Yield Units never materialized as intended. Such planning as was accomplished for Tree-farm Licences and other units focused almost entirely on the rate and pattern of timber harvesting.

The 1960's also witnessed a growing concern about the impact of logging practices on other forest values. Environmental awareness was increasing at a time when logging activity was expanding rapidly throughout the province and clear-cutting was becoming general practice. The Forest Service, hitherto concerned almost exclusively with only the forestry implications of timber harvesting, was forced to seek ways of reconciling industrial activity with the management of other resources—fish, wildlife, water, and so on—that depend on the forest environment. Operational planning took on a new dimension and new arrangements were necessary.

The "referral" system. Rapid expansion of logging and clear-cutting practices during the 1950's had generated anxieties on the part of fisheries authorities for the protection of spawning beds from siltation and other dangers to fisheries. There was clearly a need for co-operation between forestry and fisheries agencies. Accordingly, major salmon streams were identified for guidance in planning forest operations, and in 1956 the inter-agency "referral" arrangement was initiated. Under this system, the Forest Service undertook to inform federal fisheries authorities of harvesting authorizations being issued near important salmon streams, and on the basis of their advice, to incorporate restrictive clauses into contracts in order to protect aquatic habitats. In 1970 the "referral" system was extended to permit both fisheries and wildlife officers to comment on proposals before Cutting Permits were issued.

These other agencies, however, soon found themselves unable to cope with the deluge of more than two thousand referrals per year. Lengthy delays in obtaining harvesting authority and interruptions of operations became commonplace. A broader planning system was essential.

Logging "guidelines". On the Coast, as swing logging techniques gave way to mobile yarding machinery that required more roads, and as expansion in artificial reforestation obviated the need for natural seed sources, there was a new trend toward progressive clear-cutting. Clear-cutting large areas and road building in rough terrain often have important consequences for other resource values, and in an effort to minimize adverse effects the Forest Service in 1972 promulgated "guidelines"¹ for coastal logging which stipulate rather stringent minimum standards that must be adhered to in logging plans that require Forest Service approval. They specify such things as the maximum size of cut-blocks (usually 200 acres), protective measures for stream banks, road access planning, and the like. These guidelines are intended to protect other resource values such as fisheries and wildlife, minimize erosion, reduce the æsthetic impact of logging, and facilitate prompt reforestation. Other less formal guidelines have been issued in some Interior Forest Districts. They apply to all tenures on Crown land.

Logging guidelines are regarded by the Forest Service as only a stopgap method of control:

Resource management is much too complex and difficult a subject to permit entirely satisfactory consolidation in the form of guidelines. . . . It

¹ "Planning Guidelines for Coast Logging Operations", a directive issued by the B.C. Forest Service, September 29, 1972, 5 pp.

was realized that the Guidelines were only an interim measure until site specific constraints could be specified for each forest harvesting operation within the context of an interdisciplinary planning system.²

Resource folio planning. In the absence of general plans for the Public Sustained Yield Units, such planning as there was for fire control and protection, reforestation, and road development was done on the basis of regions or Ranger Districts rather than management units. But some progress was being made, particularly under Timber Sale Harvesting Licences, introduced in 1967. This tenure form, and some other new variants of Timber Sale Licences, permitted licensees to participate in planning on a broader scale than the individual Cutting Permit. Specifically, they are required to design 5-year *development plans*, consistent with their allowable harvest rate in the Public Sustained Yield Units, for Forest Service approval. Their plans must comply with any logging guidelines applicable to the area and (until recently) Cutting Permit applications were routinely subject to the referral procedure.

These new planning requirements brought licensees and Forest Service personnel into close communication, and undoubtedly helped to develop an understanding of each other's problems. Forest Service officers found it necessary to wrestle with such problems as the diet of log sizes and species required by licensees' mills over long periods, the problems of road construction, and so on; while licensees had to cope with the needs of reforestation, long-term firebreak design, allowable cut reconciliation, and other forestry problems as well as the management requirements of other agencies.

But while all these developments improved the planning of industrial operations, they failed to come to grips with the awakening public interest in non-timber forest values and the growing criticism of the environmental impact of logging. It was becoming apparent that resource planning must be more broadly based, and a solution was sought in what became known as the *Resource Folio Planning System*. This system, designed and introduced by the Forest Service in 1973 after experimentation in the Prince George Forest District as a substitute for the referral process, heralded a much more systematic and comprehensive approach to integrated resource use planning.

The resource folio system takes its name from the portfolios of maps and supporting data that comprise each plan. Wherever possible, a plan encompasses a watershed, which usually provides a coherent resource management operating unit. Through a sheaf of overlaid maps, all the available data relating to the resources of the area—landforms and soils, water, forest cover, fisheries, wildlife, roads and other works, recreational potential, and even such special features as archaeological sites—are integrated for development planning purposes. The plans cover operations for at least five years, so that roads and other works can be planned and built sufficiently in advance of operations to minimize environmental damage and to maintain seasonal flexibility.

In initiating one of these plans the Forest Service first explores with the licensee his prospective timber requirements and the alternative areas where he might exercise his cutting rights within the relevant Public Sustained Yield Unit or Tree-farm Licence. When a watershed or part of one is selected, the Forest Service gathers from the various resource agencies whatever resource inventory data and information are available. The Forest Service itself pro-

² B.C. Forest Service, brief presented to this Commission at Nelson, September 1975, p. 6.

vides forest cover data, and from the Resource Analysis Unit of the Environment and Land Use Committee Secretariat it obtains survey information relating to landforms, soils, vegetation, and climate, and maps indicating land capability in agriculture, forestry, recreation, and wildlife. Data on fisheries, wildlife, recreation, water systems, archaeological sites, and cultural resources are also obtained from relevant agencies. If sufficient data are available the Forest Service assembles the maps, one for each resource sector, and refers them to the relevant agencies for them to append comments, indicate their management objectives, and explain whatever constraints on logging practices are needed to protect their resource interests in various parts of the area. The recreational part, for example, may indicate needed hiking trails or campsites; the wildlife input may call for unharvested game corridors and limits to the size and configuration of logged openings; the aquatic inventory is likely to prescribe measures to protect stream banks, requirements for culverts, and so on. The soil inventory is used by all sectors, and is especially valuable in specifying logging patterns, road layout, reforestation requirements, and protection from windthrow.

Subsequently, meetings of representatives of the various resource agencies are held to try to harmonize their objectives, to co-ordinate the recommended logging restrictions, and to resolve conflicts. In some cases the licensee is invited to attend.

The Forest Service then consolidates all the comments and prescriptions and refers the folio to the licensee for him to try to incorporate the logging development proposals into the watershed development plan and design a 5-year cutting plan that will comply with all the requirements (see below). The watershed development plan may be a very extensive type of plan over all but the area of immediate development. Subsequent refinements and revisions are required as resource development proceeds and additional data become available.

Regional Resource Management Committees. In 1972 the Forest Service, at the request of the Environment and Land Use Committee, urged the District Foresters to formalize existing informal meetings of representatives of the several resource management agencies to facilitate co-ordination on matters relating to the use of land and resources. These Regional Resource Management Committees (originally called Land Use Liaison Committees) were to co-ordinate management approaches to local timber and other resource developments, rights-of-way, major land developments, land reserves, reservoir flooding, and like problems. They also reviewed the initial proposals for the Agricultural Land Reserves. Each representative on these committees reported to his own agency, which was sometimes required to report, in turn, to the Environment and Land Use Committee.

Later, the Secretariat of the Environment and Land Use Committee was created under a Director, and plans were made to appoint Regional Resource Managers as regional representatives of the Secretariat to serve as chairmen of inter-sector committees. No Regional Resource Managers have yet been appointed, and so the committees continue to be strictly consultative and the members accountable only through their own agencies. So far, these committees have not concerned themselves specifically with forest operational planning.

TOWARD AN IDEAL PLANNING SYSTEM

The increasing importance of resource use planning was emphasized in presentations to the Commission from a wide range of interest groups as well as public agencies, and many criticisms of present arrangements and proposals for improvement were received. The Forest Service itself has obviously had great difficulty in keeping pace with the rapidly growing demand for comprehensive planning procedures, and through experimentation and evaluation of experience it has continuously sought more efficient processes within its capacity and that of other agencies. In its presentation to the Commission on this subject the Forest Service reviewed its conception of an adequate resource planning structure which, though by no means fully implemented today, offers a constructive approach for future development.

The planning process to which the Forest Service aspires is structured around four basic levels of planning units, as stylized in Figure 19-1. First, the province should be divided into several more or less coherent economic regions, like the seven Resource Management Regions described in Chapter 24. For each of these, general objectives would be identified in terms of economic and social development and resource use. Regional studies would reveal opportunities, deficiencies, and limiting factors in development by examining the resource base, scope for new manufacturing enterprises and other activities, transportation facilities, and general social and technical factors affecting resource utilization. In the light of such studies broad policies and priorities for the region could be established and set out in *regional plans*, setting the context for more specific forest planning.

Second, the forest lands within each management unit in a region would be inventoried and classified according to their potential contribution to the regional objectives. *Management unit plans* are more technical, involving identification of resource development alternatives and consequences within units such as Tree-farm Licences or Public Sustained Yield Units and hence requiring multidisciplinary expertise and co-ordination. This unit plan would define production and use objectives consistent with the capability of the land and resources and with the demands on the area.

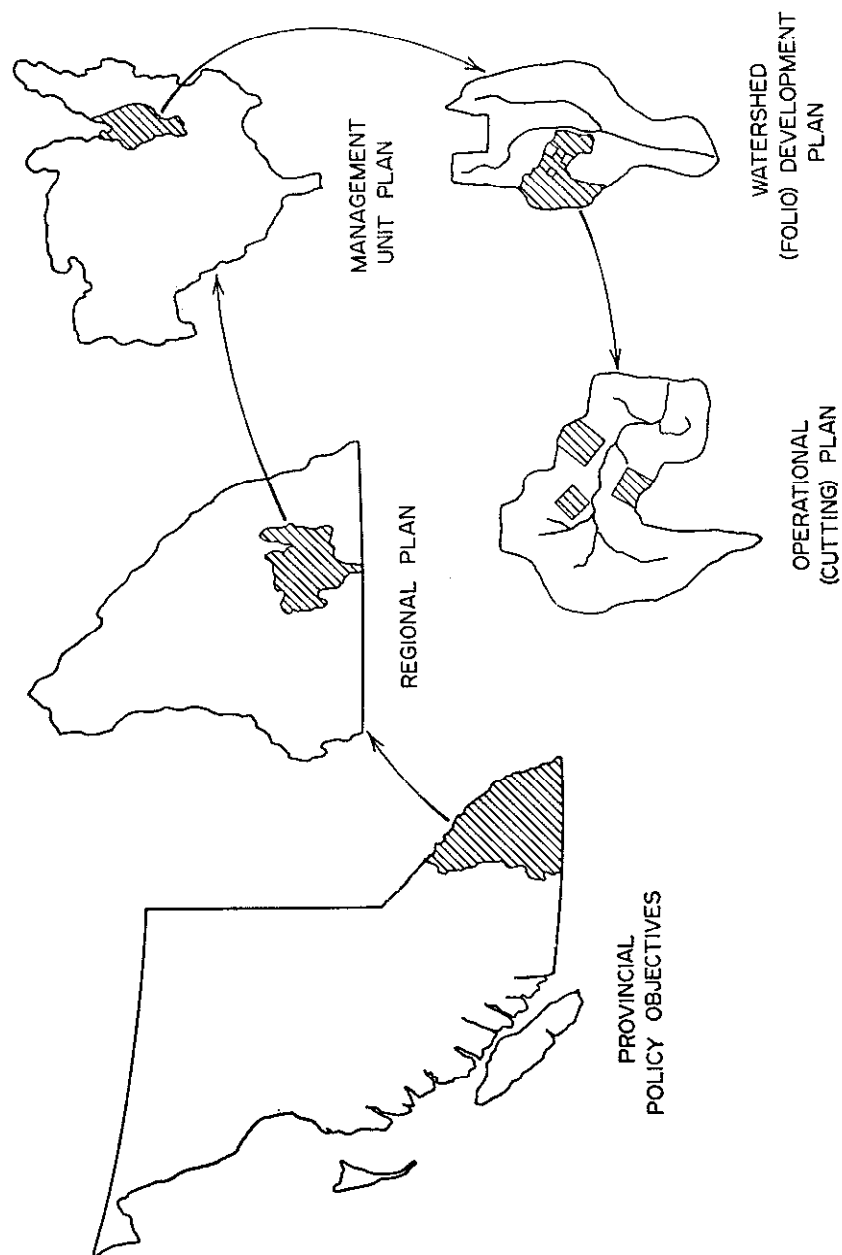
Third, plans such as those developed through the resource folio technique would be prepared for individual watersheds within the management units where operations are to take place. These *watershed plans* would specify in more detail how harvesting should proceed, and it is at this level that site specific objectives and constraints for integrated resource use must be considered. Detailed planning need be done only for a few years in advance, so that initially much of the watershed could remain essentially unplanned. But clearly the options diminish as operations progress, which underlies the importance of broader unit plans.

Finally, specific *operational plans*, like those required for Cutting Permits, would be provided to ensure implementation of the watershed plans through detailed specifications of cutting areas, logging techniques, layout of landings and skid trails, and measures to protect specific environments.

THE PRESENT STATUS OF FOREST PLANNING

The above formulation of an ideal planning framework provides a benchmark for assessing the present status of forest resource planning in the province. At the highest level, that of specification of provincial objectives,

FIGURE 19-1
LEVELS OF RESOURCE PLANNING



planning might be said to be reflected in broad provincial policies, especially the general policies aimed at sustained yield and (less explicitly) those directed toward accommodating the growth of the forest industry. In Chapter 17 I recommended that the present sustained yield objectives and methods of achieving them, be reassessed, and throughout this report I have urged that policies toward industrial development put more emphasis on qualitative considerations, which I take up again in Chapter 23.

Planning at the regional level is generally lacking, although the Special Studies Division of the Forest Service has undertaken such studies for the Bella Coola area and the northeast corner of the province during the last couple of years, and other relevant studies have been done by the Department of Economic Development and the Secretariat of the Environment and Land Use Committee.

Management unit planning. Planning by management units has been confined largely to Tree-farm Licences. Under the terms of these licences the licensee is required to prepare a *management working plan* for the approval of the Chief Forester, and all operations under the licence must comply with the approved plan. These comprehensive plans summarize all available forestry data relevant to the licence area and include detailed calculations of the allowable annual cut. A new 5-year plan is required every five years, specifying the general management objectives, the methods to be used in achieving them, and hence the licensee's commitments.

It is the licensee's responsibility to acquire the information needed for his management working plan. He uses whatever data are already available from government agencies and other sources, but often additional field surveying is necessary. The cost of approved field work may be included as forestry costs with consequent reductions in stumpage assessments, and in order to ensure that the costs and the plan are approved the survey procedure must meet standards set by the Forest Service.

Taxation Tree Farms, where they form part of a Tree-farm Licence, do not call for separate plans because they are integrated with the rest of the licence for planning purposes. For those that are separate management units the planning requirements are very flexible so as to accommodate their considerable range of size and forest conditions. The Timber Appraisal Coordinator of the B.C. Assessment Authority requires a sustained yield plan, approved by the Forest Service, for each Taxation Tree Farm, but a good deal of discretion is permitted with respect to the harvesting schedule. Less emphasis is put on steady harvest rates than on prompt reforestation, maintenance of the productivity of forest land, and proper silvicultural practices. There are no special requirements for protection or enhancement of resource values other than timber.

Planning on a management unit basis is virtually non-existent in the Public Sustained Yield Units. Although the Forest Service has intended, since these units were introduced, to develop long-term management plans for them comparable to those required for Tree-farm Licences, the exigencies of other demands on their resources have so far frustrated their efforts.

In the judgment of the Forest Service, planning at the management unit level is seriously deficient:

Although a general understanding exists of what data is required, and a major effort is being made to coordinate the gathering of resource data

and define the nature of options open to management, unit plans are not being adequately formulated for either Public Sustained Yield Units or Tree-farm Licences at the present time. This disturbing situation exists primarily because of the lack of planning staff in resource departments, undefined or poorly defined resource management objectives, lack of data and the absence of a uniform resource management planning system.³

Watershed and operational planning. At the operational level, planning has progressed much further, varying under the different forms of tenure. Tree-farm Licensees are required to prepare, in addition to the 5-year management working plans noted above, an *operational development and cutting plan* which must be revised and extended each year for the prospective five years, and which indicates cut-block patterns, road developments, and related operational activities. They require considerable detail for the forthcoming two years, and more general plans for the remaining three. Under Timber Sale Harvesting Licences and "third band" Timber Sale Licences, separate *development plans* and *cutting plans* are required.

In those (so far, few) cases where the resource folio planning system has been introduced, the licensee's proposed 5-year cutting plan must conform to the management requirements indicated in the folio. The plan is submitted to the Forest Service, which may approve it if it complies with all the folio constraints or refer it to the Fish and Wildlife Branch for endorsement where prior arrangements have been made to do so. Where it is impractical to comply fully with all the desired constraints, or some modification of them seems justified, further consultation is arranged with the appropriate agency to harmonize the plan with the agency objectives. Once approved by the District Forester, the plan effectively becomes part of the licence contract since harvesting authorizations are issued only insofar as they conform to the approved plan.

Finally, in order to proceed with harvesting timber, most licensees must obtain a *Cutting Permit*. Applications for these authorizations must comply with the 5-year cutting plan and include detailed information on proposed cut-blocks, data required for stumpage appraisal purposes, and other silvicultural and environmental information. Cutting Permits usually cover operations for three years or less. They authorize the specified harvesting, prescribe stumpage rates (wherever applicable), and set out the cutting and utilization requirements and other conditions.

Operations on Taxation Tree Farms do not require Cutting Permits unless they are part of a Tree-farm Licence, but reports of operations must be filed annually with the Assessment Authority and the Forest Service. For operations on the old temporary tenures, *operating plans*, containing such detail as the District Forester requires, must be submitted and approved in advance. Where a new watershed development is involved a folio plan is considered, but if the impact of logging does not appear to pose serious problems, an operating plan is based on general forestry planning guidelines or silvicultural harvesting practices currently considered acceptable for the region. The relatively rare "ordinary" Timber Sale Licences call for cutting plans except where only minor volumes are involved. In most cases, no separate Cutting Permits are required.

From this brief review it is apparent that resource planning is most developed at the operational level. Approved development plans and cutting plans

³ *Ibid.*, pp. 26-7.

are required for nearly all operations on Crown land, and Cutting Permits provide close control of operations. So far, few operations are governed by resource folio plans, but these are gradually being expanded with first priority given to those watersheds where multiple demands on the resource base are most pronounced and where timber operations are likely to have heavy impacts on other values.

PROBLEMS AND NEEDS

Notwithstanding the deficiencies of current resource planning arrangements and the almost universal view that more and better planning is needed, it is worth noting that few if any industries are subjected to the amount of planning already associated with forestry. I have mentioned the plethora of planning requirements under various tenure arrangements, and some of these rest on predictions that extend well beyond the planning horizons of most other activities. The challenge we face in forest planning today, as I see it, is not so much the need to expand the total effort in terms of coverage and time (indeed, in some respects it is probably already excessive), but rather to find systematic and practicable methods of integrating with traditional forestry planning the necessary provisions to protect and enhance forest values other than timber.

The problems and experience reported in evidence presented to the Commission by various parties suggest several general principles for effective resource planning, and these provide a helpful framework for evaluating current policies.

- i) Plans can be effectively designed at one level of geographical detail only in the context of plans and objectives for a broader area. Thus, proper planning of, say, Cutting Permit areas requires identification of the objectives and priorities of the relevant watershed, and this in turn calls for more general plans for management units and regions. In the absence of such a systematic progression, piecemeal planning will result in confusion of priorities and conflicts that will frustrate the total planning effort. For example, a particular resource agency is likely to resist approval of an operational plan that encroaches on the resources under its jurisdiction unless it can see, in a broader unit plan, that its needs and interests will be provided for. The Forest Service's proposed planning structure described above is clearly designed to meet this need through its hierarchy of linked planning processes.
- ii) All those who are to participate in the planning effort should have an opportunity to do so at whatever stages in the process their contributions will be relevant. While this may appear obvious, it means that specialists should not be consulted too late in the process, or with insufficient information to permit full advantage to be gained from their potential input. This inevitably happens under the referral procedure and has resulted in a good deal of frustration and wasted effort. Perhaps the greatest single advantage of the resource folio system is its provision for contributions from participants at all relevant stages in the planning process.
- iii) Responsibility for the design and execution of plans must be clearly vested in a single, accountable authority. This should not in any way restrict the range of contributors or the value of their advice; but it im-

plies that a single agency, at an explicit bureaucratic level, be responsible for the progress of the planning procedure: for collating information, for making decisions on issues of conflict, and for enforcement of the provisions of the plan.

The early resource folio procedures have apparently been weak in this respect. Diligent efforts to encourage co-operation among various agencies and groups have led to a search for universal consensus in the outcome through full accommodation of the wishes of each, instead of difficult compromises in the face of disagreement. Indeed, District Foresters have been instructed not to approve plans over objections on the part of other agencies. This threatens to diffuse responsibility and accountability, and leads to the kind of awkward compromises that characterize decisions taken by the consensus of committees. It must be the responsibility of an identifiable authority, in the face of the best information and guidance available, to make and stand accountable for decisions about the ultimate plan.

- iv) The design of plans that will best serve the public interest requires a systematic procedure for weighing alternatives and evaluating options. It is important to keep in perspective the basic purpose of resource use planning: to realize the greatest long-run aggregate of the various resource benefits, both industrial and non-priced environmental or recreational values. To date, planning has rested almost entirely on technical or biological capabilities without sufficient attention to the values at stake.
- v) Planning requires a range of inventory data relating to various resource values which can often be collected most efficiently through co-ordinated and complementary field surveys. Typically, the initiative of forest planning arises from the pressures of industrial forest development, and field data relating to timber are already superior to that for wildlife, fisheries, and other resources. There is an urgent need to complement the expertise and capability in forest evaluation with assessments of these other resources. Hitherto, field work has often been fragmented and subject to the differing priorities of separate agencies. As I suggested in Chapter 11, there is much scope for broadening the forest inventories carried out by the Forest Service and private companies, to facilitate the compilation of information required by other agencies.
- vi) The best pattern of resource use can be determined only in light of the unique characteristics of each site. This means (as I have already emphasized repeatedly in this report) that general rules or restrictions, applied uniformly over whole regions or districts that encompass areas of widely differing conditions and demands, cannot be expected to achieve the best outcome in any particular circumstance. The importance of a site-specific approach to resource planning is now widely recognized, and logging guidelines or other general regulations must be regarded as crude and often unnecessarily costly substitutes for more discriminating means of control.

I now turn to some proposals which I believe will help to overcome some of the obstacles to implementation of these precepts within the emerging planning structure.

PRIORITIES IN OPERATIONAL PLANNING

The immediate crisis is in the design and approval of operational plans. The commendable efforts toward more comprehensive and thorough planning arrangements—particularly the resource folio system—have created such enormous requirements for field data, compilations, consultations, and other demands on the scarce personnel and facilities of the resource agencies that the task has become quite unmanageable. At the time of writing this report there are several hundred proposals for folio plans and Cutting Permit referrals being held up in the administrative process awaiting additional data, field inspections, or processing. Delays of months and even years are not uncommon, and are undoubtedly extremely costly. But they have other adverse consequences as well. They frustrate administration of the forest tenure policy by impeding the exercising of rights; they generate frustrations and friction between licensees and public agencies as well as among agency personnel, which are antithetic to co-operative planning; and under pressure to reach conclusions without adequate information, other agencies sometimes resort to restrictions on operations that may be unnecessary and costly.

If these problems continue to worsen, progress in operational planning will inevitably come to a standstill. Every effort must be made to make the most efficient use of the personnel available for the task and to ensure that the standards aspired to are achievable. To this end authority for operational planning should be delegated to field personnel to the full extent of their competence. Problems and conflicts having only temporary effects should be resolved locally, leaving matters of a more permanent nature such as major roads, parks, and the like to regional and provincial levels.

Resource folios. The resource folio system is a most significant advance in integrated resource use planning. It is capable of systematically accommodating participation by all relevant resource specialists as well as the interested public. As a planning framework it should be retained and developed further; the immediate need is for more flexibility in its application to make it manageable with the data, personnel, and facilities available.

I am concerned that the high esteem in which the folio system is held by resource managers may threaten its success through attempts to apply it too widely and in too rigid a form. The demands for data and procedural guidance generated by this technique have already far outstripped the capacities of the resource agencies, and for the next few years there is little hope that it can be implemented to a uniformly high standard throughout the province. Later, I recommend increased support for this activity, but even if that is provided it will be some time before the backlog of demands can be dealt with and it is unlikely that resource managers will ever be fully satisfied with the quality of data and planning procedures.⁴

It is therefore necessary to concentrate effort where the values at stake are greatest and most sensitive, while expanding the system as fast as funds and personnel permit. Through consultation with the relevant agencies, priority must be given to careful planning of operations where resources other than timber are most valuable and environmental integrity is most threatened. There are other areas, such as watersheds that are already mostly logged and remote operations where the impact of logging techniques and

⁴ I am informed that more than 400 resource folio plans would be required immediately to provide one for each watershed in which logging operations are to be conducted in the next three years.

cut-block layout upon wildlife, fisheries, and other values will be relatively insignificant, which warrant much less than full-blown resource folio plans. Indeed, the areas of serious sensitivity are relatively few; the majority of operations either do not present critical environmental problems or else pose difficulties that are readily recognizable. The detail and rigour of operational plans should be varied accordingly (a proposal which I understand is consistent with efforts of the Forest Service in recent months to identify priorities in consultation with other agencies).

Preliminary plans. In an attempt to make better use of the resources of licensees in coping with the burden of folio planning, the Forest Service proposed in 1975 that in some cases the licensee might prepare a *preliminary* (or *overview*) *plan*, bringing together all information about the area that is already available, supplemented with reconnaissance surveys where necessary. The purpose was to speed up the procedures preparatory to agency study and investigation of the plan. These overviews would not be expensive (generally less than 50¢ per acre) and if approved beforehand could be treated as reimbursable forestry costs. However, at the time of writing this, few such "overview" plans have been approved.

I propose that this arrangement be developed, to speed up the planning process and to facilitate the determination of priorities for investigative effort. It must be recognized, however, that it can be exploited most fully only by the largest companies. There are only two or three large firms which have the specialists in all resource fields required to assemble and interpret data to the standards required by the several agencies. Where expertise is lacking the relevant public agency must be depended upon. The problem, then, is to guard against biasing planning priorities toward those proposals presented by the largest companies.

Inter-agency consultation. Before turning to administrative arrangements to deal with these problems I must refer to another—namely the necessity of explicit responsibility for the design and execution of each plan. It is essential that the joint participation of several agencies in the process not be permitted to cloud the responsibility and accountability of each, and that licensees be answerable to a single governmental authority.⁵

To cope with these rather awkward issues I propose development of the consultative mechanism afforded by the Regional Resource Management Committees. As a procedural matter each agency should routinely notify these committees of its intent to consider preliminary proposals for relevant resource developments for which it has primary responsibility. Thus the Forest Service will give notification of intent to consider folio plans, while other agencies might correspondingly advise the committee concerning fisheries or wildlife programmes, land developments, and so on (though I hereinafter confine my discussion to forestry related projects). The purpose of this advice is simply to ensure that all agencies agree that the project is not in principle inconsistent with general plans and objectives for the region and that each is kept informed of the activities of others which may call for its participation. This is not intended to introduce a new step in planning procedures but rather to standardize what I understand to be present practice in many instances. The Forest Service should then arrange for preparation of

⁵ It is understood, of course, that licensees are always answerable to other agencies insofar as their activities must comply with statutes and regulations such as those of the federal Fisheries Act, the provincial Pollution Control Act, and so on.

preliminary folios, based on interpretations of available data, and reconnaissance field work only where necessary. Where licensees are willing and able to undertake this preparatory work the Forest Service should authorize them to do so under approved forestry cost arrangements; in other cases the Forest Service will prepare the documentation. The objective of the preliminary folio process is to minimize the requirements for detailed folio plans wherever possible and to restrict the full-scale resource folio plans to those situations where major impacts and resource use conflicts are indicated.

When the preliminary folio is complete, the Forest Service should at its discretion either take it to the Regional Resource Management Committee or refer it to other resource agencies having a particular interest in it, for advice on further data required for an operational plan. This will probably be the most delicate task in inter-agency consultation: to advise each other on the minimum requirements for adequate planning of their activities. (For these purposes the Committees will almost certainly find it helpful to make use of less senior technical subcommittees.) To protect each agency in the process and to maintain accountability, I believe it would be desirable for other agencies to put their specific recommendations on planning needs to the Forest Service in writing, and where the Forest Service decides not to follow certain advice that it so inform the relevant agency in writing.

The Forest Service will thus receive advice about the desired intensity of operational planning from the resource agencies concerned and other special interest groups, based on their assessment of needs as indicated by the preliminary information and their own administrative priorities and work loads. It will then be the Forest Service's responsibility to decide how to proceed with the planning in light of this guidance. It may decide in some cases that a complete and detailed folio plan requiring extensive additional field work is necessary or, at the other extreme, that road development and cutting plans should be proceeded with directly. These operational plans, prepared for Forest Service approval by licensees or by the Forest Service itself should, as now, provide the basis for authorizing Cutting Permits.

These procedures should be followed only for typical operational planning; minor authorizations for small sales, salvage operations, and special products should, as now, be dealt with entirely by the Forest Service. In these cases logging activities should be subject to general operational guidelines, which should be administered flexibly—toward greater stringency or leniency—in light of the circumstances of each site. Responsible Forest Service officers should be given clear discretion with respect to the application of guidelines and encouraged to exercise that discretion according to their professional judgment.

These proposals should enable the Forest Service and other resource agencies to overcome the present overwhelming burden of planning. They will be able to direct their efforts in the light of their priorities determined with the best data available, relieving themselves of onerous work whenever their resource interests will be less seriously affected by forest operations under normal Forest Service controls. These proposals are meant to emphasize decentralization of authority and responsibility to field personnel, and greater dependence on professional judgment. Finally, while providing scope for participation of the full range of expertise, these arrangements should leave the Forest Service singularly and fully accountable for approval of forest operations.

OTHER PLANNING NEEDS

While the most urgent task is to overcome the present bottlenecks in operational planning, the prospects for proper resource management depend equally on the development of plans and objectives for whole management units, and this task should be addressed concurrently. These need not be nearly as detailed as folio plans, of course, but by focusing attention on the present availability of resource data and the prospects for future needs they serve a valuable purpose in identifying planning priorities for all agencies within and among units, and hence in facilitating more efficient allocation of planning resources. They are also an essential link in formulating regional objectives.

Planning at the management level should thus be concerned mainly with the means of realizing the full potential of resources in harmony with regional objectives. It is essential that it be flexible, recognizing the value of preserving future options in light of the inevitability of changing values and priorities. There is sometimes a tendency on the part of resource managers to demand too much of long-term plans, creating a false illusion of developments predetermined for decades into the future. In one respect, this lightens the task, insofar as detailed and rigid plans covering long periods are not called for. But it puts a heavy burden on expert judgment in the face of imperfect information, to ensure that what is planned for the near future is consistent with both regional objectives and the broad longer-term objectives for the unit.

While I have emphasized that the Forest Service should accept direct responsibility and accountability for operational planning for forestry activities, it should not be responsible for designing broader regional plans and objectives. For that purpose, an authority with a broader economic and social perspective, such as the Department of Economic Development, is more appropriate (although, of course, the Forest Service and other specialized agencies will have to be depended upon for relevant information). The government must recognize that effective resource planning and development is predicated on the design of coherent regional plans, and the present lack of them therefore demands attention.

There are two other aspects of these planning processes that warrant priority. One is the matter of resource inventory data. Unquestionably the most pervasive obstacle to progress in integrated resource use planning is the paucity of data, particularly of data on resource values other than timber. Today, inventory efforts of other agencies are too often hurried and fragmented in response to urgent operational needs. Other agencies should be encouraged, with appropriate financial support, to undertake general and systematic inventory programmes like that of the Forest Service. More immediately, a review and assessment of existing resource data should be made. In the long run, broad inventory information will determine the extent to which systematic operational planning can be attained.

In the meantime, every effort should be made to ensure that both private and public inventory work produces the maximum in useful information. The Forest Service annually conducts field surveys of extensive tracts of forest lands, and similar surveys are conducted by Tree-farm Licensees. The fielding of survey parties is a major cost of gaining resource inventory informa-

tion, and there appear to be opportunities for broadening the range of data collected through co-operation among agencies. I understand that there has already been some successful experimentation with the collection of wildlife information by forestry survey teams, through co-operation between the Fish and Wildlife Branch, the Forest Service, and licensees. These co-operative efforts should be encouraged; they not only promise improved economy and speed in data collection, but are also likely to stimulate recognition and appreciation of a broader range of resource values on the part of specialists.

Finally, it is essential to build into planning processes a systematic procedure for evaluating the impact of decisions and alternative courses of action. In the words of the Forest Service:

A very serious drawback to this approach is that trade-offs are usually made on the basis of the ability of the land base to produce a commodity, rather than on the demand for that commodity; for example, emphasis on enhancement of recreational opportunities should depend on the quality of experience that can be offered, its distance from population centres and transportation routes, and its location relative to intervening opportunities. The capability of the land alone should not dictate the management program.⁶

Evaluation of alternative development patterns is complicated by the absence of market values for some of the resource benefits that must be considered, such as recreation and wildlife; but the problem cannot be avoided, and more systematic analysis is preferable to exclusive reliance on technical capabilities and subjective judgments of values. Even in the most awkward cases it is possible to quantify the cost (in terms of timber values foregone) of various protective or enhancement measures, and this can be a considerable help in determining the most efficient means of meeting prescribed objectives. More generally, it is virtually impossible to identify the best controls on logging practices—including such diverse matters as sizes of cut-blocks, utilization standards, and reforestation techniques—without some routine economic evaluation of the alternatives. Like some areas of forest policy, planning procedures have been conspicuous for the absence of economic analysis in a matter of important economic decision-making.

PUBLIC PARTICIPATION

One of the concomitants of the new public interest in natural resources and the environment generally is a growing demand for mechanisms that will permit the interested public to contribute to resource planning. Outdoor recreation groups, environmentally oriented societies, and rural community associations, whose numbers and memberships have burgeoned in recent years, have pressed for means of participating in resource planning processes. Resource management agencies, for their part, generally welcome constructive public participation. But the channels for non-governmental input into the planning functions are few, and the design of appropriate institutional arrangements for this purpose presents serious practical difficulties.

There can be no doubt that private, special interest groups can provide valuable advice and information to government agencies whose decisions affect their interests. In addition to guidance about such things as recreational needs and priorities, private organizations are often able to offer expert advice

⁶ B.C. Forest Service, *op. cit.*, p. 16.

on particular resources or on local problems. Moreover, they often provide most helpful channels of communication between public agencies and the interested public. Under suitable arrangements non-governmental groups can add a constructive new dimension to resource planning processes, and contribute to more harmonious understanding of planning problems and priorities. Moreover, appropriate forums can promote understanding between groups of resource users themselves—such as wilderness recreationists, hunters and fishermen, industrialists, and others—whose interests often conflict.

Submissions to the Commission from a wide spectrum of special interest groups were impressive in their receptiveness to the needs of competing users, their almost unanimous dedication to integrated resource use planning, and their already developed understanding of the problems involved in this task. Much of the shrill intransigence that characterized debate between industrial interests and others a few years ago has been replaced by more constructive insistence on all sides that their concerns be accorded due weight in the compromises that must be made in pursuit of the overall public interest. Joint consultations and discussions are now much more rewarding than they were in the past.

I consider it important to develop means of channeling this potential public guidance into resource planning processes, but certain difficulties must be guarded against. One is that it is inevitably easiest to design consultative arrangements with the largest and best organized interest groups that are already willing and able to participate; and while they may well contribute most constructively they cannot be regarded as representative of the public at large. It is thus important to decide whether the purpose is to obtain the guidance of special interest groups or to receive a balanced public reaction to governmental resource planning. The latter presents enormous difficulties. There is undoubtedly a growing number of people in the province interested in resource development who are not members of well organized groups, but I suspect that their numbers are often exaggerated and they are extremely difficult to communicate with.

Second, ultimate responsibility for decisions about the management of public resources must remain with the public agencies answerable to the Legislature. Unless the authority of these agencies is formally transferred to new politically responsible bodies, outside contributions to resource planning decisions must be in the form of advice. Finally, the appropriate role for non-governmental consultative bodies is in offering criticism and guidance about resource management policy and planning; they should not be concerned with internal administrative matters, personnel problems, or the distribution of resource rights among particular applicants.

In view of these considerations I have three recommendations with respect to public participation, two of which involve development of existing arrangements. First, the Forest Service should expand its facilities for making its forest resource plans accessible to the public. In some District offices the Forest Service has already provided space for the interested public to peruse the agency's plans and other information. This cannot by itself be considered an efficient means of generating public commentary, but it is nevertheless important and proper that the public should have ready access to plans for resource development and use.

Second, every encouragement should be given to groups whose purpose it is to cultivate understanding among different interests in resource development. I am much impressed, for example, with the record of the Forest Land Use Liaison Committee of British Columbia, which includes representation from seventeen industrial groups, government agencies, and recreational and environmental groups in the province.⁷ This Committee explores problems of mutual interest, and has already produced an impressive "consensus statement" on the problem of managing watersheds. Judging from the evidence of participants in this group, it serves a most constructive function not only in providing helpful advice to the responsible public agencies but also in promoting communication and understanding among interest groups.

But neither of these arrangements can meet the need for locally based, representative external assessment of resource planning. For this, a new institutional arrangement is required that is not linked to the resource agencies directly and that is somehow representative of and accountable to the local populace. I have concluded that the most suitable arrangement would be resource advisory committees constituted under the aegis of Regional District Boards.

Regional Districts already have Technical Planning Committees which include representatives of the resource agencies, but these are meant to provide the Boards with expert technical advice. My proposal involves representative, non-governmental advisory committees established by the Regional Districts wherever there is a demand for them, the members to be appointed or elected by whatever procedures appear most appropriate to the area. In some areas, these committees will find it helpful to strike more locally oriented subcommittees to consider issues within more restricted parts of a Regional District.

These committees would provide a regular channel for the Forest Service (and other agencies) to communicate their plans to the public and to receive external commentaries on them. They should be invited to comment on regional objectives, unit plans, and operational plans on a regular basis; to consider special problems brought to them by the Forest Service or other agencies; and to solicit advice from local interest groups.

⁷ Represented on the Committee are the B.C. Environmental Council, B.C. Fish and Wildlife Branch, B.C. Parks Branch, B.C. Forest Service, B.C. Wildlife Federation, Canadian Fisheries Service, Council of Forest Industries of British Columbia, Federation of British Columbia Naturalists, Federation of Mountain Clubs of British Columbia, International Woodworkers of America, Pacific Salmon Society, Sierra Club, Society for Scientific Pollution and Environmental Control, Steelhead Society of British Columbia, Truck Loggers Association, and Western Guides and Outfitters.

SPECIAL MANAGEMENT PROBLEMS

In the course of this inquiry, and particularly during my public hearings, I received a good deal of evidence relating to silvicultural problems and operational management practices. Many of these issues fall outside my terms of reference, but some clearly bear on forest tenure policy and its efficacy in realizing the full potential economic and social benefits from forest resources. In this chapter I examine a few of the most important of these: reforestation, controls on clear-cutting, roads and environmental protection, and harvesting priorities.

I want to emphasize that I have not attempted a thorough investigation of the technical aspects of the problems discussed in this chapter. My purpose is to call attention to certain practical matters which, although they lie beyond the mainstream of this report, are nevertheless important matters of forest policy deserving urgent attention.

REFORESTATION

In Chapter 17, I suggested that the central tenet of sustained yield policy for the future should be the maintenance of forest land in a productive condition. This means, at the minimum, that provisions must be made to ensure the establishment of new crops on lands denuded by logging or fire. In my judgment, this minimum silvicultural objective should be one of high policy: a *sine qua non* of harvesting, and a priority over other silvicultural practices. Anything less must be considered irresponsible stewardship of a renewable resource.

If this proposition is accepted, the much more difficult question of methods, timing, and degree must be addressed. Most forests in this province are so resilient that after typical disturbances by fire or logging they will, in time, regenerate naturally. Indeed, until quite recently, we have depended almost entirely on natural regeneration and have adopted various techniques of harvesting and site preparation to facilitate this process. But natural processes have not always proven adequate, and artificial reforestation offers the means for improving future crops. Thus reforestation has become a major issue, and a major cost, of forest administration.

MAGNITUDE OF THE PROBLEM

Forest Service inventories continuously revise estimates of acreages that are not satisfactorily restocked as new lands are denuded by logging and fire, as some lands are planted, and as natural regeneration progresses. Professional foresters have expressed much concern in recent years about the "back-

log" of unstocked lands, and in response to requests from the Commission, the Forest Service has supplied the latest available information on this problem on the Crown lands outside Tree-farm Licences, summarized in Table 20-1.

Table 20-1
INADEQUATELY RESTOCKED FOREST LANDS IN
PUBLIC SUSTAINED YIELD UNITS¹

Forest District	not satisfactorily restocked ²	non- commercial cover ³	residual stands ⁴	disturbed: stocking doubtful ⁵	total	estimated "backlog" portion
	thousands of acres					
Vancouver	312.3	19.3	15.9	1.3	348.8	126.3
Prince Rupert	1,737.6	326.9	28.9	404.1	2,497.5	216.5
Prince George	1,515.1	3,022.6	47.7	389.1	4,974.5	572.7
Cariboo	401.5	53.4	119.6	—	574.4	236.2
Kamloops	378.3	45.1	160.9	8.8	593.0	280.2
Nelson	397.4	91.1	84.9	45.5	618.9	409.7
total	4,742.3	3,558.4	457.9	848.8	9,607.2	1,841.6

¹ Includes 598 thousand acres in unregulated areas. It should be noted that the scope of these estimates differs from those in Table 17-1.

² Lands on which the forest cover has been disturbed more than 75 per cent by logging or natural causes and which have failed to restock with at least 300 well-distributed new trees per acre.

³ Productive lands occupied by non-merchantable species, mainly deciduous brush.

⁴ Lands on which the stands have been disturbed 25 to 75 per cent by logging, now occupied by remnant stands.

⁵ Lands on which stocking is in doubt, pending verification by ground surveys. This classification has been used in unit surveys since 1973 only.

Source: Compiled from data provided by the B.C. Forest Service.

The columns of Table 20-1 indicate the acreages, by Forest District, in the several categories of unsatisfactorily restocked lands used by the Forest Service. The statistics in the first five columns show the results of surveys which are in some cases 20 years old. This tends to exaggerate the unstocked acreage because of subsequent natural regeneration; recent surveys have often found that 60 per cent of the lands previously considered unstocked have since regenerated.

To bring the data into perspective, the Forest Service has provided a rough estimate of the "backlog" that needs attention, as shown in the right-hand column of Table 20-1. This is the best available estimate of the lands that need reforestation, apart from those associated with current logging.¹ It amounts to some 1.8 million acres, widely distributed over the province. Only about 6 per cent of this total is on "good" sites; about 40 per cent is on "medium" sites, and the remainder is on "poor" sites.

This, then, is an indication of the magnitude of the problem of catching up with needs that have arisen in the past on Crown lands outside Tree-farm Licences. Within Tree-farm Licences the situation is much better. As explained in Chapter 11, these licensees are responsible for reforesting both the "backlog" and currently logged areas, and progress has generally been good. In many cases Tree-farm Licensees attempt to plant all areas immediately following logging.

In the province as a whole, roughly 325 thousand acres were clear-cut annually during the last five years, and some 120 thousand acres were planted.

¹ The estimate involved adjusting the total in the table for estimated new logging, fires, and areas planted since the last surveys; deducting "low" sites and "residual" stands; subtracting the more than five million acres of low quality lands in the northern part of the province that were denuded by fire and left to restock naturally; and adjustment of the remainder by a factor that reflects experience in the reduction of unsatisfactorily stocked lands when new surveys are taken.

Table 20-2
DISTRIBUTION OF PLANTING ACTIVITY

planting	Coast		Interior		distribution of all planting to date
	before 1971	last 5 years ¹	before 1971	last 5 years	
	thousands of acres				per cent
Forest Service	212.9 ²	122.4	57.1	168.7	43
licensees					
Tree-farm Licences	293.6	157.0	14.8	29.2	38
Timber Sale Harvesting Licences	—	10.9	.1	59.7	5
private owners	120.2	51.7	2.1	2.3	14
total	626.7	342.0	74.1	259.9	100

¹ 1971 to 1975 inclusive.

² Includes 27.0 thousand acres planted by the Forest Service on Crown-granted land under arrangements with the owners.

Source: B.C. Forest Service Annual Report 1975.

The distribution of planting is indicated in Table 20-2. Most observers contend that a larger proportion of lands logged should be planted to prevent delay in crop re-establishment, to establish the more desirable species, and to obtain better seedling distribution and quality.

For many years the Forest Service has been expanding its reforestation programme to close the gap between the areas denuded by fire and logging and those which reforest naturally. Large scale seedling production began in the 1920's with the establishment of a nursery near Victoria. Subsequent expansion has involved establishment of additional nurseries in other regions, improvements in seed production and collection, new techniques for growing and planting seedlings, and research.

In 1965 a more specific target was adopted. It was estimated that one-third of the acreage logged would require artificial reforestation, which, at the level of logging then, implied a need for 75 million seedlings annually. At that time, annual planting was in the order of 18 million seedlings, and was heavily concentrated on the better coastal sites. As the programme expanded toward the 75 million goal, priority was given to immediate reforestation of freshly logged, good sites threatened by encroachment of brush.

Today, the Forest Service has eight large nurseries with capacity to produce annually 130 million conventional bare-root seedlings and 16 million container grown seedlings. Advanced seed collection, extraction, registration, and storage techniques have been developed and there are six seed orchards in production. For the first time the Forest Service is in a position to deal with the accumulated backlog of unstocked lands. A reassessment of the reforestation programme is therefore timely.

REFORESTATION PRIORITIES

It must be emphasized that the reforestation problem is not *usually* artificial reforestation or nothing, as most lands will eventually regenerate naturally. Artificial reforestation, in most instances, should be viewed as an investment designed to improve or hasten the next crop of timber. Thus, artificial reforestation should be evaluated in terms of its costs and expected benefits, like other silvicultural investments. This implies setting priorities for areas requiring artificial reforestation, with first consideration to those lands which cannot be expected to restock naturally.

It is my impression that current reforestation policy is seriously deficient with respect to the attention given to the costs and benefits of alternative practices. Provisions for either natural or artificial reforestation entail a cost, and the best decision can be made only by comparing the relative costs in light of the expected results. The costs of providing for natural regeneration are usually represented by higher harvesting costs through such practices as patch-logging, selective cutting, and the leaving of seed trees. The cost of these measures may well exceed that of artificial planting and yield inferior results in terms of the value of the new crop and the time taken for its establishment, but the alternatives are not now systematically assessed. Similarly, the priorities for artificial measures are not evaluated, so there is no clear measure of how much expenditure for this purpose is warranted, and no assurance that wherever planting is undertaken it is a more productive use of funds than alternative silvicultural measures such as juvenile spacing, fertilization,

and thinning. The evaluations required for these purposes do not involve difficult analyses, and they are clearly necessary for meaningful assessments of the adequacy of the reforestation programme and for the most productive allocation of effort.

REFORESTATION FINANCING

Three aspects of the present arrangements for financing reforestation warrant attention. The first is the adequacy of the total effort, which, as I have explained above, is difficult to assess without more systematic evaluation of needs and priorities. The total effort must, of course, be measured in terms of both the direct spending by the Forest Service and the recognized reforestation expenditures of licensees.

Second, the procedure of treating licensees' reforestation costs as eligible deductions against stumpage under some tenure arrangements, while direct expenditures of the Forest Service on other lands are financed through legislative votes, may misallocate the distribution of effort. Tree-farm Licensees, for example, have a contractual obligation to attend to reforestation under cost reimbursement arrangements described in Chapter 11, and the Forest Service has given these licensees priority in the distribution of planting stock. Today, most logging in Tree-farm Licences is followed immediately by planting. On other Crown lands, less than a third of the area currently logged is planted; as well, these lands account for most of the backlog of unstocked lands. This is not to say that planting on Tree-farm Licences has been excessive (as already explained, data for such an evaluation are lacking), but that the distribution of planting effort appears to be distorted. Insofar as this is the case, the explanation almost certainly lies in the contractual obligations for reforestation under certain licensing arrangements, allowable cut incentives for Tree-farm Licensees, and expedient financing arrangements that do not call on the limited funds voted by the Legislature.

Third, there is an obvious need for better continuity in the government's financial provisions for reforestation. An efficient reforestation programme calls for long-term planning; seed must be collected in opportune years, stored, grown, and made ready according to the species, provenance, and quantities required for the projected planting date. In 1974, the long-sought objective of 75 million seedlings was met for the first time; and by 1975 production had expanded to 90 million—enough seedlings to plant nearly 200 thousand acres, about half the area annually logged. But unexpected budgetary constraints in that year restricted planting to only 65 million seedlings.

The Forest Service has repeatedly tried to work toward targets in this manner, only to be frustrated by budgeting difficulties. In Chapter 24 I propose a system of budget planning designed to alleviate such difficulties, or at least to ensure that the full implications of such changes are appreciated.

NURSERY POLICY

It has been the policy of the Forest Service to retain a monopoly on the production of planting stock for Crown lands, and to provide seedlings without charge for use on both private and Crown lands. These policies should now be reconsidered.

The arguments in favour of the Forest Service's monopoly on seedling production appear to be twofold: economies of scale in nurseries, and the

need for quality and quantity control. The economies of scale argument implies that the Forest Service, with larger nurseries, can produce stock at lower cost than smaller private nurseries. Even if this were the case (and it is not obvious that private nurseries would necessarily be smaller than the government's, nor that the economies of scale are so great) it would not justify restrictions on private operations—indeed it would make them unnecessary. My information is that some entrepreneurs would welcome an opportunity to compete with the Forest Service. The second argument does not seem compelling either; seed certification systems are already developed, and seem quite capable of providing needed quality control under private production, just as agricultural seed is normally controlled. Certainly, private forest nurseries, subject to governmental quality and other necessary controls, appear to serve the industry successfully in many other parts of the world.

In my opinion the government should seriously consider allowing private parties to engage in forest nursery activities, under seed certification arrangements prescribed by the Forest Service for stock to be used on Crown lands. Unless there are compelling reasons for the government to retain its monopoly, opportunities should be extended to the private sector. I believe that private nurseries would contribute valuable resilience and flexibility in meeting reforestation needs, relieving the present onus on the Forest Service to meet all the demands. A private nursery industry would also provide healthy competition for the Forest Service programme, and aid the government in assessing the efficiency of its operations. It appears to me that an opportunity for licensees and forest owners to engage in orderly long-term private contracts for the production of quality controlled planting stock would alleviate many of the imbalances between supply and demand that are encountered under the present system.

A necessary concomitant to such a policy change would be the pricing of planting stock from Forest Service nurseries at a level at least equal to the costs of production, including overhead. I consider this desirable in any event. I see no justification for subsidizing owners of private forest lands by providing them with free planting stock. Where the seedlings are used on Crown lands, the cost would, in many cases, be allowed as recoverable forestry costs, but this would undoubtedly contribute to more systematic reforestation financing. Further, by combining the cost of stock with the cost of planting it and providing a comprehensive allowance for reforestation, the Forest Service would encourage efficiency in all phases of reforestation.

CLEAR-CUTTING, ROADS, AND ENVIRONMENTAL PROTECTION

In previous chapters I have reviewed the processes of operational planning and the controls on logging aimed at mitigating environmental damage and adverse effects on other forest values. I have repeatedly stressed the need for improved planning and harvesting methods to ensure that the full potential range of forest benefits can be realized. I feel it is necessary to comment on some of the practices now aimed at promoting these objectives, in order to emphasize the need for new approaches.

THE IMPACT OF CLEAR-CUTTING

In particular, I want to address the sensitive issue of clear-cutting, and the controls on this practice. Evidence available to the Commission suggests that a great deal of confusion and misunderstanding surrounds this matter, and that the Forest Service is being pressed to prescribe controls which are not in the interest of sound resource management. The current concern about clear-cutting is by no means limited to British Columbia; other provinces and most jurisdictions in the United States are experiencing similar public debates and are seeking measures to deal with the issue.

It is helpful to distinguish between three categories of effects of clear-cutting: silvicultural, environmental, and aesthetic. I use the term environmental in this context to refer to the integrity of the ecosystem with respect to elements and processes that extend beyond the growth of timber, such as wildlife, fisheries, hydrologic systems, and so on. Thus the silvicultural and environmental consequences of clear-cutting can best be judged by professional experts, while aesthetics is, of course, a matter of taste.

With respect to the purely silvicultural implications of clear-cutting, the weight of professional opinion appears to be that in old-growth stands of the kind most common in this province, complete removal of the forest canopy is the most appropriate harvesting technique. Exceptions to this exist mainly in the uneven-aged stands of the dry Interior, which are amenable to selective logging. However, as a general rule, most of the forest types in British Columbia are unsuited to selective harvesting. The reasons are many. Shallow-rooting species such as spruce and balsam are often windthrown when surrounding trees are removed. Some stands become highly susceptible to insects, disease, and mechanical damage when only a part of them is harvested. Major species such as Douglas fir and lodgepole pine are intolerant to shade and require exposed soil to regenerate, conditions which can be most suitably provided by clear-cutting. And in decadent² stands, clear-cutting usually offers the only feasible means of rehabilitating the forest.

In certain circumstances extensive clear-cutting can have adverse silvicultural effects. Large clear-cut openings on steep, exposed hillsides, particularly at high elevations, can result in site deterioration and create a hostile environment for establishment of new growth. In these cases the openings should be small, in contrast to some other situations where the size of the cut-blocks is of little or no consequence. All these comments are predicated on the assumption that suitable logging equipment and techniques are used, and that appropriate site treatment is adopted; like other generalizations they are subject to qualification in particular circumstances.

Generalizations of this sort become even more difficult to make with respect to the environmental implications of clear-cutting. While hydrologists regard forest harvesting as an adjunct to watershed management, extensive removal of the forest canopy can alter the flow regime and quality of watercourses. But protection of watersheds does not necessarily preclude clear-cutting, where properly planned and executed. Fish habitats are also sensitive to changes in forest cover but with proper safeguards, particularly to avoid obstructions or disturbances to waterways and streambanks and to prevent erosion and siltation, clear-cutting is not inevitably more injurious to fisheries

² I use this word in the customary forestry sense to describe very old and decaying timber, although I sympathize with the objections of non-foresters that its pejorative connotation is justified only with reference to its industrial utility.

than other harvesting techniques. With respect to wildlife, it cannot be said that, as a general matter, clear-cutting is detrimental. Indeed, periodic removal of the forest cover is beneficial to many species, being consistent with their environmental adaptation, and the size of clear-cut openings is usually less important than their configuration and location. Exceptions are species that depend seasonally on old-growth forests, but in these instances the issue is not the method of harvesting but whether or not such stands should be harvested at all.

In short, judging from the professional testimony put to the Commission, clear-cutting cannot be said to be an inherently destructive harvesting technique, as is sometimes alleged. On the contrary, where properly and carefully executed, it is the most suitable technique for most forest types in this province from the point of view of both silvicultural and environmental management—a conclusion which is perhaps not surprising in view of the adaptation of many of our forest types to periodic devastation by fire.

This leaves the problem of aesthetics, and it can safely be said that most people find a clear-cut hillside considerably less attractive than a verdant forest. However, the natural counterpart of clear-cutting, namely wildfire, also leaves an unattractive landscape. It is possible, of course, to protect forests from both logging and fire in the interests of aesthetic values, but it would be mistaken to suppose that, as a general rule, this would preserve the integrity of the natural environment. On the contrary, since most of the natural forests of the province are adapted to denudation at random intervals, preservation of the existing cover indefinitely, or harvesting only parts of stands at a time, would interfere with natural processes more than clear-cutting. In short, aesthetic values often conflict with both man-made and natural changes to the forest cover, and though they are nonetheless important and in some circumstances deserve priority, they should not be confused with environmental protection or the best silvicultural practice.

A recent report on forestry in New Brunswick states similar conclusions about clear-cutting:

. . . clear-cut logging results in the establishment of new stands which are of essentially uniform age. Even-aged stands are the rule rather than the exception in New Brunswick, regardless of whether the origins of the stands were natural or man-made. We are therefore talking about a condition that is not only natural but also normal for our principal native species. Hence it is logical to accept the creation of even-aged stands as a basic objective of forest management. However when the formation of even-aged stands is left solely to nature, the process is often carried out on a huge scale, such as enormous burns or budworm kills covering hundreds of thousands of acres. The stress which such vast denudations impose upon fish and wildlife populations and the water regimen are tremendous . . .

Modern man is not disposed to accept these massive purgatives of nature, yet he must respect their causes. If he is to forestall nature, he must act before she does with the aim of bringing about compatible results on a much reduced scale . . .

We believe it would be wrong to fix a precise limit on the maximum size of clear-cuts, because local conditions have an important bearing on any rational decision.³

³ *Report of the Forest Resources Study*, Government of New Brunswick, Fredericton, 1974, pp. 230-1. The report goes on to propose written justification for clear-cuts exceeding 300 acres and written explanations for requirements for smaller cut-blocks.

ROADS AND ENVIRONMENTAL PROTECTION

What I have ignored so far in this discussion of the effects of logging is the impact of roads. My impression is that by far the most serious environmental problems associated with logging arise from road building. Roads are disruptive to the soil and to water runoff patterns and are also the main causes of erosion and siltation of streams. Culverts, bridges, and inevitable wash-outs have serious consequences for fish, and the opening up of new roads into new areas presents special problems for wildlife management as well. The evidence put to the Commission leads me to conclude that, on environmental and silvicultural grounds at least, there is excessive concern about clear-cutting *per se*, and insufficient concern about road building.

The relation between the two is important, because heavy pressures to restrict clear-cutting have had the effect of aggravating the need for roads. Rules such as 200-acre maximum cut-blocks, retention of 50 per cent of the stands in the "first pass" of logging, extensive leave-strips, and long or indefinite periods of deferral, (all of which feature in present controls), necessitate two or three times the extent of road building that would otherwise be required. The cost of this, in terms of construction and maintenance, is enormous; this cost might be acceptable if it yielded clear environmental benefits, but I strongly suspect that, on the contrary, it aggravates the adverse environmental impacts of logging. I fear that while the advocates of small clear-cut openings and extensive deferred patches are motivated by an interest in containing the impact of logging, the result is just the opposite. Once the volume of timber to be harvested has been decided, these restrictions simply spread operations, magnifying the required road construction and thereby multiplying the source of the most serious environmental damage.

Other serious consequences of these restrictions on clear-cutting have begun to emerge. A proliferation of small, scattered logged openings exposes a particularly large amount of forest edge, which is highly susceptible to windthrow and fringe burning resulting from slash disposal. The patch-logging practices of recent years have significantly increased the vulnerability of timber to these types of damage.

Timber damaged in these ways is either lost altogether or else salvaged at very high cost. In some areas the recovery of windthrow timber along exposed clear-cut openings has risen to a significant portion of the annual harvest, and extensive blowdowns are becoming more common. Our exposure of timber to these hazards is steadily increasing as patch-logging continues, and if we were to experience another storm of the strength of the remnant of Hurricane Freda that swept the Coast in 1962 (a prospect that is probably not remote) it would undoubtedly cause havoc in the patch-logged forests that now exist.

The extremely high cost of road construction resulting from these practices is also becoming critical. The Forest Service estimates that licensees will incur construction costs for various categories of forest roads during the 1976-77 fiscal year of \$100 million, which will ultimately be financed in large part through abatements to stumpage charges. As I have mentioned, much of this cost can be attributed to restrictions on clear-cutting.⁴ The cost of maintaining the growing network of forest roads is also rising markedly.

⁴ Some observers maintain that roads are often built to a higher standard than necessary for efficient timber extraction, and at considerably higher cost, in order to mitigate environmental damage and accommodate other users. I have no quantitative evidence on this matter.

In light of these formidable costs, and the adverse environmental consequences of roads, the government should, as a matter of urgency, reconsider its present regulations on harvesting patterns. In operational planning, much more weight should be put on minimizing the needed road construction and on the economic and environmental benefits of using fewer roads more intensively, on opening up less forest to take the prescribed harvest of timber, and on minimizing the amount of vulnerable forest edge.⁵

In Chapter 17 I recommended that harvesting targets should be determined for broader regions than the present fragmented Public Sustained Yield Units. This should reduce the pressure for simultaneous development of each unit, which tends to result in leap-frogging available timber and increasing the need for roads.

The government must, of course, recognize and respond to forest values other than timber production, as I have repeatedly emphasized. I have the impression that examples of destructive logging practices in the past have concentrated public concern on clear-cutting, and the Forest Service has responded with restrictions on harvesting that indirectly aggravate its adverse effects. In Chapter 19 I recommended more concentrated planning effort to protect non-timber values on sensitive sites, and I have no doubt that this offers much more productive means of ensuring environmentally sound forest practices than general restrictions on clear-cutting.

The government has a corresponding responsibility to resist pressures for controls that are based on faulty technical knowledge, such as the patently erroneous generalizations that selective logging is always more consistent with natural ecological processes than clear-cutting; that all harvesting is detrimental to watershed management; that slash burning is invariably destructive to forest soils; and so on. Such contentions are valid only in particular and relatively rare circumstances, or where operations are improperly conducted. There is a particular danger in transposing popular ideas from the United States, where conditions are often different and where governments have apparently acceded to pressures that cannot be defended on grounds of proper silviculture in some cases. It is therefore incumbent on the government to support the Forest Service in rejecting specious arguments for controls on harvesting and management practices. Further, the forest industry, the Forest Service, and the forestry profession have an important responsibility in developing public understanding of resource management and silviculture.

I conclude this discussion with some relevant findings of the Research Division of the Forest Service.

The financial analysis showed that the alternate patch cutting system, common to both the Interim Guides for Logging on Severe Sites (Vancouver Forest District), and to the Coast Logging Guidelines, was the main contributing factor to increased logging costs. The more extensive basis for harvesting under this system was found to result in as much as a 60% decline in economic rent per developed acre, without any consideration of increases in physical harvesting costs.

⁵ At my public hearings one company operating on the west coast of Vancouver Island described a harvesting plan that involves an incremental progression of logging inland from the waterfront centre of operations. This approach minimizes road building and the spread of operations, virtually eliminates fringe losses, and permits careful attention to sensitive sites as logging progresses. While this system would not be suitable in many other parts of the province, it is noteworthy for its ability to circumvent the disadvantages of extended patch-logging. The Tahsis Company Ltd., brief submitted to this Commission at Vancouver, November, 1975.

The size of the calculated increase in physical logging costs per unit was found to be very sensitive to interest rates and to the length of the leave period between consecutive harvesting passes.

Application of the 1972 Coast Logging Guidelines to harvesting operations in the Chilliwack Provincial Forest was found to result in an extra annual cost, ranging from between \$0.632 million to \$6.545 million for the next 24 years. A figure of \$1.423 million per annum was considered to be the most realistic estimate of the extra costs resulting from the guidelines. It was considered that the alternate patch cutting system with long leave periods may, in some cases, aggravate instability of those small undiversified communities which are highly dependent upon local logging operations and timber processing industries for employment.

The analysis of the costs and benefits of the guidelines as they affect other resource values revealed that they may be an inefficient means for obtaining (*sic.*) multiple use objectives. It appeared likely that problems of erosion, sedimentation and aesthetic impact may even be increased overall, because of the more extensive basis for forest development.⁶

The results of a study such as the one referred to cannot, of course, be transposed to other situations; these findings should be regarded only as indicative of a serious problem that warrants more study and empirical analysis. The Forest Service is to be complimented for initiating work such as this and for publishing information that questions established policies.

HARVESTING PRIORITIES

In determining patterns of harvesting, the Forest Service has adopted certain priorities concerning the order in which different kinds of timber should be cut. I intend to comment on two of these: one is the policy of requiring at least some harvesting in stands of the poorest quality and value; the other is the general reservation of younger stands from harvesting until all the old-growth is removed.

PRIORITY STANDS

I have already explained that the adoption of "close utilization" standards, coupled with the inclusion of virtually all timber in the inventory data used for allowable cut calculations, has had the effect of including extensive tracts of very low-quality, overmature timber in the stock of timber assumed to be harvestable. The Forest Service was anxious to confirm that the resulting substantial increases in calculated allowable cuts were based on realistic assumptions about the recovery of the extra timber, particularly in the decadent stands of the Interior "wet belt". So, in certain regions, some new licences (usually "third band" Timber Sale Licences) were made available only in these marginal "priority" stands, to test the ability of the industry to utilize them.

By and large, the experiment has proven that the industry is technically capable of recovering this low-quality timber. The financial feasibility of these operations at present however, is mixed. Economic recovery depends on the particular characteristics of stands and logging conditions, the availability of appropriate sawmilling facilities and pulp chip markets, and the strength of product prices. Returns are often insufficient to cover costs, particularly heavy road costs, and these operations must often be carried by others con-

⁶ *Forest Research Review*, Forest Research Division of the B.C. Forest Service, Victoria, 1975, pp. 4-5.

ducted on better sites. The question now is whether it is necessary or desirable to continue to direct operations into marginal and submarginal stands in the interests of orderly harvest planning.

There are two quite separate issues to be considered in this matter. One is the desirability of rehabilitating sites occupied by decadent timber to make way for new crops. The benefits to be derived from this are amenable to economic evaluation, and should be systematically compared with the gains from harvesting other stands first. It is quite possible that the harvesting of these poor stands is warranted even at a loss, if the expected value of new growth is high enough; but in these cases the harvesting should properly be regarded as a salvage operation that cannot bear regular stumpage charges.

The other issue is whether harvesting should be required today in the lowest quality of timber assumed to be part of the available timber supply. This question should be considered in light of the nature of the allowable cut determination. As described in Chapter 17, this is an estimate of the volume of timber that can be harvested annually over a full rotation period, and it must therefore be based on an estimate of the total amount of timber that will be harvestable during that long future period. It is not (or should not) be based only on what is harvestable today, for that would imply the unrealistic assumption that, over the next century or so, there will be no change in harvesting and manufacturing technology or in economic margins of recoverability. Thus, an allowable cut estimate should recognize more timber than is now economically feasible to recover; if it does not it will surely prove to be too low, as happened when estimates were based on the "intermediate standards" of utilization some years ago.

In short, orderly harvest planning does not require removing the worst timber today, at a loss, when it is consistent with the plan itself to anticipate that a later generation can recover it at a profit. To do so will simply dissipate the potential value generated by current harvests, reducing the gains to both the industry and the Crown. I might reiterate that this does not preclude rehabilitative harvesting where it is in the interests of the Crown to incur losses in light of the expected gains in new growth; this is an investment decision that must be based on financial analysis, but the costs should not be borne by the industry.

THE "OLD-GROWTH FIRST" POLICY

As a general rule, the Forest Service requires that all "mature" timber in a management unit be harvested before younger stands are authorized for cutting. For this purpose, stands are regarded as "mature" if they are more than 140 years old.⁷ In many parts of the province there are now highly valuable stands of second-growth that are already beyond the harvesting age planned for managed crops, but are not "mature" by this definition. These stands are being by-passed, while harvesting is directed to old-growth stands which are often less accessible, lower in quality and value, and more costly to harvest.

This policy has become a matter of increasing concern, especially in some coastal areas where early logging and fires have generated excellent second-growth stands, on highly productive sites close to tidewater and utilization

⁷ The Forest Service uses several definitions of "maturity" for different purposes. See Appendix D, footnote 18.

plants, which are now beyond rotation age. Increasingly, old-growth timber is being logged at higher elevations where winter operations are impracticable, and second-growth stands in the valleys offer the only opportunity for seasonal operations. In a few cases the Forest Service has had to grant exceptions to the normal restrictions to "mature" stands in order to permit viable operations.

The basic shortcoming of this policy is that it determines priorities on the basis of an arbitrary age definition of maturity. Maturity is an economic as well as a chronological concept. Harvesting priorities determined entirely according to an age criterion clearly cannot result in an optimal pattern of resource use. A plan directed toward maximizing the long-term flow of timber values from the unit as a whole, including the gains from complementary seasonal operations, would undoubtedly result in a different sequence of priorities, sometimes indicating that younger stands should be harvested soon after they reach the planned rotation age and before all lower valued old-growth is depleted. Policy should therefore be revised to take systematic account of the economic advantages of alternative sequences of harvesting, a measure that is implied in my proposals for a revised approach to regulating the timber supply in Chapter 17.

SECOND-GROWTH MANAGEMENT

The policy of reserving younger stands until the old-growth is depleted raises much broader issues of second-growth forest management. Silviculture, in its broadest sense, consists of three general sorts of activity, viz.: the prescription of harvesting techniques; measures to re-establish new crops by natural or artificial means; and the culture of new crops through such techniques as spacing, fertilization, and thinning. Hitherto, silviculture in British Columbia has been confined almost entirely to the first two, but in some parts of the province the point has been reached where a balanced silvicultural programme calls for attention to second-growth stand management.

Throughout the history of the forest industry, the supply of timber has been maintained by pressing the margin of logging steadily outward into new virgin timber—further from tidewater and centres of commerce, further north, further up the mountain slopes, and into stands of lower quality. Meanwhile, the new stands established on the earliest logged lands have been maturing, often on the most accessible and fertile sites. As these approach merchantability, and as old-growth harvesting progresses into costlier and less valuable timber, we are likely to find that the management and utilization of second-growth stands yields higher returns than recovering the last of the old-growth. We should, therefore, begin to develop arrangements for more intensively managing new stands.

The potential return on silvicultural measures in second-growth stands is often very substantial. Spacing young trees, fertilization, and thinning in appropriate conditions can significantly increase forest growth and the quality of timber, and these are standard practices in many other timber producing countries.

Innovations in harvesting technology have made possible such operations as commercial thinning in advanced second-growth stands to improve the

stand while recovering merchantable volumes that would otherwise be lost. These practices are particularly well suited to small scale operations, and to winter activity when normal logging is interrupted.

Some Tree-farm Licensees, mainly on the Coast, have undertaken non-commercial stand improvements. But the Forest Service has not supported these programmes because of the budgetary priority of reforestation, nor has it developed tenure arrangements for commercial thinning of second-growth stands on Crown land.

These circumstances suggest three policy requirements. First, as a prerequisite to a systematic silvicultural programme, the Forest Service should develop methods for identifying and evaluating justifiable activities and for setting priorities among them. There has been remarkably little attention to this matter in British Columbia⁸ (in contrast to other timber producing areas) even though the techniques are not complicated. Second is the need for systematic financing arrangements for stand improvement projects undertaken by both licensees and the Forest Service itself. Third, the Forest Service should develop Timber Sale Licences to permit commercial thinning operations on Crown lands.

LOG GRADING

The last issue I wish to draw attention to in this chapter is the vexing problem of coastal log grades. Elsewhere in this report I have suggested means for reducing the reliance on log scaling, but on the Coast the stumpage appraisal system rests heavily on the classification of timber by species and grades, and the prices of each in the Vancouver Log Market. Log prices undoubtedly afford the best means of evaluating coastal timber, but only if two conditions are met: a substantial and vigorously competitive log market, as explained in the following chapter; and an accurate log grading system.

For many years official log grades have remained unchanged; they are now archaic, bearing little relation to the grades in common usage by the forest industry. As a result, before reported sale prices in the Vancouver Log Market can be used for appraisal purposes they must be reclassified to indicate the prices in terms of the official grades. Moreover, official scaling must conform to these practically meaningless grading rules. All this results in inaccuracies, inequities in assessments, and additional work.

The 1974 Task Force on Crown Timber Disposal considered this problem and recommended the following.

Use of the statutory log grades, which until recently appeared as the Schedule in the *Forest Act*, should be discontinued. Instead, a schedule of official grades should be designed to correspond to the grades in current industrial use and should probably be a consolidation of industrial grades. This revision should be undertaken by the Forest Service as a matter of high priority and in consultation with the Superintendent of Scaling and industrial experts. The revised official grades should not be incorporated in the *Forest Act* but rather in the *Regulations*, to facilitate revision.⁹

⁸ A notable exception is an economic analysis of alternative silvicultural measures recently produced by the Crown Zellerbach Corporation, *Economic Analysis of Juvenile Spacing of Douglas fir and Western Hemlock*, July 1975 (mimeo), 41 pp. Earlier, related, studies include J. H. G. Smith, J. W. Ker and J. Csizmazia, *Economics of Reforestation of Douglas fir, Western Hemlock and Western Red Cedar in the Vancouver Forest District*, Faculty of Forestry, Bulletin No. 3 1961, 144 pp.; and G. Paille, *Economics of Intensification of Forest Management in the Vancouver Forest District*, (mimeo), Faculty of Forestry, 1968, 130 pp.

⁹ *Task Force 2nd Report*, 1974, p. 44.

Another recent independent study came to similar conclusions:

. . . the current B.C. Forest Service statutory log-grading system, which is largely a judgment system evolved piecemeal over time for different species, is inadequate for present-day log populations.

Some consolidation and rationalization of current grades is necessary, using analytical framework, and much of the data required are now available . . .¹⁰

I understand that revision of the log grading rules has been under review by an industrial consultative committee for some years, but there should be no further delay in solving this relatively simple problem. Whether or not it can be resolved with the concurrence of external advice, the government should undertake to reform the coastal log grades immediately.

¹⁰ J. Dobie, J. B. Kasper, and D. M. Wright, *Lumber and Chip Values from B.C. Coast Tree and Log Classes*, Environment Canada Forestry Directorate, Information Report VP-X-154, Western Forest Products Laboratory, Vancouver, 1975, p. 16.

PART VI

MARKETING AND INDUSTRIAL DEVELOPMENT

Chapter 21. Forest Products Markets

Chapter 22. Export Controls

**Chapter 23. Prospects and Priorities for Industrial
Development**

FOREST PRODUCTS MARKETS

The Commission's terms of reference instruct me to examine the implications of forest tenure policy for "... the structure of markets for forest products produced in the Province ..." and to direct my recommendations toward ensuring, *inter alia*, that "The marketing arrangements for timber products permit their full value to be realized and are consistent with an efficient economic structure". Accordingly, I have received a good deal of evidence on the markets for forest products and supplemented this with additional research. This chapter briefly describes the structure and pattern of the relevant markets and deals specifically with certain aspects of marketing which, in light of my terms of reference, warrant particular attention. Further descriptive information about marketing patterns is presented in Appendix B.

Forest products markets can be considered in two general categories: markets for the final products of the forest industry, and those for intermediate products like logs and pulp chips which are purchased for further processing by the industry. I examine these in turn below. The specific issue of restrictions on exports of intermediate products is deferred to the following chapter.

MARKETS FOR FINAL PRODUCTS

The markets for the final products of the B.C. forest industry—lumber, pulp, paper products, plywood, and minor products—are undoubtedly the most important influence on the condition of the province's economy. Nevertheless, I deal with these markets here somewhat cursorily, for two reasons. One is that these markets are generally highly competitive, and the disciplining influence of competition among sellers precludes most forms of market behaviour that are contrary to the public interest and that thereby invite government intervention. The second is that these markets overwhelmingly are outside the province (as reflected in Table 21-1) and being thus governed by external forces they are largely beyond the influence of provincial policy.

Table 21-1
MARKETS FOR BRITISH COLUMBIA FOREST PRODUCTS, 1972

sector	market						
	B.C.	Canada	U.S.	U.K.	Japan	E.E.C.	other
	per cent of shipments						
lumber	5	15	68	4	4	1	3
pulp	18	—	29	7	11	23	12
paper	16	1	50	9	3	3	18
plywood	18	60	—	16	—	6	1

Source: Adapted from F.L.C. Reed and Associates, *Selected Forest Industry Statistics of British Columbia*, B.C. Forest Service, Victoria, 1975. Tables VIII-1, 2, 3, 4.

Lumber. The most important of these markets, that for lumber, is undoubtedly one of the most vigorously competitive markets of any major commodity in world trade. Prices are determined by the interaction of supply and demand of thousands of buyers and sellers, none of which is sufficiently large relative to the total to be able to influence prices, at least for the major types of lumber produced in this province.

By far the largest market for B.C. lumber is the United States, where 68 per cent of provincial production was sold in 1972. The competitiveness of this huge market is virtually unimpeded by tariffs or other governmental controls on imports. The other major markets are the United Kingdom, western Europe, Japan and other Pacific Basin countries which, although subject to some import controls, are also highly competitive.

Most continental markets apart from the eastern seaboard of the United States are served by rail and truck, and overland marketing is very atomistic in its organization. Some of the larger producers have their own marketing systems, but most of the rest sell through a large number of wholesalers and brokers operating either in the province or in distant market centres, many of which are active in storing, distributing, and retailing. Some long-term contract selling occurs, but most sales are on a "spot" basis.

The other major continental market is the eastern seaboard of the United States, served by ship. Here, the coastal B.C. industry enjoys a significant advantage over its nearest competitors in the northwest United States because of the strictures of the U.S. "Jones Act", which has almost eliminated shipments from that region to other United States ports. The eastern seaboard market is served mostly by the large sales organizations in Vancouver, notably Seaboard Lumber Sales, the various marketing divisions of MacMillan Bloedel, and Eacom Timber Sales, the first two of which have dominated offshore lumber sales for some 40 years. These organizations assemble large cargoes, charter ships, and provide storage and distribution facilities at the port of entry. In recent years some smaller independent wholesalers have also competed in this market: assembling shipments, contracting for ships, and selling to agents at the port of destination.

Sales of lumber to other countries are dominated by these same large selling organizations. Sales are usually made on a 3- to 12-month contract basis, through local commission agents or importers, or more recently through agencies established by B.C. companies.

In short, lumber produced in the province is sold in highly competitive markets, and marketing channels are readily available to both large and small producers. Larger companies, with their own sales organizations, probably enjoy some advantage through their ability to accept large orders and maintain direct contact with customers, especially in offshore markets. But apart from certain rail transportation difficulties within the province, efficient marketing arrangements appear to be available to all lumber producers.

The most worrisome feature of the lumber market from the point of view of public policy is its extreme instability, in response, primarily, to changes in the rate of residential construction in the United States. I have considered means of promoting stability through governmental intervention in lumber futures markets, by purchasing inventories in periods of market decline or by subsidizing loans to permit producers to accumulate inventories at such times.

But any of these would be difficult to implement effectively without distorting patterns of market supply, and while they deserve further investigation I do not recommend they be pursued at this time. Certain other of my recommendations relating to the financing of forest development and flexibility in harvest rates will, however, help to alleviate some of the financial strain associated with market fluctuations.

Pulp and paper. British Columbia's pulp and paper producers have also depended largely on export markets for their three main categories of products—pulp, newsprint, and linerboard. Pulp is by far the most important, and it is mostly of the “market kraft” type, although at present there are two mills producing “sulphite” pulp. World prices for pulp are determined for the most part in three regional markets: the United States, Europe, and Japan. Most pulp is sold under long-term contracts, often to parent or affiliated companies in other countries. In this market, continuity of supplies and close contacts with customers appear to be important elements in competitiveness.

Newsprint marketing takes two forms. Most sales are governed by long-term contractual agreements with customers in the western United States. Although prices in the California market tend to be low relative to those in other major markets, sales elsewhere are constrained by freight costs. In this market, the qualities of the product are modified according to the needs of particular consumers, and sales are handled by the producing companies themselves. The other market is the international “spot” market, in which standard newsprint is sold under vigorous price competition in overseas countries such as the Orient, Australia, and Latin America. To develop this market, the newsprint producers in the province (except the Ocean Falls company) have formed a consortium, Export Sales Ltd.

Linerboard, used mainly in the manufacture of cardboard boxes, is sold mostly to box and converting plants in British Columbia and other western provinces, although significant export markets have been developed in Britain and the United States. Most sales are based on long-term contracts, similar to those which govern the sale of newsprint.

In contrast to lumber markets, in which prices respond quickly to changes in supply and demand, the prices of pulp and paper products tend to be inflexible over considerable periods with discrete adjustments in the face of prolonged disequilibrium. To accommodate shifts in demand, producers respond less by vigorous price competition among themselves (which would cause prices to fluctuate constantly) than by adjusting rates of production to maintain market shares, and by giving discounts or premiums around a standard price rather than changing the “going” price itself. Shifts in general price levels are typically initiated by price leaders within the industry, with other producers following suit; but producers in this province are not regarded as the price leaders in major pulp and paper markets.

These are the characteristics of an oligopolistic industry: “sticky” prices, protection of market shares, and competition more on the basis of supply guarantees, quality, and marketing service than on price.¹ Like other such industries (such as petroleum and some mineral industries) new entry to the

¹ For a discussion of the characteristics of oligopolistic industry, see Milton Moore, *How Much Price Competition?: The Prerequisites of an Effective Canadian Competition Policy*, McGill-Queen's University Press, Montreal and London, 1970.

industry is constrained by heavy capital requirements, close connections between suppliers and purchasers, and controlled sources of raw material. Another common feature of such industries is a tendency toward excess capacity—a conspicuous feature of the pulp industry for many years, with only short-lived exceptions. In British Columbia, these tendencies have undoubtedly been exacerbated by government policy which conditioned the granting of timber rights upon the construction of pulp mills.

Plywood. Some 78 per cent of the plywood produced in British Columbia in 1972 was sold in Canada, the balance being exported to offshore markets, mainly Britain and the European Economic Community. The major producers employ their own wholesale distribution centres in channeling output to final sales outlets; some sales are made directly to contractors and builders, and there is some reliance on independent distributors.

In effect, the B.C. plywood industry operates as a tightly knit oligopoly, and price leadership behaviour has prevailed throughout the industry's history.² Individual large producers attempt to maintain their market shares and price their product at the rates established by the price leader, resulting in much less flexible market prices than for lumber. This industry enjoys domestic market protection in the form of a 15 per cent tariff—one of the few features of the Canadian tariff policy that supports activity in this province. Nevertheless, U.S. producers have made substantial inroads into the Canadian market in recent years, displacing B.C. plywood from 90 per cent of Canadian consumption a few years ago to 65 per cent in 1975. There can be little doubt that the industry would suffer seriously from any reduction in the tariff.

In addition to lumber, pulp and paper, and plywood, which account for most forest industry production, there is a range of minor products produced—poles and piling, shakes and shingles, and other specialty items—which utilize less than one per cent of the timber harvested. The markets for nearly all of these are highly competitive, like the markets for lumber.

I can see no useful scope for substantial provincial intervention in any of these markets for final products at the present time. In a later chapter I express some anxiety about international transfer prices between affiliated companies, and this warrants surveillance. I have made other recommendations in this report that will enhance flexibility in the industry, which will improve its ability to adapt more readily to changing market conditions. Governments, particularly the federal government, can play a useful role in trade promotion. Beyond this, the public interest does not seem to call for intervention in final products markets.

MARKETS FOR INTERMEDIATE PRODUCTS

The marketing of intermediate products—mainly logs and wood chips—is much more directly influenced by provincial policy. In terms of the value of all sales, these markets are small in relation to final products markets, but they exert extremely important influences on the structure and efficiency of the forest industry. Without them, manufacturing enterprises that require logs or chips must be their own suppliers, so that the benefits of integrated recov-

² See R. M. Bessom, "Competitive Marketing Strategies of Major American and Canadian Softwood Plywood Firms", unpublished doctoral thesis, University of Washington, 1965.

ery and utilization of timber can be realized only through integration within individual firms. In such circumstances each manufacturer must attempt to utilize the full range of logs or chips available from his own sources, even though they may often be unsuited to his needs or facilities. And the absence of such markets in this province compels either the Forest Service to grant timber rights to each manufacturer sufficient to meet the requirements of his processing plant, or the latter to adjust his capacity to his timber rights.

On the other hand, vigorous and accessible markets for intermediate products permit integration of industrial uses of timber through independent specialized producers. By providing a medium for sorting, purchases, sales, and trades these markets direct logs and chips to manufacturers who can make the most valuable use of them at any time. And they can add a good deal of resilience to the industry and flexibility in the allocation of timber rights by providing producers with a market cushion between raw material supplies and needs.

Public policy therefore has much at stake in these markets, and they have undoubtedly been shaped by the direct and indirect influences of forest policy. But the policies that have most affected these markets were generally directed toward specific problems or toward accommodation of particular sectors of the industry. The time has now come to re-examine these policies in terms of their implications for the general pattern of industrial development and the efficiency of resource utilization.

The urgent need of attention to these markets for intermediate products led the Task Force on Crown Timber Disposal, in its July 1974 report,³ to recommend a public authority with responsibilities for keeping them under surveillance, collecting and publishing information, advising the Minister, and taking certain actions to promote competitive marketing. Many of these recommendations were subsequently embodied in the Timber Products Stabilization Act, enacted in 1974. The legislation provides for a Forest Products Board of British Columbia, which at the time of writing this report has not yet been established.

This new legislation stimulated considerable debate, centring primarily on two issues: the authority it provided to the Minister to fix the selling price of wood chips, and the power of the Board to intervene in forest products markets. Chip pricing policy has since changed, and is discussed later in this chapter. Apprehensions about the Board's potential intervention in product marketing arose from a concern that it would impair well established and efficient market mechanisms, including the complicated marketing arrangements for final products.

As I have already remarked, I see no compelling need at present for public intervention in the marketing of final products. Nor can the public interest be served by adding any impediments to private transactions in intermediate products. On the contrary, the markets in intermediate products have such an important influence on the health and structure of the forest industry that they must be stimulated. Analysis of these complex markets requires special expertise that is not found in the Forest Service or other branches of the public service. Further, there is no satisfactory alternative means for ensuring that the public interest in stumpage revenues, utilization

³ *Task Force 2nd Report, 1974, Ch. 11.*

efficiency, and industrial structure is now adequately protected. For these reasons I recommend that the Forest Products Board be established without further delay.

The main markets at issue are those for logs and chips, and their circumstances and implications are so different that they must be treated separately.

THE COASTAL LOG MARKET

Most log marketing takes place on the Coast, in what is known as the Vancouver Log Market. Coastal logging, with few exceptions, involves removing standing timber to tidewater where it is boomed or barged for delivery to manufacturing plants. The continuous coastal waterway effectively links all log producers to all utilization plants with a relatively inexpensive medium of transportation, permitting logs to be readily sorted and traded among producers and users.

Historically, the Vancouver Log Market has played an extremely important role in the coastal forest industry. Before World War II the industry was dominated by independent logging enterprises selling logs through buyers and brokers to unintegrated sawmilling firms. The log market was then an important interface between the extractive and manufacturing industries.

The processes of industrial consolidation and integration described in Chapter 4 and Appendix B have drastically changed this pattern. The trends were becoming evident twenty years ago: in the *1956 Sloan Report*⁴ it was observed that “. . . in the last decade the number of large and small free and independent loggers has been steadily declining . . . Logging is now to a major degree a subsidiary function of integrated companies . . .”. Today, only three independent⁵ logging companies hold significant⁶ rights to Crown timber and, although there is an uncertain number of smaller loggers, this sector of the industry now accounts for less than 10 per cent of the coastal harvest. Only a very few small and specialized sawmilling companies do not hold rights to timber. These changes have had important consequences for log marketing. Fourteen years ago the Forest Service, in a report to a committee of the Legislature, wrote:

The tendency toward the integration of what were originally separate and distinct logging and sawmilling industries has weakened the Vancouver log market. The log market is still functioning to establish the market value of logs in individual transactions but it is questionable whether it can now properly be referred to as an open or freely competitive log market.⁷

The volume of logs transacted in the Vancouver Log Market fluctuates widely from year to year, without any apparent long-run decline during the post-war period. But the fraction of the coastal harvest that is marketed has clearly declined over this period, as the rate of harvesting has risen. From more than 20 per cent in the immediate post-war period, the proportion

⁴ P. 157.

⁵ “Independent” is defined here as referring to those firms operating in only one sector of the forest industry. It should be noted that this differs from some common usages of the term, such as meaning small companies, or companies without pulp mills.

⁶ “Significant” is defined (as in Chapter 4) as meaning rights to an allowable annual harvest in excess of 25,000 cunits.

⁷ British Columbia Forest Service, “The Condition and Operation of the Open Log Market and Chip and Small Wood Marketing in the Vancouver Forest District”, a Report to the Select Standing Committee on Forestry of the Legislative Assembly of British Columbia, January 1962, 25 pp. + App.

reported to have passed through the market has declined in recent years, to an average of less than 14 per cent of a harvest that has nearly doubled.

But while the volume of sales through the Vancouver Log Market remains substantial it has nevertheless deteriorated (even more since 1962 when the Forest Service expressed its concern) as a competitive and reliable source of logs for mills. A major reason for this is that many transactions are not sales from competing log suppliers to independent buyers but rather non-competitive trades between integrated companies. In 1974 the Task Force on Crown Timber Disposal described these circumstances.

The transactions that now dominate the log market are not those between independent sellers and buyers but rather trades between the large integrated companies. These sales are frequently made subject to an explicit or an implied condition that the purchaser will later make available to the seller other logs more suitable to his needs on a reciprocal basis, at the market price prevailing at the time of the subsequent transaction. Today, these reciprocal sale or "swap" arrangements so dominate the log market that it is generally acknowledged that significant volumes of timber cannot be acquired by buyers who have nothing to trade. Few milling firms without linked logging operations are able to survive, and the inaccessibility of the market to independent buyers is particularly acute in periods of strong demand.

These tendencies toward integration and decline in log marketing are self-aggravating. Vertical integration, supported by tenure policies, diminishes dependence upon the open market for wood supplies; and as the market becomes narrower it fails to be a reliable source of supply to independent millers who are then also forced to integrate into logging. Such trends raise serious questions about the continuing effectiveness of the log market, both as a mechanism for efficiently allocating timber to its highest use and for generating prices that accurately reflect log values.⁸

The Task Force, which studied the log market in some detail, was primarily concerned with the reliability of log prices as accurate indicators of timber values, and the high proportion of non-competitive trading was one of several factors that led to doubts about the dependability of indicated prices for stumpage appraisal purposes. Here, the concern is with the broader issue of whether the log market is making its full potential contribution to the efficiency and vigour of the forest industry.

Its full potential contribution to the industry will be made if the market meets the conditions noted earlier: if it provides a reliable source of supply of at least the major categories of logs to independent buyers at competitive prices and, concomitantly, if it offers a reliable medium for independent log producers to sell logs at their full value. Only then can the market serve its valuable economic function as a clearinghouse for timber, sorting and redirecting logs to their highest uses and users, and provide the desired flexibility between the log supply and the requirements of individual producers and consumers. To do this the market must be competitive; it must provide access to logs at all times to willing buyers providing only that they are prepared to pay the competitive price; and it must be large and resilient enough to accommodate market fluctuations through price responses without interruptions in access to the market. If these conditions were met, log prices would reliably reflect their competitive market value, as sought by the Task Force, and the market would continue to stimulate efficiency in the use of timber.

⁸ Task Force 2nd Report, 1974, pp. 167-8.

There is no doubt that the market can meet these conditions, as it has in the past; the question is whether it does so now. The arguments presented to the Commission on this matter conflict, as did those received by the Task Force. Most of the large companies, which account for the largest share of the trading, argue that the market is satisfactorily competitive and prices are representative of competitive values; while independent milling companies argue almost unanimously that they cannot rely on it as a source of raw material supply unless they have logs of their own to trade.

Independent manufacturers are also concerned about the trend in log supplies. They have become the residual users of timber not required by the large integrated companies that control most of the coastal log harvest, and particularly of the small, low quality, and less common types of logs not well suited to the large sawmills of the big companies. But several of the large firms plan to construct specialized mills that will use these logs, so that the supply available to independent mills threatens to deteriorate further.

The decline of openly competitive selling and buying in the log market is thus closely linked to the continuing concentration of the industry into a few large firms. In the face of these trends, many of the independent milling companies have concluded that their survival depends on allocations of timber rights. The production of the few independent logging companies is also increasingly tied to integrated companies which are able to undertake to purchase their full range of output, including low-grade logs which are otherwise difficult to sell. It should be noted that as confidence in the dependability of the log market declines, expectations about its deterioration become self-fulfilling because firms seek independent sources of timber, or sell out.

While some uncertainty remains about the patterns of log marketing, certain conclusions can safely be drawn. Most importantly, it is no longer a dependable source of timber for independent sawmills. The volume of reported sales in the market greatly exaggerates the amount of timber available to willing buyers at the indicated prices, because of the prevalence of reciprocal sales agreements. The proportion of such sales is uncertain, but undoubtedly substantial; they are most prevalent in sales of the better grades of logs and their importance tends to increase in periods of strong demand.

Independent manufacturing firms are therefore driven to attempt to acquire their own timber rights and integrate into logging, if only to obtain logs which they can then use as leverage in the market to fulfill their specialized needs. There are many examples of manufacturing enterprises that have thus been forced to purchase or otherwise acquire timber rights and produce their own logs even though their limited opportunities and expertise (which often lie in specialized manufacturing and marketing) in logging sometimes resulted in heavy financial losses.

All indications suggest that the log market has reached a point of crisis, and the implications extend well beyond the market to the structure and efficiency of the coastal forest industry. If present trends continue, all manufacturing firms will require their own rights to standing timber and the market will be reduced to exchanges between them. The prices will not provide a reliable base for stumpage appraisals, both independent milling and logging will disappear, and the industry will become increasingly consolidated into fewer large companies.

Alternatively, if the present trends were reversed, opportunities for un-integrated logging and manufacturing enterprises could be preserved, and vigorous competitive sales and purchases would ensure reliable prices and stimulate industrial efficiency and specialization in resource utilization. My conclusion is that these opportunities must not be lost through passive acquiescence to present trends.

Indeed, measures to invigorate the log market are an essential element in an industrial strategy for the coastal forest industry. But the means must be chosen carefully if they are to promote and not impede industrial development and efficiency. The purpose is not to artificially contrive a market, but rather to allow it to play its potential role by releasing some of the constraints placed on it by present policies.

Deliberate and explicit policy will be required to reverse present trends, and these should include the following:

- i) The government should declare its determination to maintain an openly competitive log market. The public interest lies both in Crown revenues from stumpage charges being based on reliable log market prices and, more generally, in maintaining a vigorous and efficient industry with opportunities for firms of the full range of sizes, specializations, and structures.
- ii) The government should undertake to protect and enhance the market by ensuring a sufficient competitive log supply to meet the needs of milling companies that have insufficient timber supplies of their own, and to assure potential investors in plant construction or expansion that they will be able to obtain their raw material requirements at competitive prices. It would not be prudent to attempt to fix the needed market volume for all time, but an explicit target for the next few years should be established in the order of 15 to 20 per cent of the coastal harvest.⁹ This is, incidentally, relatively close to the present proportion of the harvest marketed, but because of the non-competitive trades described earlier this target implies some expansion of log marketing.
- iii) The Forest Service should ensure this volume of competitively marketed logs by including a provision in at least some Timber Sale Licence contracts that the timber be offered for sale. As the Task Force on Crown Timber Disposal recommended, the Vancouver District Forester's reserve sales (which amount to 5 per cent of the allowable annual cut in Public Sustained Yield Units), new sales on the lower Coast, and other incidental allocations of Crown timber should, where practicable, specify that the logs shall be sold on the market.
- iv) Clauses in tenure contracts requiring the manufacture of timber in appurtenant mills should be eliminated as soon as possible, as discussed in Chapter 23.
- v) The Forest Products Board of British Columbia should keep log marketing under continuous review to ensure that the desired results are achieved, and in the most efficient way. In particular the Board should:
 - (a) Substantially improve knowledge about the market by compiling data on all log sales. Specific legislative provisions should be

⁹ At the present time independent sawmills control approximately 10 per cent of the lumber manufacturing capacity in the Vancouver Forest District. A fairly substantial number of other mills, however, have insufficient timber harvesting rights to meet their total raw material requirements.

enacted to require sellers to report all log sale prices directly to the Board.

- (b) Advise the Forest Service with respect to the volumes and types of timber required by the market in order to maintain the required competitive supply and the proper balance of species and grades.
- (c) Maintain a continuing registry of information about logs available for sale and logs required by manufacturers, with data supplied by log producers and consumers.
- (d) Investigate the possibilities of enhancing the market by purchasing, sorting, and reselling logs where their market value can be improved by such means.¹⁰

These functions are all consistent with the responsibilities of the Board as established in the Timber Products Stabilization Act.

These recommendations are designed to achieve the necessary results without encroaching on existing contractual rights or on the present supplies of timber available to any operator. Even a provision that some logs be offered for sale will not divert them from an established buyer, but merely ensure that his price is competitive, which in turn provides the assurance that they will be used in the most productive way. Nor will these measures offer any particular advantage to any sector of the industry. Indeed, these policies may have little impact on the present pattern of marketing, but they should stem the trend toward further deterioration of the log market.

To be effective, these measures must be sufficiently explicit and deliberate to reverse the declining confidence in the log market on the part of independent milling companies and independent logging companies. They must be assured that government policy is directed toward ensuring them an opportunity to compete equitably for their raw material requirements.

INTERIOR LOG TRADING

Log marketing in the Interior has never been as prevalent as on the Coast, primarily because the high cost of transporting logs over land constrains the scope for log interchange. Thus the Interior industry evolved from the beginning as linked logging and sawmilling enterprises. But trade in logs occurs to a minor extent throughout the more developed parts of the Interior, consisting mainly of transactions between companies for special types of logs, and sales of private timber by farmers and ranchers. Generally, the supply of private timber appears to be declining through depletion, which inevitably generates new pressures for allocations of Crown timber.

In some respects, however, the potential scope for log trading is increasing: manufacturing firms are becoming more closely grouped in major centres, reducing the transportation obstacle to exchanges; log transport facilities are improving steadily; and diversification of manufacturing into pulping, plywood, specialized sawmilling, and specialty products presents new opportunities for beneficial exchanges of logs. It is clearly in the public interest to encourage such trade.

¹⁰ There is no reason to expect that the market would be improved by simply displacing private transactions in logs; and certainly no monopolistic agency like the usual agricultural marketing boards, with their restrictive "supply management" practices, is envisaged here. On the contrary, any intervention in log marketing should be directed toward enhancing the open competitiveness of log transactions.

Apparently, the policy of allocating "third band" Timber Sale Licences in the Interior according to the "need" of licensees' mills (explained in Chapter 6) has deterred log trading. Licensees have testified to the Commission that they have been reluctant to sell logs for fear that the Forest Service would judge their timber rights excessive to their mill requirements, and therefore reduce their allocations. My recommendations for revised licensing arrangements would eliminate any such impediments to beneficial log trading, by leaving the allocation of rights independent of judgments about mill capacities. Several of my other proposals also would stimulate log trading, such as those relating to Wood-lots, community Tree-farm Licences, special products, and rights suitable for independent loggers.

I see no immediate need for government to further stimulate log trading in the Interior, but the general policy should be to encourage and accommodate it. The Forest Products Board should keep this activity under review and advise the Minister with respect to any impediments to log marketing and possible means of alleviating them.

CHIP MARKETING

Wood chips are more freely marketed on the Coast than in the Interior. Like logs, chips are more expensive to transport over land, but chip marketing in the Interior is also constrained by direct government controls.

The complicated controls on chip marketing in the Interior are rooted in measures taken to accommodate a new pulping industry in regions where the timber supply was already heavily committed to the sawmilling industry. This accommodation was made, in large part, through the Pulpwood Harvesting Area Agreements described in Chapter 9, which provided the pulp companies with opportunities to acquire timber that was then considered unsuitable for sawmilling. However, in response to the new market for by-product chips provided by the pulp mills, and to various incentives offered by the government, the Interior sawmilling industry rapidly adapted its technology to manufacture chips from the residual wood in lumber production and to process timber that previously was unsuitable for sawmills. Since sawmills could make more valuable use of this timber, and because they appeared to be capable of meeting all the raw material requirements of pulp mills with by-product chips, the government allocated to them extensive rights over the low-grade timber that had earlier been regarded as being useable only by pulp mills.

Chip direction. To replace the security of fibre supply to the pulp companies holding Pulpwood Harvesting Area Agreements, the *chip direction* policy was introduced. This policy involves provisions in "third band" Timber Sale Licences held by sawmilling companies, within areas covered by Pulpwood Harvesting Area Agreements, which require them to offer their by-product chips to the pulp company holding the relevant agreement.¹¹

It is important to note that chip direction is a contractual commitment on the part of individual milling firms; it is not part of the Pulpwood Harvesting Area Agreements. Nor are the holders of those agreements obliged to purchase all the chips directed to them. And in all cases the price to be paid

¹¹ As explained in Chapter 9, similar provisions, to be invoked at the Minister's discretion, are contained in some licences for timber outside Pulpwood Harvesting Areas and in some Timber Sale Harvesting Licences as well.

is either unspecified in the contracts or is ambiguous. There appears to be some confusion surrounding the right of a sawmilling company to sell its chips to a pulp company other than the one to which its chips are directed, if that other buyer wished to purchase them at a higher price. In any event, the obligations imposed on chip suppliers, coupled with transport costs and shortages of transport facilities, have combined to restrict most producers to a single buyer.

Chip price regulation. By restricting their market opportunities, the chip direction policy inevitably generated dissatisfaction among chip producers, particularly with respect to the prices the pulp companies offered, and the absence of a reciprocal obligation of the pulp companies to purchase all the chips produced.

The Timber Products Stabilization Act. This Act empowers the Minister to establish prices to be paid for wood chips. When the legislation was passed in November 1974, the sawmilling industry was suffering severely depressed markets while the pulp industry was enjoying an unusually prosperous period. The government, concerned about the state of Interior sawmilling and the sluggishness of chip prices being offered in some regions, moved quickly to raise and standardize the minimum chip price. New Regulations proclaimed in January 1975 set the minimum price for most chips sold in the Interior at \$35 per unit (with some qualifications for special grades and distant suppliers). In February 1976 a formula was introduced linking the price of chips to the price of bleached kraft pulp. At the time of this writing, the chip price stood at \$30 per unit.

Shortly after the price minima were introduced, pulp markets softened. Sales of chips declined and inventories began to accumulate; and some pulp companies have contended that both were aggravated by artificially high chip prices.

The minimum chip price regulation was obviously a crude interim measure aimed at improving equity in a non-competitive market. An across-the-board floor price at the present or any other level cannot be expected to achieve equilibria in the widely varying and constantly changing supply and demand relationships prevailing in different parts of the Interior.¹²

Evaluation and recommendations. The chip direction policy and the chip pricing policy must now be considered together. A policy that restricts competition cannot be expected to yield equitable prices, and so chip direction creates a need for price regulation. But such government controls inevitably distort marketing patterns and are unlikely ever to permit the flexibility required for the most efficient use of resources. It is now necessary to reassess these two policies; the second was necessitated by the first, and the first was introduced to deal with circumstances which have since changed.

As always, it is useful to begin by identifying the problem to be solved, but it is by no means clear in this case. It cannot, or at least should not, be a general shortage of wood chips, for market forces, government incentives,

¹² It should perhaps be noted that a policy of fixing the price of an input in relation to the price of the product it is used to manufacture is likely to become untenable in the long-run if relative costs and prices change, as historical experience has demonstrated. A similar policy that ultimately had to be abandoned was the linking of royalties on timber to the price of lumber under the Timber Royalty Act of 1914. See *Task Force 1st Report, 1974*, pp. 20-22.

and technology have combined to generate a problematical surplus in most parts of the Interior. There is undoubtedly a substantial volume of chippable wood now being wasted or unrecovered and this is creating a serious management problem, but the solution to that must lie in increasing the demand—an issue that is addressed in the next chapter and elsewhere in this report.

Indeed, new opportunities for chip marketing are beginning to emerge which show considerable promise in alleviating imbalances in supply and demand, and both the industry and the Crown have much to gain from exploiting these possibilities. The barrier between the Coast and Interior is breaking down with advances in transport technology; and export opportunities, as I explain in the next chapter, are growing. Potential shifts in supply patterns and widening of markets are likely to help rationalize chip production and consumption, with significant gains to industrial stability and wood utilization. The present marketing constraints and price controls impede development of these opportunities.

Nor does there appear to be a general need for government intervention to protect the raw material supplies for individual pulp mills. As long as wood is available for chip production, the pulp companies are quite capable (and more efficient, I dare say, than the government) of inducing production and sorting out supplies through normal market and contractual processes. And I have already recommended in Chapter 9 that their assurances under Pulpwood Harvesting Area Agreements be strengthened.

Chip suppliers, of course, have nothing to gain from policies that constrain their market alternatives. The chip direction policy operates in favour of those pulp companies to whom it guarantees sufficient raw material, while the price minima work to their disadvantage because they are binding only when prices would otherwise be lower. Then, the minima may correct price inequities and benefit suppliers, but only insofar as they can sell their product, and any reduction in sales or lost opportunities to compete for them will create new inequities. The government controls thus became a focus of conflict between suppliers and consumers and a cause of inequity among both.

In short, I see no useful purpose in continuing these government restrictions on Interior chip marketing. On the contrary, policy should be directed toward increasing the demand for chips and competition among purchasers, in the interests of fuller and more efficient utilization of timber that must otherwise be wasted. I therefore recommend the following changes in policy.

- i) The chip direction policy should be eliminated.¹³ All that is required in its place is some assurance that chip producers will sell their chips to the nearest pulp mill if it is willing to offer competitive prices and terms, and will not enter into excessively long-term contracts with distant buyers or affiliates that would preclude the local pulp mills from competing for the chips.

To provide these safeguards, all licences should explicitly provide that pulp companies within a Forest District shall be afforded an opportunity to match the terms of any proposed chip supply contract between a saw-mill located within that District and other buyers, and that chip supply

¹³ Under existing tenure arrangements, the "third band" Timber Sale Licences are the only contracts which contain explicit provisions for chip direction. In some Timber Sale Harvesting Licences provisions are included which provide for chip direction at the Minister's discretion. In both cases, these provisions should be waived by government.

contracts will carry terms of no more than 5 years (possibly with some provisions for extension or renewal after 3 years). Should short-term chip supply shortages arise in any region, I am convinced that sufficient scope exists for pulp mills to increase supplies through normal market channels. The pulp companies will also have the assurance of Pulpwood Agreements in most cases. Beyond these safeguards, I see no need for the government to intervene in any existing or future chip supply contracts.

- ii) The minimum chip price policy should be much more discriminating, designed to deal specifically with circumstances where competition among buyers does not occur. Thus, I see no need for such controls on the Coast, or in the Prince George and Cariboo Forest Districts. The situations in the Nelson and Kamloops Forest Districts are less clear. In the Nelson District competition between the two pulp mills for available chips is limited. In the Kamloops District, where the potential supply of chips is greatest in relation to pulp capacity, the situation is somewhat alleviated because chips are marketed to some extent in other areas. As an interim measure a minimum price should be retained in these two Districts at a level not exceeding the average contract prices in the Prince George and Cariboo Districts.
- iii) The Forest Products Board should be charged to keep chip marketing under constant surveillance. It should advise the Minister with respect to the need for price controls and the appropriate level of price minima in any regulated region with a view toward eventual elimination of the pricing policy.
- iv) The Board should also investigate impediments to chip marketing, especially the continuing problem of inadequate rail transport facilities, and advise the Minister accordingly so that these difficulties can be systematically represented to the transport authorities.

OTHER RESIDUAL PRODUCTS

Marketing of hog fuel, sawdust, shavings, and like products should also be encouraged. The technology of recovery and use of these products is changing rapidly: the dramatic escalation in energy costs has increased the fuel value of residual products; new processes enable the use of sawdust in pulping; and manufacturing of reconstituted board products can utilize shavings and other materials. It is clearly in the public interest to take full advantage of these new opportunities.

It is important, therefore, that public policy in no way impedes the recovery and use of these residual products. Apparently, incentives for development of new markets are now blunted by apprehensions that this may result in their being included in stumpage appraisal calculations (under the Interior end product appraisal formula) and hence in increased timber prices. This concern should be allayed. I therefore recommend that the government make an explicit policy statement to the effect that residual products other than pulp chips will not be included in stumpage appraisals for a period at least sufficient to assure producers that the government will not appropriate the returns from new investments undertaken to develop the use of these products. Such a commitment should be for at least five years.

EXPORT CONTROLS

For many years exports of logs and other intermediate forest products have been restricted, with important consequences for patterns of marketing, prices, and timber utilization. The form of these restrictions has changed in some respects during the last few years, and a review of their impact is timely. This chapter reviews the current export restrictions, examines their impact, and proposes certain changes. The present policy and procedures are not well documented, and to avoid the necessity of lengthy description in this chapter, a more detailed review and commentary is provided in Appendix E.

CURRENT POLICIES AND PROCEDURES

Control of exports of forest products is shared between the federal and provincial governments, the federal Parliament having constitutional jurisdiction over international trade and the province having authority over natural resources. The provincial controls prohibit exports from the province of "unmanufactured" timber except under permits issued by the Lieutenant-Governor in Council. They do not apply to timber cut from lands Crown-granted before the relevant legislation was passed in 1906 (which includes most of the existing private forest land) or from lands under federal jurisdiction, such as Indian Reserve land. The provincial restrictions apply to exports from the province, whether to other parts of Canada or to other countries.

The federal policy relates only to trade between Canada and foreign countries.¹ It does not apply to interprovincial trade, but this is of little consequence because there are few opportunities for trade in unmanufactured forest products between British Columbia and other provinces. It does, however, cover all exports from British Columbia to foreign markets, whether subject to the provincial controls or not. Some timber is therefore liable only to the federal restrictions, mainly that cut from the bulk of private lands and from Indian lands. Federal restrictions are enforced by requiring exporters to obtain permits issued by the federal Minister of Industry, Trade and Commerce.

Both the federal and provincial governments restrict exports of unmanufactured timber—which is interpreted to include logs, pulp chips, and certain other mill residuals—with a view toward promoting the domestic manufacturing industry. The federal government has therefore harmonized its controls with those of the province by, in effect, endorsing export permits granted by the province and by applying similar criteria in authorizing exports exempted from provincial regulation.

¹ The origins of the federal controls are rooted in measures to restrict trading with enemy countries. The present Export and Import Permits Act, revised in 1974, explicitly states the objective of promoting manufacturing. The provincial controls are contained in the Forest Act.

EXPORT PERMITS

In reviewing applications for export permits, the two governments receive advice from informal advisory committees—the Log Export Advisory Committee and the Chip Export Advisory Committee—which make recommendations on applications for the most important products.² Their task is to decide whether the export permit applications relate to products that are surplus to the needs of domestic manufacturers; only if they decide that this is the case will they recommend that permits be granted.

The Log Export Advisory Committee is more accurately two committees, insofar as it is convened once under the chairmanship of a representative of the Forest Service to consider applications that fall under provincial control and again under the chairmanship of an official of the Department of Industry, Trade and Commerce to deal with those subject to federal controls, both usually on the same day each month. The membership is largely the same in both, consisting mainly of representatives of the forest industry. The representatives of the federal government sit as observers when the committee considers provincial applications.

An applicant for a log export permit is required first to advertise that the logs are for sale domestically, and then after two weeks to submit his application with evidence of his advertisement to the District Forester, who refers it to the relevant advisory committee. To decide whether the logs are surplus to domestic manufacturers' needs the committees rely mainly on whether any offers have been received from domestic buyers. No consideration is given to the reasonableness of the price that a local buyer may have offered, but if the applicant considers the price to be unsatisfactory, he may appeal a negative recommendation to the Minister.

The Chip Export Advisory Committee is comprised of representatives of chip producers (mainly sawmilling companies) and consumers (pulp companies), observers from the B.C. Forest Service and the Department of Industry, Trade and Commerce, and a chairman from the Council of Forest Industries. This committee deals with applications for export of all wood residues—including sawdust and shavings—as well as pulp chips. Applications for chip export permits are referred to the Consumers' Sub-Committee, which represents coastal pulp companies, to determine whether the applicant's chips are surplus to their needs. For applications to export chips from the Interior, the Sub-Committee consults with Interior pulp companies and a representative from the Interior industry normally meets with the group. Each application, and the Consumers' Sub-Committee's recommendation, are then reviewed by the Chip Export Advisory Committee for final disposition.

When the committee approves an export application, it often recommends a basic one-year "evergreen" permit (that is, continuous but subject to cancellation on one year's notice upon receipt by the Minister of a "notice of need" from the committee). If domestic chip users experience difficulty in meeting their requirements, which cannot be alleviated through voluntary curtailments of exports arranged by the Producers' Sub-Committee, steps are taken to reduce the volume of exports authorized under these arrangements.³

² Certain (relatively minor) applications are not reviewed by these advisory committees, as described in Appendix E.

³ See Appendix E.

The final decisions for either issuing export permits or rejecting applications rest with the provincial Cabinet and the responsible federal Minister. While governments usually accept committee recommendations they have often seen fit to deviate from the recommended terms when granting permits. The procedures of the advisory committees are conspicuous for the lack of consideration given to price in determining surpluses. Price, of course, influences both demand and supply, and a surplus or shortage is therefore meaningful only in terms of a particular price. The chip committee, representing as it does the major producers, is particularly loath to consider price for fear of contravening federal anti-combines laws.

THE TIMBER TAX

In addition to these administrative restrictions, exports that fall under the provincial controls are subject to an export levy known informally as the "timber tax". In May 1974, the rate on chips was increased from 50¢ to \$1.50 per bone dry unit or equivalent.⁴ The tax on logs has increased dramatically over the last four years from a flat rate of \$1.50 per cunit to the structured rates presently used: \$2.00 per cunit on low-grade Interior pulpwood, \$5.00 per cunit on cottonwood, and \$10.00 per cunit on all other species except cypress, on which the levy of \$40.00 per cunit reflects the exceptionally high prices it brings in Japan.

EXPORT DEMAND

Exports of these restricted products fluctuate widely from year-to-year in a pattern roughly opposite to the rise and fall of forest products markets. Strong domestic demand obviously reduces the search for export buyers, and the criterion of need adopted by the Export Advisory Committees undoubtedly contributes to this cyclical pattern. In addition, the total harvest of timber in the province responds to market demand so that the percentage exported shows an even more pronounced inverse relation to the cycles in forest products markets. Thus exports of logs represented 2.5 per cent of the total volume harvested in the province in the depressed year of 1970, but only 0.2 per cent in 1973 when markets were buoyant. Exports of pulp chips fluctuate also, within a few points of 5 per cent of provincial production.

The relatively small quantity of log and chip exports in relation to provincial production does not, of course, indicate the importance of the restrictive policies. It is the exports that they prevent, and the consequent impact of reduced trade on prices, production, employment, incomes, and so forth that are the most relevant economic effects. In this sense it is the smallness of the export flows that is more indicative of the burden of the restrictions.

Although it is impossible to estimate the exports that would take place under free trade, there is no doubt that the present controls constrain potential sales substantially. Certainly the export demand for logs and chips is considerable. Large volumes are exported from the northwest United

⁴ On the Coast, chips are measured in "gravity packed" units, and by conversion the tax is \$1.11 per "gravity packed" unit.

States and Alaska; exports of logs and chips from State and private lands in Washington are unrestricted.⁵

Logs exported from British Columbia mainly serve Japanese markets, where the demand is strongest for light-grained species that are harvested in greater proportions here than in the northwest States. Indeed, there is evidence that Japanese buyers show some preference for B.C. timber because of its particular qualities, and the prices obtainable in that market are often extremely high in comparison with domestic prices—in some cases more than twice as high.⁶ The Puget Sound area of the United States also affords a market for certain types of logs produced in the province. Log exporters in this province point to the substantial opportunities for realizing higher values for certain types of timber in foreign markets, the significant employment in log exporting activities, and the encouragement for improved domestic utilization of all types of timber that would result from increased competition from export buyers.

Opportunities for chip exports appear to be increasing rapidly, as a result of shifts in world demand and new shipping technology. Movements of chips across Puget Sound to mills in the United States have taken place for some time, but new possibilities for sales in the Orient, and even Scandinavia, are emerging. Foreign buyers, in seeking significant sources of chip supplies, look for contractual commitments of 5 to 10 years, which are difficult to meet under our current restrictive controls.⁷ Transportation costs to the Coast for non-tidewater producers, and inadequacies of specialized port facilities also impede such trade. Nevertheless, these opportunities should be seen in light of chronic surpluses of chips and pulp timber in certain parts of the province and the limited prospects for expansion of domestic pulping capacity in the short-term.

IMPACTS OF CURRENT RESTRICTIONS

The official rationale for restrictions on exports of logs and pulp chips appears to be the promotion of domestic secondary manufacturing, an aim which undoubtedly has wide support. However, my evidence and analysis of this issue lead me to the inescapable conclusion that, whatever the benefits of increased manufacturing in the province, encouragement of it *by means of restrictions on exports of logs and chips* reflects a misunderstanding of the full impacts of such policies in the context of the provincial economy.

In discussing this problem I am guided by my terms of reference, which charge me to ensure that "marketing arrangements for timber products permit their full value to be realized . . ." and that ". . . regulation of exports of forest products serves the best economic interest of the province". For

⁵ D. R. Darr, *Softwood Log Exports and the Value and Employment Issues*, U.S. Dept. of Agric., Forest Service, Pacific N.W. For. and Range Expt. Sta. Res. Paper PNW 200, Portland, 1975.

⁶ Commission calculations indicate that the prices received for logs exported from the U.S. Pacific Northwest since 1972 have been consistently double the prices for the same species sold on the Vancouver Log Market. These calculations were based on information contained in F. K. Ruderman, *Production, Prices, Employment and Trade in Northwest Forest Industries*, U.S. Dept. of Agric., Forest Service, Pacific N.W. For. and Range Expt. Sta. Portland, 1975; T. C. Adams, *Log Prices in Western Washington and Northwestern Oregon, 1963-1973*, U.S. Dept. of Agric., Forest Service, Pacific N.W. For. and Range Expt. Sta. Res. Bull. PNW 235, Portland, 1974; and from data obtained from the B.C. Forest Service.

⁷ The Forest Service has recently issued a few 5-year export permits, each containing a "Notice of Need" clause (see Appendix E). As this was being written, news reports indicated that the government is now willing to consider 5-year "non-interruptable" export permits. The *Vancouver Sun* July 27, 1976, p. 27.

reasons that I explain below I find the present export control policies inconsistent with these goals and therefore propose certain changes.

To discuss the effects of constraining the market for intermediate products, it is helpful to distinguish the producing industry from the consuming industry, because the impact on each tends to be opposite. The producing sector for logs is the logging industry and the consumers are the various wood manufacturing industries. In the case of chips, the producers are mainly sawmills and the consumers are pulp mills. Integrated firms are, of course, both producers and consumers of intermediate products.

The most obvious effect of restrictions on export sales of logs is that demand for logs is reduced, and this inevitably depresses domestic log prices. As a result, domestic log consumers benefit from both lower prices and reduced competition for raw material. It is important, however, to recognize that the log producing sector is correspondingly disadvantaged—an effect which is often apparently ignored. The depressing impact of the restrictions on the logging industry is indicated by the obviously strong potential export market and the significant extent to which they hold log prices available to domestic producers below export prices. In part, then, the benefits that the controls confer on the log consuming sector are at the expense of the log producing sector. Similarly, restrictions on chip exports benefit the domestic pulp producers at the expense of domestic suppliers.⁸

These offsetting disadvantageous effects on the producing sectors throw into question the benefits to be gained from promoting manufacturing through export restrictions on intermediate products. Several kinds of impacts must be considered, and I will touch on them briefly in turn. I must emphasize that this whole issue has not been subjected to empirical study in British Columbia, and so the discussion draws heavily on investigations of comparable policies in the United States and on *a priori* economic analysis.

EMPLOYMENT

The ultimate purpose of promoting further manufacturing is not often well articulated, but probably the most common argument is that it creates job opportunities. In the present context the question is whether the additional jobs generated in the consuming sectors by restricting exports of logs and chips exceed those foregone in the producing sectors. Employment statistics indicate that there is greater labour input per cunit of wood produced in manufacturing than in logging, but this is not the issue. The question is whether the higher log prices that would result from freer trade would in the long-run reduce employment in manufacturing more than they would increase logging employment. There is every reason to expect that logging would be stimulated by higher log prices and wider markets, resulting in expansion into currently sub-marginal timber and improved economic recovery of currently logged stands. But it is unlikely that manufacturing would contract concomitantly, especially in view of the probable increase in timber harvest.

It is surely an exaggeration to suggest that the domestic manufacturing industry is critically dependent on these export restrictions. Manufacturing

⁸ For discussion of these effects, see H. V. Lewis, "Objectives of Public Forest Policy in British Columbia: Some Economic Considerations", paper prepared for a forest policy conference organized in 1974 by the B.C. Institute of Economic Policy Analysis. (Papers presented at this conference are forthcoming in William McKillop and Walter J. Mead (Editors), *Timber Policy Issues in British Columbia*, University of B.C. Press).

was established before the restrictions, they have little or no effect in most regions of the province, and transportation costs ensure that domestic processing will continue if production efficiency is maintained. Much more important is the industry's cost competitiveness in logging and manufacturing processes, a matter that cannot be ensured (and may be aggravated) by restricting exports of intermediate products. Relaxed export restrictions would probably result in expansion of logging and increased timber supply, greater exports, and some marginal adjustments in patterns of wood manufacturing in some areas. But there is no convincing evidence that total employment in the forest industry would decrease; indeed it might well increase.

Nor can much be said about qualitative differences in employment opportunities that result from a shift toward higher processing activities. Available census data indicate that all the forest products industries employ a conspicuously high proportion of unskilled and semi-skilled workers relative to other industries, and the average educational level of employees in the pulp and paper sector are only slightly higher than those in logging. In any event, while it is often simply assumed that industries that employ more skilled and professional manpower are preferable, it is by no means obvious that these groups call for higher priority for employment opportunities in the province, in relation to the structure of the labour force.

I am therefore driven to the conclusion that the primary rationale for the export restrictions cannot be supported with available evidence. To deal with additional arguments which often are raised in support of the policy it is necessary to look to other impacts, but my examination of these, summarized in the following paragraphs, adds little support for the present restrictions.

DISTRIBUTION OF GAINS

To the extent that the export restrictions depress the potential demand for logs and chips, the consuming industries benefit at the expense of the producers, as already explained. This does not mean, of course, that the former will show high profits and the latter losses, because in the long-run the effect is borne in the relative rates of growth in the two sectors. It does follow, however, that any sudden removal of the restrictions on logs or chips would boost the logging or chip producing sectors respectively and adversely affect the profitability of consuming industries.

But a large share of the impact on incomes and wealth is borne by a third sector—the government—through its interest in resource values and tax revenues. Any constraint on the demand for forest products will ultimately be felt by the owners of the natural resource, and in British Columbia the prevalence of Crown ownership and the sensitivity of the stumpage system means that it will be felt substantially by the public purse.

On the Coast a small share—between 10 and 15 per cent—of the timber harvested passes through the Vancouver Log Market although *all* stumpage charges on Crown timber are based on these prices. This means that the depressing effect of export restrictions on log prices has a manifold impact on Crown revenues. Similarly, lower chip prices are ultimately reflected in stumpage payments, most directly in the Interior.

Any depressing influence on the price of logs or chips will therefore be absorbed by the public, in large part, through reduced stumpage revenues. Not only will the value of timber harvested be thus depressed, but (less timber being within the economic margin of utilization) the annual harvest will be smaller than it would were prices higher. For these reasons the timber tax must also be regarded as a trade deterrent and not a logical adjunct to the public revenue system. There can be little doubt that, under the present administrative system, the indirect impact of the timber tax on stumpage revenue substantially exceeds the yield of the tax itself.

Another group of beneficiaries of the present arrangements should be noted, namely the successful applicants for export permits. Something of a windfall gain is bestowed with each export permit, as happens with any rationed privileges. The delays, administrative obstacles, and uncertainties associated with the present system undoubtedly constrain participation in the restricted trade to a specialized few.

Finally, it must be emphasized that insofar as these export restrictions aid manufacturers through reduced competition for their inputs, the benefits are not bestowed in any logical pattern. By providing more favourable raw material supplies they benefit firms not in relation to their need or the priorities of government but rather in proportion to their raw material consumption—in effect, their size. Further, the pattern of benefits depends on the geographical accessibility of their raw material supplies to export buyers. They afford substantial protection to manufacturers in some areas while in much of the province they have little or no impact.

INDUSTRIAL STABILITY

It is sometimes argued that export restrictions help to ameliorate instability in the industry. I have already noted that exports of intermediate products fluctuate in a pattern roughly opposite to the cycles in forest products markets: a result, in large part, of the criteria applied in granting export permits. It must be recognized, however, that the fluctuations in actual volumes of exports are so small in relation to total provincial log production that the stability induced as a result of the export controls is marginal at best. It has also been suggested that by facilitating the growth of the sawmilling and pulp milling industries, the export restrictions have induced a diversification of the province's industrial base and therefore reduced the vulnerability of the economy to fluctuations in any one product market. The contribution of the restrictive export policy to stability in this way depends on both the effect of the controls in inducing industrial diversification and the extent that the market cycles for these products are out of phase with the fluctuations in log export demand. It is not at all clear that export restrictions have the alleged effects, but in any event the impact must, again, be considered marginal.

Indeed, freer trade in intermediate products might well have a stabilizing effect on the industry. The Japanese log market, for example, appears to have been steadier than the Japanese lumber market and the Vancouver Log Market, and apparently there are opportunities for steady export sales of chips as well.

TIMBER UTILIZATION

A much more important consideration is the impact of export restrictions on the utilization of the province's timber. First, it can be argued that without the controls logs and chips used in domestic manufacturing plants would be more valuable, and this would tend to encourage more exacting utilization, particularly of logs. More important, however, is the impact on the quantity and type of timber that can profitably be recovered from the forest. The utilization of low-grade logs and pulp chips is one of the most pervasive and intractable problems of forest management in this province, and it is becoming increasingly difficult with the declining quality of timber harvested and more stringent utilization requirements. While the magnitude of the present problem is difficult to estimate, there are probably several hundred thousand units of chips being produced each year that cannot be utilized within the province, in spite of the efforts of many milling firms to minimize their production. If the potential export markets were accessible, undoubtedly considerably greater volumes of timber would be advantageously utilized in this way.

The current restrictions on export markets clearly aggravate this utilization problem. Indeed, it would be difficult to find two more contradictory policies than the strenuous efforts on the part of the Forest Service to encourage and enforce fuller utilization and less logging residue on the one hand, and on the other a programme of government intervention which, in effect, restricts the demand for the recovered material. And in the long-run, of course, it is the value our timber can command in markets that will govern the feasible expenditures in silviculture and forest management.

TOWARD A MORE CONSTRUCTIVE POLICY

The federal and provincial policies on exports of intermediate products appear to have been introduced to encourage more domestic processing without sufficient attention being paid to the other effects of the controls. I do not mean to imply that manufacturing in the province should not be encouraged—a case for more processing can be made on grounds of better resource use alone. However, I am gravely concerned that an attempt to do this *by restricting the market for intermediate products* which are themselves the products of domestic industry is misdirected and contrary to a constructive industrial strategy.

As a general matter, it is worth emphasizing the obvious: that this province's strength in the world forest industry lies in its especially valuable timber. It has no significant advantage over competitors in the technology of processing; indeed, the manufacturing sector is clearly at a disadvantage with respect to proximity to markets, labour costs, and capital intensiveness relative to competing supply areas. It is therefore important to recognize that the unique forestry potential of the province lies in production and recovery of timber, and the competitiveness of manufacturing is derived from this natural resource advantage.

Nor do I mean to suggest that the government should not intervene to mould the development of industry according to public priorities; undoubtedly it should, as I imply by many of my recommendations in this report.

Development of secondary industry may well be such a priority. But in pursuing such goals the government has at its disposal a variety of other means which would be more effective and have less adverse impact on other sectors than restrictions on exports of intermediate products. More direct incentives, through taxation policy or infrastructural development, can provide assistance much more closely related to needs and priorities, and are likely to be much more effective in terms of their cost to the public treasury. Certainly the imposition of restrictions on the markets for products of our forests must be considered a poor choice in light of the alternatives.

My conclusions are not unique; detailed studies by both the Stanford Research Institute and the University of Alaska have found significant gains from log exports from regions close to British Columbia, which export substantially more than this province.⁹ Both have recommended relaxation or abolition of log export controls.

While the current obstacles to trade in intermediate products are not consistent with the public objectives indicated in my terms of reference, it must be recognized that any sudden removal of the controls would cause dislocations in certain firms in certain areas. My proposals are therefore designed to relax only partially the present restrictions to export trade, to rationalize them by removing some of their more arbitrary and inequitable features, and to simplify administration.

We have to consider two forms of restrictions: the administrative restrictions applied through the federal and provincial permit system, and the provincial export tax. Of these, the former is the most cumbersome and unsystematic and I therefore propose that increased reliance be placed on the export levy. The timber tax affords a flexible and consistent device for providing whatever degree of protection to domestic manufacturers the government considers desirable, and it enables the Crown to appropriate some of the gains from export privileges.

The permit system and approval procedures currently followed are unsatisfactory in several respects. However diligent the export advisory committees may be in discharging their responsibilities, any determination of domestic need and exportable surplus without reference to price is inevitably tenuous. The committees recently have taken steps to try to eliminate abuses and excessive delays in processing permit applications, but by its very nature the system produces aberrations in marketing patterns. It is now impossible for exporters to enter into firm contracts with foreign buyers until permits have been granted, and in the case of logs the applications cannot even be considered until they are scaled and ready for sale. This virtually precludes exporters from undertaking to harvest and assemble logs to meet the needs of foreign buyers. The administrative obstacles and delays in obtaining approvals make it almost impossible for small logging companies to pursue export opportunities, restricting this market to a few brokers and traders.

Finally, in spite of attempts to eliminate export sales from compilations of Vancouver Log Market prices, trading, sorting, and reselling makes it

⁹ Stanford Research Institute, *Benefits and Costs of Alternative Log Export Policies, Phase 1 Report*, February 1974, 140 pp. and *Phase 2 Report*, August 1974, 206 pp., prepared for Pacific Northwest Regional Commission, Menlo Park, California; A. R. Tussing et al., *Alaska-Japan Economic Relations*, Institute of Social, Economic and Government Research, University of Alaska, June, 1968, 469 pp.

impossible to eliminate the influence of export prices, particularly on certain types of timber in strong export demand. Coastal stumpage appraisals are based on these prices, with the result that licensees who do not have access to export sales bear inequitable stumpage rates on timber that is subject to these price distortions.

I therefore propose that the permit system no longer be used to ration exports, and that the timber tax be modified to give sufficient price protection to domestic manufacturing companies to prevent serious disruption in their raw material supplies. I recommend that this be done through the following modifications to existing policies.

The timber tax. The timber tax should be changed from fixed dollar levies to a simple *ad valorem* tax: a single percentage rate for logs and another for chips, applied to the export selling price. This will give domestic companies an explicit and consistent degree of protection from the prices offered by export buyers. The timber tax for chips initially should be no higher than the implied rate under the existing levy—about 3 per cent. For logs, a generous increase over the existing effective tax rate may be called for because of the effect of relaxing the permit restrictions. Thus a levy of something in the order of 40 per cent may be required.¹⁰ Establishing the timber tax in this manner will ensure that no exports occur unless domestic users cannot profitably use the material, even with this price advantage over foreign users.

The timber tax rates should be fixed by the Legislature, rather than on an *ad hoc* basis by Order-in-Council as is now the case. The *ad valorem* tax (unlike levies expressed in dollars) will respond to changes in market conditions without changing the effective rate of the tax. For this reason and to permit orderly contractual arrangements with buyers and fulfillment of commitments, the timber tax rates should be altered infrequently, and with notice of at least six months. The Forest Products Board of British Columbia (as charged under the Timber Products Stabilization Act) should maintain surveillance over these arrangements and recommend needed changes from time to time.

Categories of products that present utilization and forest management problems in the province should be exempted from the export levy; low-grade pulp logs, hardwoods, other mill residues and materials that cannot be sold domestically at a price that covers their cost of production should be freely exportable. Also, consideration might be given to reducing timber tax rates in certain areas of the province as a means for advancing regional development objectives. The legislation should empower the Lieutenant-Governor in Council to grant exemptions or reductions in such cases, and the Forest Products Board should provide advice on these matters.

In fixing the rates and exemptions the government and the Legislature should recognize that low export levies are in the interests not only of the log and chip producing industries but also of the public treasury, because of their strong leverage on stumpage values (in itself a reason why responsibility

¹⁰ Under this system, exporters will be required to report f.o.b. selling prices to the Forest Service in sales invoices. It must be recognized that a tax on selling prices creates an incentive to report low prices, especially in export sales between affiliated companies. For this reason, the Minister should clearly be empowered to adjust the timber tax charge in instances where he deems that the reported prices do not accurately reflect existing market conditions and the degree of price protection intended by the tax.

for advice and surveillance should be in a public agency such as the Forest Products Board). To hold domestic log prices 40 per cent below their potential value is undoubtedly more protection than is warranted in the long-run. The tax should be reviewed from time to time and gradually reduced to enhance timber values and promote more efficient use of timber resources.

The tax on chips should be phased out at an early date. As I have repeatedly emphasized, the elimination of surplus mill residues and low quality pulp logs warrants high governmental priority, and the removal of export restrictions on chips is an obvious step toward providing improved opportunities for their recovery and valuable use.

Permits. The permit system should be retained, for the time being at least, but the procedures for administering permits should be modified considerably so that they no longer serve a restrictive function. Applications for permits should be reviewed by the Forest Products Board but no criterion of domestic need should be invoked with respect to each application. The purpose of review for advice to the Minister should be only to ensure that the terms and conditions of the permits do not prejudice future flexibility of policy or changing domestic needs. Thus permits for pulp chip exports should normally be limited to terms of about five years (possibly with provisions for extension after three years), non-interruptable and staggered in time, to provide an appropriate balance between needed long-term supply commitments and the flexibility that might be required to accommodate any new pulp mills constructed in the province. These proposals imply that potential log exporters could enter into commitments with the assurance that export permission will be forthcoming.

The two informal provincial export advisory committees should become consultative committees to the Forest Products Board. They should not review individual permit applications, but instead provide the Board with continuing information and advice from industrial producers and consumers.

In short, permits should no longer be a rationing device but only a method of maintaining surveillance of exports subject to the timber tax. After a transitional period, the need for continuation of the permit arrangements should be reviewed.

Federal participation. In implementing the above changes the province should seek the co-operation of the federal government in adopting complementary policies.¹¹ If the federal government continues to be as willing as it has in the past to harmonize its controls with those of the province, it will simply endorse export permits granted by provincial authorities and issue comparable permits for timber not covered by provincial control. If federal authorities decide to introduce comparable export duties on the latter, the province might arrange to collect it on their behalf, for administrative convenience.

The federal government has not hitherto challenged the province's authority to levy the timber tax, although it poses some complicated constitutional questions that have attracted recent attention in connection with

¹¹ Indeed, the language of the Export and Import Permits Act anticipates that federal controls may be designed to complement other policies such as the provincial restrictions, insofar as it states that the Governor-General in Council may control the export of any product "to implement an intergovernmental arrangement or commitment".

other natural resources. My proposals are predicated on the assumption that the federal government will not interfere with the existing timber tax arrangements of the province.

One other aspect of federal policy deserves mention. In its foreign trade promotional efforts the federal Department of Industry, Trade and Commerce attempts to develop foreign markets for highly manufactured forest products, but is reluctant to entertain foreigners' interests in buying logs or pulp chips, even though the demand in some countries is very strong. This federal stance, if it is intended to serve the interests of this province, appears to reflect a misunderstanding of the problems faced by the B.C. forest industry. The industry in this province has virtually no raw material links with the rest of Canada and is hampered by inadequate markets for residual products and certain types of logs.¹² The value of the natural resources we produce can be eroded significantly if we cannot take advantage of foreign markets when they offer a clearly more advantageous return. The federal government should therefore be encouraged, in its promotion of secondary manufacturing, to confine its efforts to explicit restrictions on trade, and beyond that to take a neutral position with respect to the level of manufacture at which our forest products are exported.

I have no doubt that relaxation of the administrative impediments to exports of intermediate products will result in more systematic, equitable, and beneficial export trade; and I hope that the volume of trade will also increase, particularly in products that the domestic industry has difficulty in utilizing fully. A dramatic increase cannot be expected, however, because there are too many transportation and other inherent obstacles to export sales from most regions of the province. Moreover, I doubt that the local manufacturing industry will encounter great difficulty in obtaining raw material even if export demand were allowed to increase domestic prices for some products in some areas. Certainly any such additional competition will be more than compensated for by the gains to the extractive sector, higher values for domestically produced timber and more efficient utilization of forest resources in general.

¹² Federal authorities are apparently influenced by the argument that restrictions on exports of logs and chips are desirable in order to induce foreigners to purchase Canadian lumber and pulp. This argument can hardly be supported in light of Canada's limited market power in forest products, let alone this province's power in markets where we might sell intermediate products. Canada has more international market power in wheat and flour, for example, but I doubt that restrictions on grain exports would be seriously considered as a means of promoting domestic flour milling.

PROSPECTS AND PRIORITIES FOR INDUSTRIAL DEVELOPMENT

Early in this report I explained that the influence of forest tenure policy on the structure and development of the forest industry has emerged as a matter of major concern during the course of this inquiry. This was perhaps inevitable, in view of the preponderance of Crown ownership of forest resources, the importance of industrial forestry for the entire economic and social development of the province, and the rapid changes that have been occurring within the industry itself.

Over the last century, forest policy has been designed and continually revised to accommodate and promote industrial development. And, as I have pointed out in previous chapters, special policies have been directed toward particular phases of the industry. But there has been very little analysis of the impact of forest policy on the structural evolution of the forest industry, and no public policy has been clearly articulated with respect to the desired form of industrial growth. Yet in view of the importance of this issue, any review of forest tenure policy should consider its effects on the industry's structure and the direction of industrial development that will best serve the public interest.

My terms of reference instruct me to inquire into the structure of the forest industry and its pattern of ownership and control, concentration, and integration, and in formulating recommendations to recognize the need to maintain a vigorous and efficient industry. In Chapter 4 and Appendix B, I report the results of my investigations of the present structure of the industry, and in other chapters I have made recommendations that would have considerable consequences for its future development. In this chapter I attempt to put the prospects for the industry into some perspective, to draw together some of my earlier proposals to indicate how they should contribute to industrial vigour, to deal with some additional related matters, and generally to indicate what I consider to be the priorities for industrial policy.

BRITISH COLUMBIA IN THE GLOBAL PICTURE

Commentaries on forestry in British Columbia typically emphasize the enormity of the timber resources, the size of the forest industry, and its importance to the provincial economy. The significance of forestry in the provincial context is hard to exaggerate, but there is the danger that emphasizing it may give a misleading picture of the industry's position in forest products markets. Even in terms of the existing stock of world softwood timber, British Columbia contains only a small fraction; about 55 per cent of the world's softwood timber is believed to be in the Soviet Union alone, North America contains 25

per cent, Canada has 12 per cent, and British Columbia only 6 per cent.¹ I have already noted that the forest industry of this province is an export industry, and it competes in international markets with the other major world sources of softwood timber products.

Correspondingly, British Columbia producers of lumber, pulp, and other forest products serve only a small fraction of the markets in which most of their products are sold. In Chapter 21 the general pattern of marketing was described. The share of consumption in the main export markets accounted for by B.C. production is shown in Table 23-1. The relatively minor position of British Columbia's share in these markets is conspicuous, even though this province is among the world's main exporters of forest products. The inference to be drawn, coupled with the competitiveness of international marketing, is that the province's industry has limited market power in the consuming regions where its products are sold.

Table 23-1
SHARE OF CONSUMPTION ACCOUNTED FOR BY BRITISH COLUMBIA
FOREST PRODUCTS IN MAJOR MARKETS, 1974

	United States	Europe	Japan
	per cent accounted for by B.C. products		
lumber	14.4	5.3	5.1
pulp	.8	6.7	4.8
newsprint	9.0 ¹	negligible	.6

¹ Sales by B.C. producers are mainly restricted to western States, where they account for a significantly higher proportion of consumption.

Source: Brief submitted to this Commission by British Columbia Forest Products Limited, Vancouver, November, 1975, p. 16.

Forecasts of future world demand for forest products suggest substantial growth in the foreseeable future. The Food and Agriculture Organization of the United Nations predicts that, during the last three decades of this century, the demand for solid wood products will nearly double and that the requirements for paper and paperboard will triple.²

However, it cannot be assumed from such projections that the industry of this province will experience growth of these proportions, for several reasons. First, long-term predictions of this kind are inherently precarious, and are susceptible to changes in the basic relationships which underly demand. Second, while the province's resources are capable of supporting increased production, it is by no means clear that they could support the expansion implied by these projections over the next three decades. Third and most important, the growth of the province's industry will depend primarily on its ability to compete against other world suppliers.

¹ *World Wood Fibre Supplies and Canadian Pulp and Paper Prospects to 1990*, report prepared for the Canadian Department of Industry, Trade and Commerce by Paul H. Jones, Ottawa, 1975, 138 pp.; United States Department of Agriculture, Forest Service, Forest Resource Report No. 20, *The Outlook for Timber in the United States*, Washington, October, 1973; and G. H. Manning and H. R. Grinnell, *Forest Resources and Utilization in Canada to the Year 2000*, Canadian Forestry Service, Department of the Environment, Publication No. 1304, Ottawa, 1971.

² United Nations Economic and Social Council, Economic Commission for Europe, Timber Committee, *Study of Timber Trends and Prospects in the ECE Region 1950-2000* (various chapters dated August and November 1975); Food and Agriculture Organization of the United Nations, *Outlook for Pulp and Paper Consumption, Production and Trade to 1985*, Rome 1972, 50 pp. + App. See also K. M. Jęgr and K. M. Thompson, *The Canadian Pulp and Paper Industry Threats and Opportunities 1980-1990*, Pulp and Paper Research Institute of Canada, Montreal, 1975, 53 pp.

In this connection, the prospects for increased production in competing supply areas must be considered. Both in established areas of the western world and in developing countries very substantial industrial and forestry developments are in train which will almost certainly have a significant impact on the markets served by B.C. producers.³ Even the United States, by far our biggest customer, is likely to increase production considerably, and one official study suggests that under certain (albeit not "likely") conditions, that country could become practically self-sufficient in wood products by 1990.⁴ At least some parts of the U.S. industry appear to enjoy lower capital and labour costs and higher productivity than their counterparts in this province. In short, while I have not made an independent study of world market prospects, the available evidence suggests that we cannot assume that world consumers of forest products will exert heavy new demands on this province's forest production in the foreseeable future.

Other circumstances also colour the outlook for expansion of the province's forest industry. Certainly, the capital costs of construction in British Columbia are very high by international standards, as is the cost of labour.⁵ The relatively poor profit performance of the industry in recent years, which I discussed in Chapter 4, is another cause for concern. Also, during the last few years especially, it has become apparent that the primary advantage upon which the provincial forest industry was established—that of high quality timber—is rapidly being eroded. In the course of its development, the industry logically exploited the better, more accessible, and lower cost stands first, turning to less desirable resources as technology and market conditions brought them within the margin of economic recovery. As a result, inventories now consist, to an increasing degree, of stands which present difficult problems for recovery and manufacture. In most regions of the province, the industry's future rests on its ability to utilize low quality timber—defective stands, small dimensions, and heretofore under-utilized species like cedar and hardwoods—harvested at high cost in areas where the threat of environmental damage is often severe. These are constraints that will not impinge on many of our competitors in more favoured regions, at least not to the same extent.

Higher prices would undoubtedly spur industrial growth in British Columbia, but forecasts of price trends appear highly uncertain. In any event, the relevant prices are international prices, and any increases in them will generate supply responses in all producing areas and therefore will not necessarily improve the relative position of B.C. products.

These trends do not augur well for future industrial expansion. However, in drawing attention to them it is not my intention to paint a bleak picture for the province's forest industry but rather to emphasize the critical importance of public policies that will allow and encourage producers to achieve high levels of efficiency, minimize costs, realize the full values that markets poten-

³ For an assessment of the prospects for forest products in the "third world", see the brief submitted to this Commission by Forestal International Ltd., Vancouver, November, 1975.

⁴ United States Department of Agriculture, *The Outlook for Timber in the United States*, the United States Forest Service, Forest Resource Report No. 20 Supt. of Docs. U.S. Government Print. Off. 1973, 367 pp. According to this study massive investments in forest management would be required. Another forecast produced by the same agency, which does not make this assumption but focuses on price trends, indicates increased dependence on imports: U.S. Department of Agriculture, Forest Service *The Nation's Renewable Resources—An Assessment, 1975: As Required by the Forest and Rangeland Renewable Resources Planning Act of 1974*, Washington, 1975.

⁵ For revealing international comparisons, see Jaakko Poyry & Co., *Future Alternatives in the Global Supply of Pulp and Paper*, Second World Pulp and Paper Industries Conference, Helsinki, 1975, 32 pp.

tially afford, and respond flexibly to changing technology and market conditions. It is to this end that many of my recommendations are directed.

INDUSTRIAL CONSTRAINTS AND POLICY IMPLICATIONS

In spite of the declining quality of available timber (and in part because of it) it is unlikely that the physical limits of the natural resource will be the binding constraint on industrial expansion in the foreseeable future. Much more critical is the relationship between the costs of harvesting, manufacturing, and transportation and the prices that can be realized for forest products. In the following paragraphs I touch on some of the ways in which governmental policy can influence these, and hence the scope for industrial growth.

Control of costs. With respect to costs, some of the most severe problems are only peripherally related to forest policy. Certainly a major constraint on new developments, especially in the more remote areas, is the high cost of labour. Even leaving aside prevailing wage levels, unstable industrial relations and high rates of labour turnover impede pioneering ventures. Evidence presented to this Commission suggests that in spite of statistically high unemployment rates, the difficulty of attracting and keeping a stable labour force has become a major impediment to steady and efficient industrial operations.⁶ This complicated problem clearly calls for the attention of specialized departments of government, and it should figure importantly in decisions about the location of new industry.

Perhaps an even more serious constraint on new developments has emerged in the last couple of years in the form of rapid escalation of capital costs. Evidence suggests that plants built only two or three years ago would cost double or more to construct today, which, in view of their present profit performance, would have precluded their undertaking. Industrial spokesmen maintain that unless some change in these cost trends occurs, we cannot expect many substantial new ventures of the kind that were undertaken with such frequency during the last 15 years.

The escalation of capital costs also presents difficulties for firms in making the repair, maintenance, and up-grading expenditures required to maintain efficiency and productivity. On the Coast particularly, many of the older mills need modernizing in order to remain competitive. Unless the industry's profitability improves, these firms are likely to find it difficult to raise the capital for these purposes.⁷

There are, therefore, serious obstacles to forest industrial development, at least for the next few years.⁸ If the government is to accommodate further industrial expansion, particularly in manufacturing, it should encourage those particular activities in which producers in this province enjoy a

⁶ One study of labour turnover in a sawmill that experienced a turnover of 235 per cent in one year revealed a cost of \$1,000 per turnover, or \$2,350 per person employed. William C. Wedley, *Community and Corporate Development in the Pemberton Valley*, a report prepared for the Pemberton Valley Labour Force Development Committee, October, 1975. Turnover rates of this magnitude are not uncommon in remote areas throughout the province.

⁷ Recent proposals of the federal Anti-Inflation Board to restrict the profits of manufacturing companies to 85 per cent of their level in either their most recent fiscal year or the 1970-74 5-year average would not likely permit sufficient earnings in the forest industry for either maintenance or expansion.

⁸ The Department of Economic Development has recently initiated a series of studies to identify opportunities for industrial growth. The first of these, *The North East Report 75, A Summary Report on Development Possibilities in the North East Region of British Columbia* (125 pp.), has been published by the Department and others are being prepared.

comparative advantage in trade,⁹ and generally attempt to assist the industry in coping with escalating costs.

The latter bears directly on forest policy through the cost implications of controls on logging and development practices exacted under harvesting rights. It appears to me that two areas of policy have imposed particularly excessive costs: the regulation of recovery standards, and controls on logging which aggravate the need for road construction. I have already examined these issues at some length, and it is my impression that both policies substantially increase the aggregate cost of timber recovery without providing compensating benefits.

In Chapter 18 I explained that current recovery standards are applied under uniform and rigorous specifications over widely divergent conditions, and have apparently been influenced less by economic analysis than by attempts to reconcile harvests with the inventory, to facilitate cut control accounting, and to expedite slash disposal. I have commented on the severe economic implications of these regulations both for the Crown and licensees, and recommend changes which are designed to permit recovery standards to be determined discriminatingly in light of economic factors and the special needs of each site. I have also proposed methods of granting harvesting rights that will develop operators' incentives to recover marginal material. If these modifications are adopted I have no doubt that they will significantly reduce the costs of harvesting and hence broaden the opportunities for feasible forest development.

The problem of roads was discussed in Chapter 20, where I emphasized the heavy environmental and economic impacts of road construction that have resulted from controls on harvesting patterns. It seems clear that much more emphasis should be put on economizing on road construction within the limits of proper silviculture and the environmental needs of each site. Revision of policy in this manner offers significant scope for reducing the costs of resource development.

While these two areas of policy probably offer the greatest promise for reducing the costs of timber production without prejudicing high standards of resource management, I have recommended other policy revisions as well, such as more suitable means of financing the enhancement of non-timber values (in Chapter 11) and more systematic administrative arrangements (in Chapter 24).

Realization of timber values. Government should also direct its attention to ensuring that the highest possible values can be realized on the forest products produced, and I have made a number of recommendations toward this end. With respect to marketing structures, most potential for improvement lies with intermediate products. In Chapter 21 I emphasized the importance of ensuring an active and open coastal log market, not only to provide opportunities for unintegrated manufacturers and log producers and to protect the public interest in stumpage revenues, but also to ensure that timber will

⁹ For good analyses of British Columbia's comparative advantage in production see R. A. Shearer, J. H. Young, and G. R. Munro, *Trade Liberalization and a Regional Economy*, University of Toronto Press, 1971, 203 pp.; R. A. Shearer, "The Development of the British Columbia Economy: The Record and the Issues", and G. R. Munro, "British Columbia's Stakes in Free Trade" in R. A. Shearer, ed., *Exploiting our Economic Potential: Public Policy and the British Columbia Economy*, Toronto, Holt Rinehart and Winston, 1968, 152 pp.

find its way through competitive market channels, to users who can put it to the most beneficial use. I have also criticized the strictures on chip marketing in the Interior, and recommended that they be relaxed so that the unrestrained forces of supply and demand will enable their value to be reflected in competitive prices. In the previous chapter I reviewed the restrictions on exports, explaining their depressing impact on log and chip values. My proposals for revising export controls offer a particularly easy means for broadening the demand for forest production and taking better advantage of potentially available market prices.

It should be recognized that policies directed towards increasing the demand and price for timber complement efforts to achieve higher standards of recovery. At present, there can be little doubt that recovery standards which compel operators to remove sub-marginal material depress the value of low quality logs on the Coast, and contribute to problems of residual chip surpluses throughout the province. In consequence, a significant fraction of productive activity involves a financial loss, and results in lower average returns for both operators and the Crown.

Finally, to provide a stimulating environment for industrial development, the government should concern itself with the policies of other agencies and other governments which go beyond forest policy itself. Certainly, rail transport difficulties have affected the efficient operation of the industry in the Interior and the lack of certain harbour facilities has impeded the development of export opportunities. Federal import tariffs on industrial machinery and equipment leave the capital costs faced by provincial producers well above those of competitors in the United States and elsewhere—increases that cannot be passed on to consumers in export markets. The federal government should also be encouraged to press diligently for lower import tariffs on forest products in foreign markets. And the provincial government should use its full influence to discourage the federal government from adopting such restrictive policies as were included this year in proposed new shipping legislation.

PRODUCTION FLEXIBILITY AND EFFICIENCY IN RESOURCE USE

I have emphasized that the extent to which the B.C. forest industry will be able to prosper will depend primarily on its ability to develop and use resources of declining quality under conditions of rising costs within the limits of externally generated prices for final products. I have also emphasized that the government can improve the environment for meeting this challenge. But the limits of economic feasibility are constantly shifting with changes in product prices, technology, and production costs. Therefore, another dimension of policy concern is to ensure that the industry can respond in the most advantageous way to changing opportunities. I am convinced that the most effective way of meeting this need is not through administrative regulations, controls, or subsidies, but rather through policies that will provide the scope, flexibility, and incentive for producers to respond to these changing external conditions which are beyond both their own and the government's control. I have touched on this matter in several previous chapters. Most of my recommendations are directed toward unshackling the industry from restric-

tions and controls that suppress industrial responses to market fluctuations without producing identifiable offsetting benefits.

Harvesting controls. In Chapter 18 I examined the present cut control policy, and while I recommended that controls be retained my proposals will allow considerably greater response to fluctuating markets. This will not only enhance the viability of enterprises over market cycles, but will also ensure that, in the long-run, higher values are realized from resources by both producers and the Crown.

Correspondingly, in the same chapter, I proposed approaches to utilization controls that will promote flexible and efficient adjustments in the face of changing circumstances. Too often, efficiency is judged in purely technical terms, implying that the recovery and use of more material is by definition more efficient. But it must be recognized that beyond a certain point the recovery of more "waste" in the form of timber involves a waste of labour and capital and dissipates the value of the resources harvested. The criteria used to assess harvesting efficiency must recognize this economic dimension if the full potential value of timber is to be realized. These arguments also underlie my proposals for more flexibility and more rigorous evaluation in determining harvesting priorities among old-growth and second-growth stands, and those requiring rehabilitation.

Markets for intermediate products. Throughout this report and again in this chapter I have referred to the desirability of maintaining vigorous and competitive markets for intermediate products. As well as enhancing product values, markets for intermediate products promote flexibility in industrial activity. In the absence of such markets consumers of logs and chips are restricted to those they produce themselves, regardless of whether they are best suited to their needs, whereas active marketing permits more flexible inventory adjustments and more efficient allocations of raw material among users. Thus my recommendations for promoting log and chip markets will also contribute to desirable flexibility in production.

Appurtenancy requirements. Another thread of forest policy which restricts industrial flexibility involves the appurtenancy requirements contained in many licence contracts. These provisions tie the allocation of timber rights to the maintenance and operation of manufacturing facilities, and in some licences have been interpreted to mean that the timber harvested under the authority of that licence must be processed at a specified mill. To the extent that such requirements are enforced, they obviously eliminate opportunities for log selling or trading and thereby threaten to impede the efficient allocation and utilization of timber. Recognizing this, the government frequently waives appurtenancy requirements, and in at least one instance has transferred the appurtenancy of rights from one mill to another. Such controls, in short, constrain advantageous reallocations of raw material, and except where they offer the only means of meeting a particular and compelling need I recommend that they be waived in current agreements and excluded in future contracts.

STRUCTURAL DIVERSITY

The preceding discussion has dealt with policies for enhancing the scope for industrial growth and efficiency. I now turn to policies affecting the

structural pattern of industrial development. I have repeatedly emphasized the desirability of a broad and diverse forest industrial base, and expressed concern about current trends toward industrial concentration. It is most urgent for the government to address its attention to this matter, to carefully consider the implications of these trends, and to design explicit policies for the desired structural pattern of industrial development. My main concern in this matter is that, while the public interest is best served by a diversity in firm size and structure, public policy has been biased to the disadvantage of smaller and less integrated enterprises. The thrust of my proposals is therefore to remove these distortions.

There are two related aspects of this issue; one is the balance between firms of different size, the other relates to the degree of integration within firms. These are related, of course, because the larger firms tend, for various reasons, to be the most broadly integrated, but it is convenient to discuss the two problems separately.

Policy impacts on firm size. In Chapter 4 I examined the degree of concentration in the forest industry and noted that a large and increasing proportion of the industry is controlled by relatively few large controlling companies. Some of these companies are very large, although not conspicuously large in relation to other international forest companies. The urgent policy question now facing the government is whether continuing consolidation of the industry into the hands of fewer large companies is in the public interest.

The issue is not, as I have emphasized, that the size of these large firms is, in itself, disadvantageous, but rather that their progressive control over the timber supply and manufacturing capacity threatens to eliminate opportunities for the survival and development of small, specialized firms and new enterprises. If it were clear that this would lead to a more efficient industry, more capable of serving the public interest in generating the maximum value from timber, there would be less cause for concern. But there is scant evidence to suggest that the best industrial structure for this province is one composed of only a few, large, integrated corporations. On the contrary, the variety of forest conditions, manufacturing processes, and potential market opportunities, in addition to the self-regulating features of a diverse and dynamic industrial structure, suggest that superior performance can be expected from an industry that provides opportunities for a broad range of sizes and forms of enterprises.

Some of the growth in average firm size can be attributed to economic and technological developments that have produced economies of larger scale, and to this extent the trends have enhanced industrial efficiency. But certain public policies have undoubtedly worked to the disadvantage of small, unintegrated, specialized firms and potential new entrants, and have thereby biased the pattern of industrial development in favour of large firms. Some of those policies are the following:

- i) When Public Sustained Yield Units were created in well-developed areas and established operators' cutting rights brought into conformity with allowable harvesting rates, the impact of the proportionate reductions often left smaller operators with insufficient "quota" to maintain a viable operation. Most had little alternative to selling their rights

to larger operators who could amalgamate them with their own, and many smaller firms thereby disappeared.

- ii) When "quotas" were subsequently increased with the introduction of "close utilization" harvesting standards, established licensees were awarded increases in timber rights in proportion to their existing rights: by one-third in the Interior and one-half on the Coast. Thus licensees holding large "quotas" obtained proportionately greater additional timber rights than those who held small allocations.
- iii) Hitherto, the government has been willing to endorse amalgamations of all of a licensee's timber rights in a Public Sustained Yield Unit with those of another firm, but has refused to permit any fragmentation of rights; hence all such transactions have had the effect of consolidating rights into fewer hands.
- iv) By virtue of the "quota" system, the only means available for obtaining timber rights in the developed regions of the province has been through the acquisition of an established operation, the price including the capitalized value of the tenure. This has inevitably raised the barriers to entry into the industry, particularly for smaller firms with limited access to capital.
- v) The Tree-farm Licence system undoubtedly favoured the larger firms. It was designed (among other things) to enable companies with holdings of Crown-granted lands and old temporary tenures to combine these with other Crown timberlands in integrated sustained yield units. Such companies were thus able to add to their earlier holdings (with their preferred terms and lower Crown charges) extensive new rights to Crown timber, without competition. Moreover, since the older tenures were concentrated in the more accessible and preferred timberlands, especially on the Coast, these tenures absorbed much of the best Crown timber, leaving only less attractive, higher cost opportunities for other firms in the Public Sustained Yield Units.
- vi) The increases in allowable annual cuts approved for Tree-farm Licensees have greatly exceeded those granted to licensees in Public Sustained Yield Units, with the result that the balance of the available harvest has shifted in favour of Tree-farm Licensees.
- vii) Public Sustained Yield Units were intended (judging from policy discussions at the time they were introduced) for smaller operations, but the special arrangements to accommodate small firms, such as governmental assumption of most of the burdens of management other than logging, have been substantially eroded. No particular advantage is afforded smaller firms, and today 39 per cent of the timber rights in these units is held by ten large integrated controlling companies.
- viii) The rising costs of road construction, forest development and management, coupled with the policy of delegating more of these responsibilities to licensees, falls particularly heavily on smaller companies with more limited professional staffs and more restricted access to capital.
- ix) On the Coast, reimbursement of these costs through stumpage adjustments falls short of approved expenditures where stumpage rates are at minimum. Insofar as smaller firms more often operate in less valuable

timber in Public Sustained Yield Units where costs are also higher, they more frequently suffer non-reimbursement.

These are only some of the more conspicuous ways in which government policy appears to have been biased to the disadvantage of smaller firms.¹⁰ I have made recommendations in earlier chapters that should provide a more neutral policy environment. These include arrangements for competitive access to Timber Sale Licences, provisions for licences of smaller volumes and shorter durations, modification of special bidding privileges of "quota" holders, and more definitive rights to timber under the Tree-farm Licence system.

I have little doubt that if they are afforded equal opportunities, the smaller and more specialized firms will be able to compete effectively and maintain their place in the province's forest industry. It is important that they do so, not only from the point of view of the public interest for the reasons I have mentioned, but also for the large corporations themselves, because increased governmental regulation of their activities is inevitable if rights to timber and manufacturing activity become monopolized over large regions of the province. Indeed, if my proposals for a more neutral policy environment prove to be insufficient to maintain a vigorous complement of smaller, unintegrated firms or to provide continuing opportunities for new enterprises, then I would advocate another reassessment of policy to find further means of maintaining this sector of the industry.

Industrial integration. A related matter is the impact of public policy on the pattern of industrial integration, including both horizontal integration (the diversification of activity at a particular level of the industry) and vertical integration (the spread of activity into different levels of the industry). Integration of both kinds offers clear benefits in terms of fuller utilization of timber resources, and is widely advocated. But insufficient attention is directed to the important distinction between integration within the industry as a whole and integration within individual firms. Clearly the two are not synonymous; an integrated industry can consist of firms which are individually integrated into all phases of activity or of firms specialized in particular sectors of the industry which, in the aggregate, provide integrated resource utilization. The latter depends on markets for intermediate products like logs and chips to provide the links between the different phases of industrial production. Both forms of integration are found to varying degrees in the B.C. forest industry.

Conspicuous examples of a policy aimed at achieving industrial integration without intra-firm integration were four of the original Pulpwood Harvesting Area Agreements, which were intended to create a complementary pulp industry alongside a sawmilling industry without disturbing its independence. But as I explained in Chapter 9, the provisions aimed at maintaining the separation of control between the two sectors were abandoned, and other incentives have since led to the integration of all the relevant pulp companies into logging and sawmilling.

¹⁰ Until 1972, the federal income tax authorities permitted a licensee who sold his "quota" rights to treat the proceeds (with some qualifications) as a tax-free capital gain, while the purchaser was permitted to write off a varying proportion of the cost against his taxable forestry income. Thus the tax-free gains from selling rights were often more attractive to "quota" holders than the taxable income they could anticipate from exercising them, and this undoubtedly contributed to the concentration of timber rights.

From the point of view of maintaining a broad and resilient industrial base, an integrated industry consisting of specialized firms dealing in intermediate products markets offers obvious advantages: firms can vary widely in size; they can specialize in activities in which they have particular expertise; resources can be transferred among firms to ensure that they will be utilized in the most beneficial way at each stage of production; and exposure of intermediate products to competitive markets sharpens incentives to make the best use of raw material supplies. Nevertheless, in certain important respects, forest policy appears to have been biased toward integration within individual firms:

- i) Many rights, including some old temporary tenures, Tree-farm Licences, Timber Sale Harvesting Licences, and others include appurtenant mill provisions which require licensees to maintain a mill capable of processing the timber harvested under their licences. These provisions effectively condition the allocation of timber rights on licensees' integration between logging and manufacturing.
- ii) The criterion of "need" invoked in granting "third band" Timber Sale Licences links eligibility for timber rights to the capacities of the applicant's processing plants.
- iii) On the Coast, particularly, these links between timber rights and processing plants have substantially eroded the role of the log market, with the result that it is no longer regarded as a reliable source of timber by independent milling companies, nor as a dependable sales outlet by independent logging companies. Few firms in either category have been able to survive without integration into the other sector.
- iv) Harvesting regulations that require removal of material that is difficult to utilize or to sell inevitably bear most heavily on firms lacking the full range of processing facilities.

The impact of some of these biases toward integration within firms is supported by evidence given at the time when these trends began to accelerate with the introduction of new tenure policies some thirty years ago. The perspicacious H. R. MacMillan, testifying before the Royal Commission on Forestry in 1946, emphasized the value of maintaining a competitive environment for timber on the Coast.

Competition should be maintained throughout the Coast district amongst those who can pay the highest prices for raw material. The result of such a policy will be to encourage the best use of all the forest crop and the greatest return from growing timber.¹¹

He pointed out, however, that owners could be expected to support this policy only if they could be

. . . confident that on equal terms, by buying cutting rights or buying logs, they have access to the product from the whole Coast forest.¹²

Accordingly, he disapproved of proposals to grant extensive timber rights to the large manufacturing companies where they would impinge on independent logging and milling enterprises. However, ten years later, after several Tree-

¹¹ Speaking for the MacMillan Export Company, submission to the Commission of Inquiry on Forest Resources, 1946, p. 39.

¹² *Ibid.*, p. 38.

farm Licences¹³ were allocated on the Coast, the protection of corporate positions called for a different approach.

. . . when we saw these applications covering the country we thought the first thing we know everybody else is going to have . . . [Tree-farm Licences] . . . and we would have nothing. So we applied . . .¹⁴

The point that warrants emphasis is that the integration of manufacturing companies into forestry and logging was seen to be unnecessary and undesirable as long as there was a competitive market for logs. The integration that took place was, in part at least, a defensive reaction to public policies that threatened to put control of timber rights in the hands of competitors.

There can be little doubt that forest tenure policy has created an environment in which coastal manufacturers feel compelled to secure rights to standing timber rather than rely on log markets. Once created, such apprehensions about raw material supplies become self-fulfilling; as firms seek to avoid dependence on them, markets decline in size and competitiveness.

I cannot over-emphasize the importance of vigorous markets for intermediate products, like logs and chips, for the healthy development of the province's forest industry. The resilience of the separate phases of the industry, the efficiency with which resources will be utilized, and the extent to which the public interest can be protected by market forces rather than government controls, will hinge significantly on the vitality of such markets. Thus I have suggested that the development of markets for intermediate products should be an explicit goal of public policy. I have made specific recommendations toward this end in Chapter 21.

While integration among firms calls for healthy intermediate products markets, it is also clear that the manufacturing capacity in the province is not perfectly fitted to the raw material supplies. The most serious imbalance arises from excess pulp material relative to pulping capacity, a problem which is likely to become more conspicuous as timber quality declines. For the foreseeable future, until and unless pulp capacity expands, the government should endeavour to alleviate this difficulty by facilitating the development of export markets, as I recommended in the previous chapter. The government should also encourage new pulping ventures, recognizing that their benefits are likely to extend beyond the private gains because of their complementary effects on the wood products sector. Certain new techniques, such as the relatively small scale and versatile thermal-mechanical pulping process, probably hold more promise for future development in this area than the traditional processes. Obviously new pulp ventures will be most beneficial if they draw their raw material from the surpluses in intermediate markets, rather than depend on new timber supplies. Thus I have endorsed the Pulpwood Agreement system of providing needed assurances of raw material.

I have made a number of other recommendations in previous chapters that should also contribute to industrial diversity. The promotion of special products industries, small scale forestry, and more variable licensing arrange-

¹³ Then called Forest Management Licences.

¹⁴ Commission of Inquiry on Forest Resources, 1955, *Proceedings*, Book 76, p. 9091. I cite the testimony of Mr. MacMillan here because it indicates the contemporary assessment of the province's most prominent forest industrialist, whose acute perception and concern for public policy were well known. It should not be inferred that the testimony cited reflects the views of the companies that bear his name today.

ments to accommodate the needs of different kinds of enterprises should all help to broaden the forest industrial base.

THE CONTRACTING SECTOR

The government has made special provisions in forest tenure arrangements to secure the position of the contract logging industry. Beginning in 1959, apparently out of concern for the position of smaller logging firms as timber rights were becoming increasingly consolidated, "contractor clauses" were included in Tree-farm Licences, requiring the licensee to provide an opportunity to contractors to harvest a stated proportion of the harvest from "Schedule B" lands. Eight of these licences direct that 30 per cent, and eighteen that 50 per cent,¹⁵ of the harvest be treated in this way, while seven of the earliest licences contain no such requirements. A number of Timber Sale Harvesting Licences carry a 50 per cent contracting obligation.

Several aspects of these contractor provisions require some comment. A minor problem is that some recent licences stipulate that the licensee's contracting obligation extends over a volume "up to" 50 per cent. Interpreted literally, this provision does not ensure any opportunity for contracting, but administration of the contract has overlooked this apparent drafting error. A more serious problem of interpretation arises in all relevant contracts, which fail to specify clearly whether the fraction to be offered to contractors applies to the allowable annual cut or the licensee's actual cut. In practice it is interpreted to refer to the latter, as it undoubtedly should, since if it were applied to the constant allowable annual cut the licensee's logging work force would have to bear the full brunt of adjustments in cutting rates from year to year, and could conceivably be thrown out of work altogether within prescribed cut control limits.

A third issue is the way in which fulfillment of the contracting obligation is measured. A licensee may let a single contract for an entire logging operation—to a so-called "stump to dump" contractor—or alternatively deal with a number of "phase contractors" which individually perform road construction, harvesting, yarding, trucking, and so on. In the latter case it is necessary to weigh the contribution of different phase contracts toward meeting the general contractual obligation. The Forest Service has recently developed a formula for this purpose which ascribes weights to each phase in proportion to its relative cost in appraisals, and requires licensees to meet a minimum balanced percentage for each phase. This formula appears generally satisfactory for this purpose.

A more fundamental question concerns the need for generating opportunities for contractors through these licence requirements. Some contractors hold that the requirements should be increased, or applied more widely, but the evidence does not suggest a need for securing further the position of contractors by these means. Under most licences that contain these provisions the requirements are exceeded, and as allowable annual cuts have been increased over the years the volumes that must be contracted have increased roughly in proportion. In the Interior, most logging is contracted regardless of contractor clauses, and contractors now account for a substantial propor-

¹⁵ One of these requires, in addition, that 65 per cent of the cut from "Schedule B" lands in two of the five blocks included in the licence area shall be offered to contractors by the licensee through competitive bidding procedures.

tion of coastal logging as well. Indeed, one of the most conspicuous features of the logging industry in recent years has been the remarkable expansion in contracting, which testifies to the relative efficiency of these smaller enterprises (and, incidentally, to my earlier conclusions about economies of scale in logging). As a general matter, this growth in contracting cannot be attributed to contractor clauses; the success of the contracting industry undoubtedly reflects the relative efficiency of this form of enterprise.

Government intervention aimed at manipulating industrial structures through these means should be used discriminately, otherwise it has a tendency to impede industrial flexibility. Contractor clauses should be designed in the light of local needs to forestall serious disruptions to established operations that are likely to result otherwise, where new licences are issued. I see no justification for this artificial protection where these dangers do not exist, or where contracting is well established under normal arrangements with licensees.

A much more urgent matter, according to evidence available to the Commission, concerns the contractual arrangements governing the relationships between contractors and licensees. In some cases these are only oral agreements. Where they are written they are usually drafted by licensees and seem to afford excessive protection to them while offering little security to the contractors. It should be emphasized that in the great majority of cases the relations between the parties are smooth, the licensees recognizing the value of dependable contractors. But there are evidently repeated examples of friction arising from unbalanced contractual provisions and this problem should be rectified.

It has been suggested that the government should prescribe the form of contracts to be used between licensees and contractors but, in my judgment, this should be regarded only as a last resort. The government should not intercede in private business relationships of this kind unless the two groups are unable to develop satisfactory arrangements by dealing with each other directly. Accordingly I recommend that the government encourage contractor associations and representatives of licensees to address themselves jointly to this problem, with the objective of designing standard contractual forms to be used in the industry, as has been done in the construction industry. Only if these groups are unable to reconcile their differences should the government take the initiative in developing a prescribed standard form of contract.

Finally, my recommendations respecting the structure of tenure forms would broaden opportunities for smaller, independent licensees. In recent years contracting firms have not often sought to obtain their own harvesting rights: many existing licensing arrangements impose heavy capital requirements for roads and extensive management obligations; they have been oriented toward the needs of manufacturing concerns; and dependable log markets have waned. My proposals for revising the Timber Sale Licence system will remove many of these obstacles, and my recommendations to enhance log marketing should expand opportunities for independent logging, both on the Coast and in the Interior. It is to be hoped that many contractors will take advantage of this new scope for independent logging, adding a vigorous new element to the distribution of timber rights.

THE FORESTRY INDUSTRY

The future of forestry in British Columbia holds enormous potential for the development of a new silvicultural industry. Hitherto, responsibilities for forestry have been largely delegated to licensees, with the Forest Service undertaking direct responsibility for certain activities such as seedling production and reforestation on some lands. In the future, forestry practices will undoubtedly expand, in the form of planting, spacing, thinning, and other types of stand improvement, seed collection and, as I suggested in Chapter 20, perhaps forest nurseries. Already some enterprises specializing in contractual forestry services of this kind have begun to emerge, and the government should encourage their development.

I have recommended that licensees be relieved of most forestry responsibilities under certain forms of rights, but it is not necessary for the Forest Service to carry out all this work itself. Both the agency and licensees have considerable experience in contracting such work to others, an arrangement which undoubtedly affords significant advantages in terms of the flexible availability of specialized personnel and facilities. As silvicultural activity expands with the management of new crops, the forestry industry could well develop into a significant new sector, embodying needed forestry expertise and improving the efficiency of many aspects of resource management to the benefit of both timber companies and the Crown.

EXTERNAL OWNERSHIP AND CONTROL

My terms of reference instruct me to consider the degree of domestic participation in the ownership and control of the province's forest industry. In Chapter 4, I reported the results of my investigations of this issue, which indicate that companies which are entirely or mostly owned by foreign shareholders control about a third of the industry.

The extent of foreign participation in the Canadian economy has received a good deal of attention in recent years, and there is no doubt that it is very extensive in comparison with other industrialized countries and that it has been comparatively unrestricted. The federal response to this problem was creation of the Foreign Investment Review Agency, which in 1974 began to exercise surveillance over non-resident takeovers of Canadian business enterprises. However, the Agency does not concern itself with by far the largest source of increase in foreign ownership and control, namely the expansion of existing foreign enterprises into related businesses, and has only recently concerned itself with the establishment of new businesses in Canada by foreign firms.

The arguments for and against foreign participation in the economy are many and varied, and I cannot review them all here. The alleged advantages are mainly linked to the beneficial effects of capital inflows, improved marketing connections, and associated transfers of technology and managerial skills. Critics contend that continued foreign investment aggravates balance of payments problems, distorts exchange rates, biases domestic industrial development (particularly toward capital intensive resource industries), creates truncated export industries, allows profits to be shifted to foreign parent companies, discourages domestic research and entrepreneurship,

creates instability through vulnerability to decisions of foreign owners and governments, and leads to undesirable external influences on domestic public policy.¹⁶ All of these arguments require a good deal of careful analysis, and many of them obviously fall well beyond the scope of this inquiry.

However, certain features of British Columbia's forest industry have important implications for some of these arguments. First, the resource base overwhelmingly is under Crown title, and the government maintains very close control over its management. The result is that there is little scope for foreign firms to use forest resources differently from domestic users. Second, my investigations reveal no obvious differences between domestically and foreign owned firms with respect to their structure—their horizontal and vertical integration or their methods of marketing. There is no apparent truncation of foreign firms, nor any less research activity on their part relative to domestic firms.¹⁷ Third, the stumpage system which serves as the primary means of capturing the Crown's interest in timber is based on competitive market prices and does not afford much scope for foreign firms to appropriate an undue share of domestic resource values for foreign owners.¹⁸

Government should be concerned, however, about sales arrangements between domestic producers and their affiliated or associated companies abroad. Through adjusting transfer prices it is possible for multinational companies to shift profits from one country to another, and there are sometimes tax or other incentives to do so. In addition, a subsidiary company may be restrained from competing with its parent or affiliates in product markets.

I have no evidence that profits are shifted abroad through transfer prices by companies operating in British Columbia's forest industry, and if it happens it is probably confined to pulp and paper sales where marketing links with parent companies are most common. Even in these cases, spokesmen for the relevant companies maintain that their prices are fixed at competitive levels. But there have been examples of such practices in other industries and in the forest industry elsewhere, and they are clearly prejudicial to the public interest. Responsibility for surveillance of these matters rests largely with the federal income tax authorities, but the province has an obvious interest in them as well.

Apart from these general remarks I can say little about the adequacy of domestic ownership and control in the province's forest industry in isolation from the general question of foreign ownership in the Canadian economy. By this I do not mean to imply that governments should be acquiescent about foreign ownership and control; it undoubtedly has significant economic consequences for both the patterns of domestic development and for Canada's international flows of capital and payments. It also raises serious questions relating to the susceptibility of Canadian industry to external private and governmental

¹⁶ *Foreign Direct Investment in Canada*, Government of Canada, Information Canada, Ottawa, 1972, 523 pp.

¹⁷ Kates, Peat, Marwick & Co., *Foreign Ownership and Forest-Based Industries*. Prepared for the Select Committee on Economic and Cultural Nationalism of the Legislative Assembly, Province of Ontario, 1973, 124 pp.

¹⁸ One recurrent concern in the literature on foreign ownership is that large foreign corporations may exert inappropriate external influences on a host government. Whatever the case in other sectors, it is my impression that in British Columbia's forest industry the problem is, if anything, the opposite; that the foreign companies tend to defer, in public debates and representations to government, to their domestic counterparts. If this is so (and it is only a superficial impression) it is nevertheless a problem in a society which depends on the vigorous participation in public affairs by all vested interests, because it may leave too much influence in the hands of others.

policies, extraterritoriality, and other implications for national economic and political integrity. In view of the current level of foreign ownership and control in the Canadian economy and its trends, these issues warrant careful attention and a clear policy for dealing with them.

But the degree of foreign participation in British Columbia's forest industry does not appear to warrant as much concern as that in many other sectors of the Canadian economy. It is certainly lower than in most other natural resource industries, rather widely dispersed among foreign countries, and the close governmental control over the use of forest resources as well as the generally competitive marketing arrangements limit opportunities for foreign firms to deviate from the practices of the rest of the industry. Moreover it is probably declining. In short, the present level of foreign participation in the province's forest industry does not appear to be especially critical in the context of the general issue of foreign ownership and control in the Canadian economy, and I can see no justification for special measures to alter it independently from other industries.

The appropriate national policy toward this question goes well beyond the scope of this inquiry, but it should be noted that the province has independent means of influencing ownership and control in British Columbia's forest industry. The government has (and will continue to have under my proposals in Chapter 10) broad discretionary powers to ensure that transfers of rights do not adversely affect the public interest and has the same powers with respect to the allocation of new rights. Clearly, the government should discourage changes in ownership and control that will reduce competition, unduly consolidate rights to timber, or cause unwarranted dislocation of communities through transfers of industrial activity. Indeed these problems may arise whether the relevant owners are domestic or foreign. In addition, the province can act through the provisions of the Foreign Investment Review Act to influence proposed acquisitions or development of new ventures, by foreign interests. Thus the province appears to have adequate means to oversee the pattern of ownership and control, including the extent of foreign participation, in the B.C. forest industry.

PART VII

ADMINISTRATION AND POLICY REVIEW

Chapter 24. Resource Administration

Chapter 25. Policy Implementation and Review

Chapter 26. Retrospect

RESOURCE ADMINISTRATION

During the course of this inquiry it has become apparent that the processes of public administration are as critical in determining the pattern and efficiency of forest resource use as is the tenure system itself. Indeed, the two are inextricable. While formal licensing arrangements convey the essential contractual rights and responsibilities to those who use the public forests, the manner of harvesting and management is controlled in varying degrees by discretionary powers exercised by the Forest Service, and indirectly by decisions of other government agencies as well. In this way the government's administrative structures, procedures, and practices govern the impact of the legislation, regulations, and contractual arrangements that form the legal basis for forest policy.

Concern about present forest administration is pervasive, as submissions at my public hearings revealed. Numerous commentaries and critiques of administrative arrangements and procedures and many suggestions for improvements were received not only from representatives of the forest industry but also from spokesmen for government agencies, environmental organizations, other forest users, and professional organizations. In view of all this evidence, and the importance of many of the problems raised, I have found that, in order to deal adequately with the issues in my terms of reference, it is necessary to consider administrative matters in more detail than I had originally anticipated. This chapter reviews problems of organization and financing in the administration of forest resources.

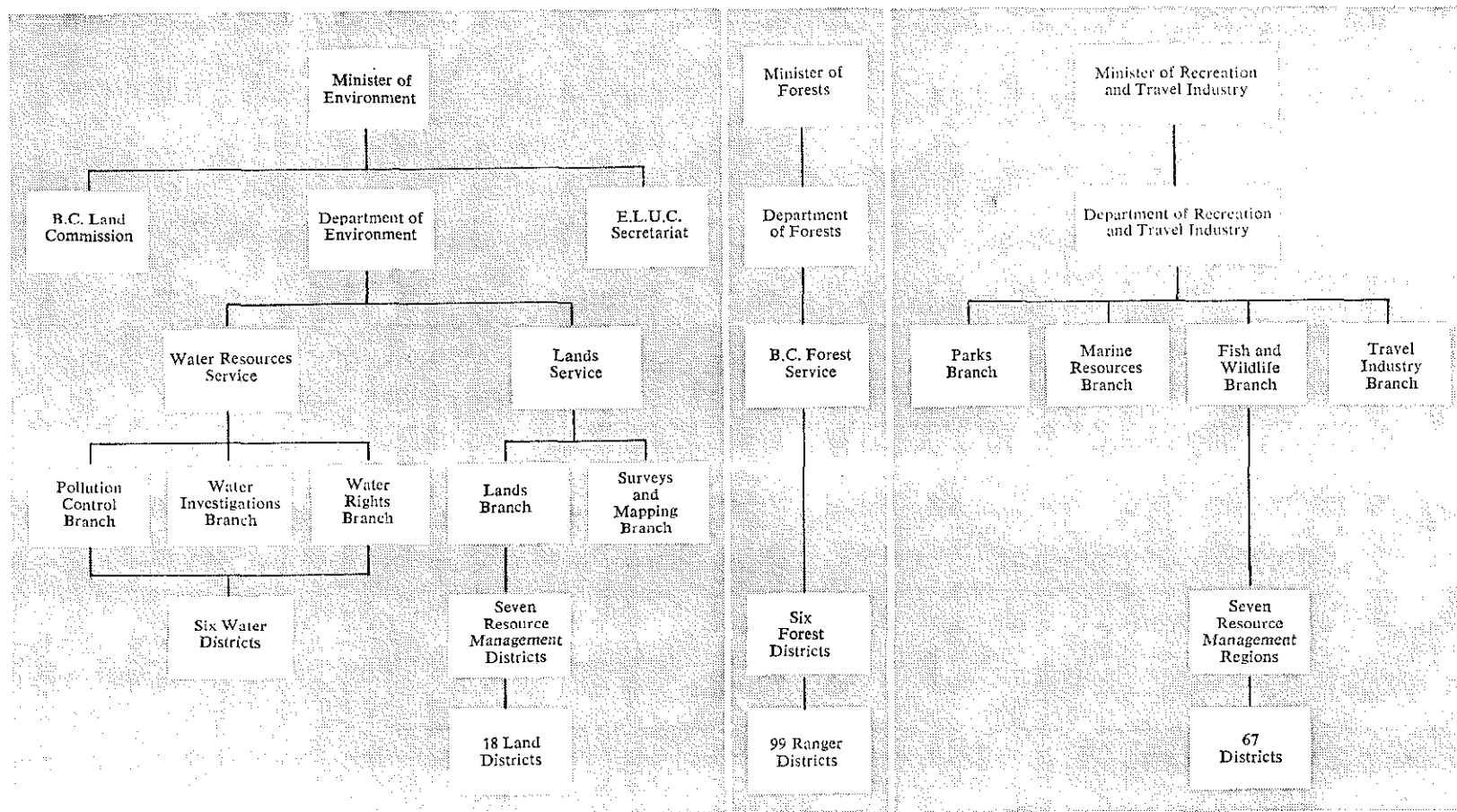
ADMINISTRATIVE STRUCTURES

A conspicuous feature of natural resource policy in British Columbia is the great variety of systems used for allocating rights over Crown property. A host of licences, leases, permits, and area designations has been developed to make each resource available to users, and these are administered by the several resource agencies. As a result, a single tract of Crown forest may simultaneously be covered by one or more authorizations, giving access to Crown resources for such diverse purposes as timber production, water withdrawal, grazing, guiding, trapping, mining, and outdoor recreation. The administrative arrangements that govern these overlapping uses for Crown land have extremely important consequences for the efficiency of resource use.

A major issue is the division of responsibilities among the several agencies of government. This is presently undergoing change; several significant alterations in Ministerial responsibilities have been made during the past year, and as this report is being written, a number of organizational changes are being introduced under the recent Government Reorganization Act.

Figure 24-1

ORGANIZATIONAL STRUCTURE OF PROVINCIAL RESOURCE MANAGEMENT AGENCIES



AGENCY ORGANIZATION

Figure 24-1 schematically portrays the lines of responsibilities relevant to forest management that appear to have emerged. The Lands and Water Resources Services, which for several decades had, like the Forest Service, been part of the Department of Lands, Forests and Water Resources, were separated and placed under a newly created Department of Environment. The Forest Service is now the sole agency in the new Department of Forests, responsible to the Minister of Forests (although the current incumbent holds the position of Minister of Mines also). The Department of Recreation and Conservation, which included the Fish and Wildlife, Parks, and Commercial Fisheries (now Marine Resources) Branches, was eliminated and these agencies now form part of the new Department of Recreation and Travel Industry. A proposed Outdoor Recreation Branch in the Department of Recreation and Travel Industry is not yet functioning but will, if constituted, be directly concerned with recreational use of forest lands. The Land Commission, formerly responsible to the Minister of Agriculture, and the Environment and Land Use Committee Secretariat, now report to the Minister of Environment.

Besides the Forest Service, the provincial agencies most directly concerned with forest resource management and use are the Lands Service, the Fish and Wildlife Branch, the Parks Branch, the Water Resources Service, and the Environment and Land Use Committee Secretariat. There is, of course, a wide range of other provincial and federal agencies that are concerned with forest related activities—dealing with such diverse matters as fisheries, navigation, safety, highway use, and so on—but the concern here is with the agencies involved mainly with forest resources.

Forest Service. The Forest Service is the agency with widest responsibilities for managing and regulating the use of forest land in the province.¹ By statute it is specifically charged with responsibility for “all matters relating to or otherwise connected with forestry”.² Only the Minister in charge of the Forest Service is empowered to grant timber rights over Crown land, and the agency has jurisdiction over forest revenues, resource management and administration, and execution of its legislation—the Forest Act and the Grazing Act.

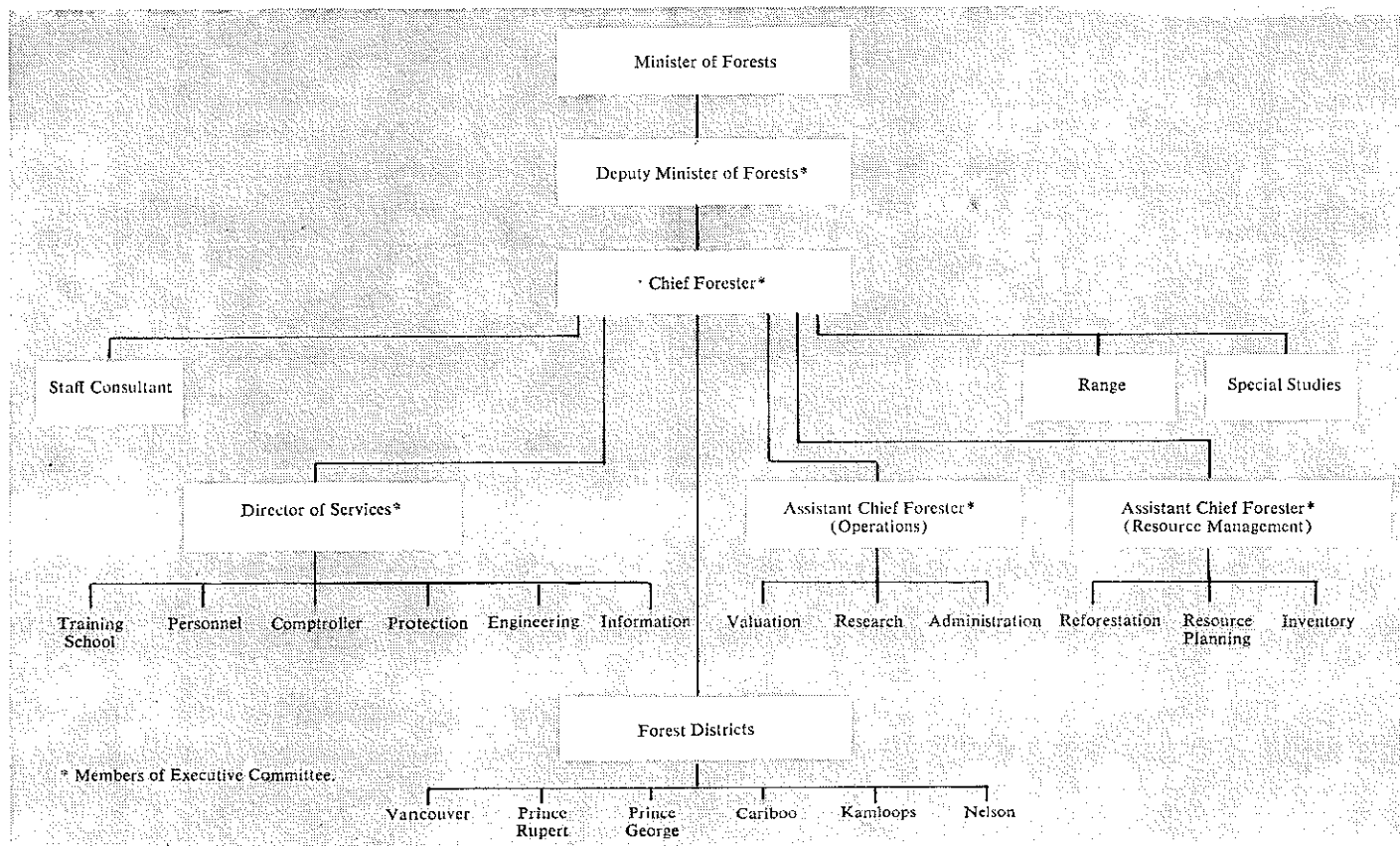
These overriding responsibilities for forestry extend throughout the province, but the Forest Service asserts even wider jurisdiction in the 94 Forest Reserves which cover some 75 million acres of Crown forest land. Once areas are given this designation by Cabinet, they are to be used only for timber production, grazing, recreation, or other forest uses. They lie outside the jurisdiction of the Crown's land agency, the Lands Service; and rights to occupy them may be conferred only by the Forest Service, under its system of forest licences, Grazing Permits, and Special Use Permits.

The organization of the Forest Service is depicted in Figure 24-2. Directly responsible to the Minister is the Deputy Minister of Forests. The Chief Forester of the Forest Service reports through the Deputy. At Victoria headquarters, responsibilities are then spread among six officers who report to the Chief Forester. The Director of Services supervises the Training

¹ By virtue of the Government Reorganization Act the traditional statutory responsibilities of the Forest Service now technically are those of the new Department of Forests.

² Forest Act, s. 5.

Figure 24-2
ORGANIZATION OF THE B.C. FOREST SERVICE



Source: B.C. Forest Service Annual Report, 1975.

School, the Comptroller, and the Personnel, Protection, Engineering, and Information Divisions. Two Assistant Chief Foresters share responsibilities for six other Divisions: Valuation, Research, Administration, Reforestation, Inventory, and Resource Planning. Also reporting directly to the Chief Forester are the Special Studies Division, the officer in charge of range management, and the Staff Consultant to the Forest Service's Executive Committee. The latter committee is composed of the Deputy Minister, the Chief Forester, both Assistant Chief Foresters, and the Director of Services.

Each of the six Forest Districts is headed by a District Forester, who is responsible to the Chief Forester. However, routine operational problems from the Districts are usually channeled directly to the Assistant Chief Forester (Operations). Each District Forester is supported by a District staff: an Assistant District Forester, and foresters in charge of operational divisions which correspond, with a few exceptions, to the divisions at headquarters. Within the Districts, zone foresters take responsibility for operational administration over specific areas. And there are 99 smaller Ranger Districts, administered by Forest Service Rangers.

As the principal agency for administering forests, the Forest Service has taken the lead in co-ordinating forest development with the other relevant branches of the provincial and federal governments. The functions of these other agencies and the ways in which their responsibilities interact with those of the Forest Service are briefly described in the following paragraphs.

Lands Service. The Lands Service acts as the Crown's agent in granting rights over public land for most general purposes. It transacts fee simple grants, and conveys agricultural, grazing, and residential leases under procedures prescribed in the Land Act. The authority of the Service to dispose of Crown forest land is qualified, however: it has no power to convey rights over lands in Forest Reserves, and even outside these areas the Land Act prohibits it from granting title over Crown lands suitable for timber production unless, in the opinion of the Minister of Environment, they are "required for agricultural settlement and development or other higher economic uses".³

As well as discharging its Crown land disposition responsibilities, the Lands Service acts as the central agency for recording the legal status of all lands under provincial jurisdiction and acting as a clearing house for information about the rights conferred by the other resource agencies. Finally, the Lands Service administers the Ecological Reserves Act and the Green Belt Protection Fund Act.

Fish and Wildlife Branch. In spite of their close physical interdependence, fish and wildlife resources are administered separately from forests. In the Canadian constitutional framework the province enjoys exclusive jurisdiction over resident wildlife, and the federal Parliament is assigned responsibility for all fisheries and migratory birds. Under a long-standing federal-provincial agreement, the Fish and Wildlife Branch has assumed responsibility over fresh water fisheries and certain shellfish, while the federal Department of the Environment—through its Fisheries and Marine Service—controls marine fisheries and anadromous salmon. As a result, the division of responsibilities for fish and wildlife is rather complicated, as summarized in Table 24-1.

³ Land Act, s. 19.

Table 24-1

DIVISION OF RESPONSIBILITIES FOR FISH AND WILDLIFE RESOURCES

resource	responsible agency	relevant statute
marine fisheries (including salmon and other commercial anadromous fish, most shellfish and marine animals)	federal Fisheries and Marine Service	Fisheries Act of Canada
resident freshwater fish and anadromous sport fish (steelhead trout)	provincial Fish and Wildlife Branch	Fisheries Act of Canada
oysters	provincial Marine Resources Branch	Fisheries Act of B.C.
migratory birds	federal Canadian Wildlife Service	Migratory Birds Convention Act of Canada
all other wildlife	provincial Fish and Wildlife Branch	Wildlife Act of B.C.

Each of these agencies regulates the harvest of the resources under its jurisdiction through use permits or rights over areas. Thus commercial and sports fisheries, as well as game, are regulated by means of licences and bag limits. In addition, the Fish and Wildlife Branch, under the Wildlife Act, allocates guiding territories and registered traplines that convey commercial rights over designated areas covering most of the province, and oyster culture and harvesting rights are granted by the Marine Resources Branch over tidal beaches.

The Fish and Wildlife Branch is headed by a Director and three Assistant Directors comprising an executive committee at headquarters in Victoria. Of the six sections of the Branch, three—wildlife management, fisheries management, and habitat protection—are directly concerned with forestry matters. For field administration the province is divided into seven resource management regions, each of which is headed by a regional supervisor and a staff of conservation officers, biologists, and service personnel. The total permanent staff of the Branch is about 340: about 70 per cent field personnel, the remainder being divided among the Victoria headquarters, fish hatcheries, and an information and education office in Vancouver.

The Fish and Wildlife Branch has traditionally been concerned with regulating hunting and fishing, but over recent years it has gradually expanded its role to include environmental protection. The quantity and quality of fish and wildlife resources is dependent upon the condition of their natural habitats, which in turn are heavily influenced by forests and the patterns of forest development. With rapid expansion of industrial forest operations and growing public concern over the quality of the natural environment, the scope of the Branch's activities has broadened markedly; its involvement in forest development planning, particularly, has become one of its major functions (see Chapter 19).

Parks Branch. Before 1957 the Parks Branch was part of the Forest Service, and until the recent reorganization of government departments it was included in the Department of Recreation and Conservation. It is now an agency of the new Department of Recreation and Travel Industry, and administers the Park Act.

In Provincial Parks, industrial timber harvesting is generally prohibited. The main exceptions are certain old temporary tenures issued before the lands were designated as parks. In addition to administering and developing existing parks, the Parks Branch concerns itself with identifying the recreational potential of other lands and assessing the desirability of reserving and dedicating new areas as Parks or Recreation Areas.

The Parks Branch is headed by a Director who oversees two units, one concerned with operations and the other with development of new parks. As well as the Park Act, the Branch administers the Archaeological and Historic Sites Protection Act and is responsible for special Wilderness Conservancies established under the Environment and Land Use Act.

Water Resources Service. The Water Resources Service, now under the administrative umbrella of the Department of Environment, is concerned with allocating rights to use surface fresh water and regulating discharges into streams. For these purposes officials of the Water Rights Branch are authorized by the Water Act to issue Water Licences, and the Pollution Control Board issues discharge permits under its legislation, the Pollution Control Act. The third branch of the Service, the Water Investigations Branch, plays a technical role, taking inventories of water resources, monitoring snow accumulation, runoff, and so on.

The most important interfaces between the Crown's forest and water resources relate to the interaction of forest practices and stream flow regimes, and loss of productive forest land in valleys through flooding by water licensees. The dominant examples of the latter are the massive developments of the B.C. Hydro and Power Authority in the northeastern and southeastern regions of the province.

Environment and Land Use Committee Secretariat. The Environment and Land Use Committee was established by the 1971 Environment and Land Use Act, as a forum for consultation among the Ministers whose responsibilities relate to natural resources. It is now comprised of the Ministers of Environment, Forests, Mines and Petroleum Resources, Health, Agriculture, Highways and Public Works, Economic Development, Municipal Affairs, and Recreation and Travel Industry. It is chaired by the Minister of Environment. In 1973, a Secretariat to the Committee was created to serve as a central repository for land inventories, and to carry out special studies assigned to it by the Committee. Special assignments have involved analysis of particular land and resource use conflicts, evaluation of major resource developments, and preparation of guidelines designed to mitigate and reconcile conflicting resource uses.

The Secretariat is not included in any government line department, but is responsible to the Committee of Ministers. Since the recent reorganization of Ministerial responsibilities, the Minister of Environment, as chairman of the Cabinet Committee, has directed the Secretariat's activities.

PROPOSED STRUCTURAL CHANGES

I have received many suggestions about the structural organization of these resource agencies, ranging from the maintenance of the *status quo* to complete amalgamation of all of them into a single resource department. The most common criticism of forest licensees is that they must now deal with several agencies, resulting in repetitious field inspections, delays, and contradictions, when seeking approval of operational plans. Understandably, they tend to advocate arrangements that would permit them to conduct their business with the government through a single, authoritative agency.

Amalgamating all resource agencies into a single department has some intuitive appeal, but it also poses problems. A major concern is that specialized agencies such as those reviewed above vary considerably in size and strength, and a small agency may be so submerged in a larger organization that it would lose its identity and weaken the influence it can exercise as an independent specialized group—particularly if it is identified with a different sector of the public which expects its special interests to be advanced in Cabinet by a separate Minister. Amalgamation may therefore result in less effective assertion of conflicting interests, and a less attractive professional environment for certain specialists. The danger of creating a bureaucracy so large and with such diverse responsibilities that it lacks focus and responsiveness must also be faced. It is my impression that some of these difficulties have been encountered in omnibus resource departments established in some other provinces and elsewhere. Any amalgamation of agencies should therefore be done selectively, and only where the advantages to be realized clearly outweigh these dangers.

In my judgment the appropriate administrative structure must be determined primarily on functional grounds. In this connection there is a tendency to confuse the authority to regulate industrial operations (through forest licensing) with the responsibility for planning forest development, discussed in Chapter 19. There is an important distinction, conceptually at least, between planning resource use and regulating operations. Planning can involve the co-ordinated efforts of several separate agencies, while supervision of particular users such as timber licensees can remain the responsibility of a specialized agency. Indeed, it would be clearly impractical (and in some cases constitutionally impossible) to bring under one departmental umbrella all the agencies that need to be consulted in the planning process, because in particular circumstances they include such diverse entities as the Provincial Archaeologist's Office, the Departments of Agriculture, and Highways and Public Works, the federal Department of the Environment, local governments, and so on. In short, while I consider that the Forest Service should be the agency directly and solely responsible for administering the forest tenure system and regulating forest operations, this does not imply that all agencies involved in planning forest development should be amalgamated with it.

To the contrary, it is desirable that some agencies maintain their separate identities. There would be few advantages to be gained from relocating the Water Resources Service, because most of its activities bear no direct relationship with forest resource use. Although the Parks Branch is mainly concerned with Crown forest land, there is little interaction between its activities

and timber extraction. For the time being at least I see no compelling need to merge it with the Forest Service.

The Lands Service and the Environment and Land Use Committee Secretariat should remain independent for other reasons. In contrast to agencies concerned with the use and management of particular resources (such as water, forests, and fish and wildlife) these are more concerned with the allocation of resources among alternative uses, and therefore have an important role in guiding broad patterns of resource use. Such choices should not be left to agencies that have special, and often conflicting interests, and that vary in strength and influence. For this reason I consider it essential in an environment of public ownership that the specification of broad planning objectives and the determination of general patterns of resource development and use be the responsibility of an expert, neutral agency which is not identifiable with any particular use or group of users. The Lands Service, and especially the Environment and Land Use Committee Secretariat, are well structured for this purpose.

If responsibility for broad provincial and regional planning is assumed by a neutral agency as I have suggested, and if other agencies having only a tangential interest in forest management remain separate, the issue reduces to the desirability of integrating the Forest Service and the Fish and Wildlife Branch. There is now a very strong case in favour of bringing together the expertise in environmental protection, that has been developed within the Fish and Wildlife Branch, and the forest management responsibilities of the Forest Service. Their responsibilities have converged to such an extent, and improvements in resource management depend so heavily on continuous and intimate interplay between the disciplines now embraced by these two agencies, that their present structural separation in different departments is an impediment to progress in environmentally sound resource development. Moreover, some of the most critical wildlife management problems relate to range use and competition between livestock and big game. I have already endorsed the current arrangement in which the Forest Service is responsible for grazing, and I have no doubt that range management, which increasingly requires co-ordination of livestock, wildlife, and forestry uses, would benefit from more direct participation of the staff biologists and agrologists now within the Fish and Wildlife Branch.

The primary benefit of integrating these two agencies would be the undivided responsibility, within a single organization, for ensuring that resource planning and administration at all levels recognize the constraints of both industrial needs and environmental protection. Judging from problems discussed at my public hearings, other more specific benefits may be expected as well:

- i) Conflicts would be more easily resolved at the field level, avoiding the tendency to refer disagreements to higher authority where lines of responsibility are separate.
- ii) There would be greater scope for decentralization of decision-making authority with field staff responsible for a wider range of resource uses. (Later, I point to the need for more delegation of responsibilities to forest officers in the field; the traditionally greater independence of field officers of the Fish and Wildlife Branch may well complement this objective.)

- iii) Efficiency in field work would be enhanced, particularly through co-ordinated gathering and interpretation of inventory data for development planning. Presently, independently determined priorities and separate budgeting constraints often lead to duplication of survey work or gaps in required information.
- iv) Dealing with licensees on the most important issues affecting forest operations would tend to be more co-ordinated.
- v) Administration would be more efficient if field officers, support personnel, equipment, and other facilities were shared.

Integration of the Fish and Wildlife Branch with the Forest Service would forestall two other adverse tendencies in resource administration. Since each agency requires the kind of expertise found in the other, there is a trend toward duplication of personnel. Thus the Fish and Wildlife Branch has already begun to recruit foresters, and the Forest Service recreation specialists. These staffing arrangements tend to isolate specialists from the centres of strength of their disciplines and sometimes to retard their professional development.

Another tendency, which I regard as very serious, is toward decision-making by consensus where public officials with different lines of responsibility seek to co-operate. There is a natural inclination in such circumstances for the representatives of one agency to make every effort to obtain the concurrence of other agencies before making decisions, to avoid vulnerability to public criticism and inter-agency conflicts. But this often results in lengthy delays, unreasonable compromises, and a clouding of accountability. In extreme cases, separate agencies may involve private groups in their efforts to seek concessions from other resource interests, and professional public servants may thereby lose the initiative in resource planning. In Chapter 19 I emphasized that while consultation and co-operation among agencies is obviously necessary for integrated resource use management, responsibility for the design and execution of operational plans must be vested in a single accountable agency with authority to make decisions, however awkward, in light of the information and advice available. The adverse tendencies noted above would be alleviated by ensuring that the responsibilities of the officers of the relevant agency encompass the major interests affected by its decisions.

All these considerations lead me to conclude that structural integration of the Fish and Wildlife Branch and the Forest Service is desirable. However, I am reluctant to recommend that this be done precipitously, for two practical reasons. One, while there has been considerable progress in the development of understanding between foresters in the Forest Service and fisheries and wildlife biologists in the Fish and Wildlife Branch in the last few years, it cannot be said that this has progressed to the point at which either can accept responsibility for the work now done by the other. This is important, because successful integration of the two agencies would require that personnel for supervisory positions could be drawn from any of the pertinent disciplines represented in the agency, such as forestry, biology, or agrology. In my judgment, the training and experience of professionals has not yet left them with sufficient breadth to make this practicable. Second, the Forest Service is a much bigger agency, and has been perceived to have

much more power than the Fish and Wildlife Branch although, as I have explained, the influence of the latter in resource management has been increasing rapidly. I fear that if the two were integrated now, fisheries and wildlife personnel would be smothered in an agency dominated by foresters; their effectiveness, which is now augmented by their separate identity, would tend to be diminished. Moreover, those who now look to the Fish and Wildlife Branch to represent their interests may well feel alienated from an agency responsible for industrial forest development.

I therefore propose that the two agencies retain their separate identities for the time being, but that they be brought together in a single Department of Forest and Wildlife Resources under the authority of a single Minister. It would be most desirable, also, for these two agencies to have their offices in the same premises, both for greater efficiency and for the convenience of industry and members of the public. This should apply to regional headquarters and, where practical, to field offices (such as in Ranger Districts) as well. Initially, at least, each should be represented at the policy level by its own Deputy Minister or Associate Deputy Minister. This will permit closer co-ordination of policies, priorities, and budgeting while preserving the specialized functions of each agency. I believe that this is in itself a logical grouping of Ministerial responsibilities, but it will also provide valuable experience in assessing the desirability and feasibility of further integration, particularly of responsibilities for habitat protection.

ADMINISTRATIVE DISTRICTS

For purposes of administering Crown land and water resources, most of the major resource agencies of the province developed, over the years, their own field organizations and deployed their staff in response to their work demands. The result is that each agency divided the province into a different number and pattern of administrative districts, and the regional offices had differing degrees of responsibility. Thus the Lands Service had six Land Districts, subdivided into smaller administrative units; the Fish and Wildlife Branch had eight regions, with 67 district offices; the Forest Service had six Forest Districts divided into Ranger Districts, and so on.

Until recently, these inconsistencies in regional designations and administrative centres were of little consequence, because each agency carried out its functions more or less independently. But in response to the new demands for co-ordinated resource planning, a programme of unification of administrative districts and regional headquarters has begun.

In 1973 the Legislature's Select Standing Committee on Forestry and Fisheries, concerned about co-ordination of the activities of various resource agencies, recommended that their varying administrative districts be rationalized and all district staffs be located in the same centre. Subsequently, following discussions among the resource departments, the Environment and Land Use Committee Secretariat designated new Resource Management Regions for the province, as shown in Figure 24-3. The several agencies are now in the process of re-deploying their field organizations to conform to these seven Resource Management Regions, with headquarters at Nanaimo, Vancouver, Nelson, Kamloops, Williams Lake, Prince George, and Smithers.

The Lands Service, the Fish and Wildlife Branch, and the Water Resources Service have already adopted the new regions and headquarters.

The Forest Service, with its considerably larger staff and regional organization, so far has retained its six Forest Districts with headquarters at Vancouver, Nelson, Kamloops, Williams Lake, Prince George, and Prince Rupert. Because of the special complexity and cost of reorganizing the Forest Service's field work, adoption of the seven Resource Management Regions will require several years to complete.

Figure 24-3

BRITISH COLUMBIA RESOURCE MANAGEMENT REGIONS



Since the earliest days of forest regulation the "Coast" has been distinguished from the "Interior", in recognition of the sharply differing forest and industrial conditions in the two zones, which are legally defined as being west and east, respectively, of the summit of the Cascade Mountains. Nearly all of the Vancouver Forest District and a major part of the Prince Rupert Forest District are in the Coast zone, the remainder being in the Interior. Some important aspects of forest policy distinguish between these two regions.

I have not studied the delineation of the new Resource Management Regions in detail, but I should like to make three observations with respect to them. First, as a general principle I strongly endorse the rationalization of administrative districts and unification of the centres for the field headquarters of the various agencies. The problem of co-ordinating public administration

is difficult enough without geographical separation of authority and inconsistencies among jurisdictions. Second, I consider it important, in particular, to designate a District forest administration for Vancouver Island. Vancouver Island has hitherto been administered by the Forest Service as part of the Vancouver Forest District, from Vancouver. But the magnitude of forest activity and special complications both on the Island and in the lower mainland, coupled with the difficulties of communication between the two, call for separate District administrations, as provided by the new regions.

Third, I am concerned that the demarcation of the Cariboo region, including as it does a strip of the central Coast as well as the central Interior, may prove to be awkward for forest administration. I have already mentioned the different administrative arrangements between the Coast and Interior, which relate to such matters as stumpage appraisals, scaling, and utilization controls, and so linking the zones in administrative units will tend to complicate administration. Moreover, few, if any, licensees operating in the Coastal portion operate in the central Interior, so that administration of their operations from Williams Lake is likely to be an inconvenience for both them and the Forest Service—a problem that is aggravated by poor road connections through this part of the Cascades. The maximum benefits from rationalized resource administration districts will be realized only if they take account of the particular problems of each agency. I have not considered the problems of other agencies, but I believe that those of the Forest Service are sufficiently serious to justify a reassessment of this particular boundary.

FOREST SERVICE ORGANIZATION

The internal organization of the Forest Service has gradually evolved over the years to accommodate the agency's increased size and broader responsibilities. It has frequently undertaken studies, in varying degrees of formality, of its own organizational problems; their success in finding solutions has also varied. Today, both officers of the Forest Service and others who deal with the agency point to organizational problems that warrant attention.

I have considered some of these problems, but I have not undertaken the detailed study of the Forest Service's administrative structure that would enable me to recommend reorganization with confidence. It is nevertheless clear that serious organizational problems exist, and if the extensive recommendations in this report are implemented they will call for new administrative arrangements as well.

I therefore propose that the government initiate a thorough external review of the Forest Service's administrative structure and organization. I suggest it be external because, although the Forest Service itself would provide much of the needed information and advice, an outside reviewer can often make recommendations for changes with fewer inhibitions than internal assessors, and may be able to take better account of external interests in Forest Service organization. It is essential, however, that the reviewers understand and be sensitive to the complex problems faced by the Forest Service. I suggest that a qualified public administration consultant, assisted by someone intimately familiar with forest administration, be retained for this purpose.

This review should be comprehensive, examining Forest Service administration at all levels. I feel I should draw attention to several issues that warrant particularly close scrutiny, and possible approaches to their resolution.

On-site field responsibility. As a general matter, Forest Service administration appears to be characterized by insufficient delegation of responsibility. There seem to be too many instances in which those at the first line of communication with licensees and others either lack authority to make decisions or are not required to make them, with the result that problems are too often passed on to higher levels. This tendency, repeatedly alluded to by those who deal with the Forest Service, is undoubtedly linked with the calibre of staff the agency is able to recruit and retain, and to the adequacy of in-service training arrangements.

A major priority in any restructuring of lines of responsibility within the Forest Service is the need for a framework that will facilitate on-site field responsibility and authority. As I have repeatedly emphasized in this report, a *sine qua non* for efficient forest management is the availability, in the field, of capable field personnel who can deal with problems as they arise.

Toward this end, the Forest Service began several years ago to subdivide the Forest Districts into zones, with a forester assigned to each. By 1971 all Districts had been divided up in this manner. A zone typically comprises several Public Sustained Yield Units, and the zone forester works out of District headquarters.

By encouraging government foresters to become familiar with the problems and needs of specific areas of forest land, this progressive innovation promises significant improvement in the quality of public forest administration. The zone forester system has been welcomed enthusiastically by the forest industry, and many participants at the public hearings urged that it be strengthened by moving zone foresters out of District offices into their areas of responsibility, where they would live and work as resident foresters. This suggestion has much to recommend it and I propose that it be fully explored.

There appear to be at least three other aspects of the zone forester system that warrant attention. One is that their zones of responsibility have hitherto been too large. To enable them to cultivate an identification with specific areas and the operations within them, they should probably not have responsibility for more than one or two management units containing a significant number of operations. Second, the Forest Service has found it difficult to recruit experienced foresters and retain them in these positions long enough for them to develop and benefit from the desired familiarity with field conditions and operational problems. Thus most zone foresters have been fresh graduates who soon pursue higher positions in District or headquarters offices. It therefore appears necessary to find means of raising the status of zone foresters and enabling them to advance in these positions.

Third, the functional relationship between zone foresters and Rangers appears to need rationalization. Rangers are in many respects the bulwark of the Forest Service, and are the first line of communication between the operating companies and the government. In comparison with zone foresters, Rangers often possess much greater experience and local knowledge; all have received special training in the Forest Service's Training School and often forestry education in technical colleges as well. Traditionally, Rangers and Assistant Rangers have been the only staff resident outside the main District

offices with specific, continuous responsibilities for prescribed local areas. But the lines of responsibility between Rangers and zone foresters are confused. While Rangers report to zone foresters on forest management matters, they report through Ranger Supervisors to the Assistant District Forester on others, such as protection. Zone foresters report separately to the District office through the forester in charge of timber management. These irregular channels of accountability have apparently given rise to anxieties among the staff involved and confusion in their dealings with licensees. This organizational problem should be resolved in a way that will ensure a more consistent line of responsibility from Rangers and zone foresters to District headquarters. At the same time, it is important to preserve Rangers' opportunities for advancement, so that through study, experience, and accreditation, they can qualify for zone forester and other professional or specialized positions.

Headquarters organization. As Figure 24-2 shows, the Chief Forester reports to the Deputy Minister of Forests. Some 17 years ago these two offices were held by the same person, and it is my impression that their respective functions have remained blurred. A clearer functional distinction between these positions should be drawn, with the Deputy Minister assisting the Minister to formulate and interpret policy, to make Ministerial decisions, to establish budgeting and other priorities, and to oversee Forest Service relations with other departments. That would leave the Chief Forester with responsibility for all strictly administrative matters.

Under present headquarters organization the responsibilities assumed directly by the Chief Forester appear to be excessive. In addition to controlling the central Divisions through his Assistants and the Director of Services, he is also directly responsible for all District matters, at least nominally. The desirability of creating a third Assistant Chief Forester position, to oversee and co-ordinate Forest District matters, should be examined.

The position of range administration within the Forest Service should be clarified. Traditionally a Division of the Forest Service, range administration is currently headed by a Director responsible directly to the Chief Forester. In view of the separate set of rights for allocating the use of rangelands and the special management problems involved, there should probably be a special Assistant Chief Forester in charge of this aspect of policy.

Professional and technical staff. An outside observer gains the impression that the professional staff of the Forest Service, in headquarters as well as in the field, is often excessively occupied with routine administrative and clerical functions. To the extent that effort is spent on office work that could be performed by less highly trained and expensive personnel, the Forest Service is inefficiently deploying its scarce expertise, and threatens to create an unattractive environment for professionals. Thus there should be a careful examination of functions that can be performed by administrative, clerical, and secretarial staff, thereby releasing the specialized professional and technical forestry personnel for more productive duties.

As I have mentioned previously in this report, public administrators and those who deal with them must be equipped with clear public objectives and unambiguous legislation, regulations, contracts, and administrative rules. Some scope for administrative discretion is essential, but as much guidance

as is practicable should be given to assist those who must exercise it. I have also emphasized the need for clear delegation of responsibility and decision-making authority. In designing my recommendations in earlier chapters I have tried to overcome some of the present deficiencies in these respects, which should therefore enable more efficient public administration.

FINANCING FOREST ADMINISTRATION

Inevitably, many of the Forest Service's difficulties are rooted in the strictures of its budget. Nearly all of the major criticisms of public forest management that were repeatedly brought to the Commission's attention can be traced to this underlying problem. The adequacy of Forest Service funding has two aspects which need to be considered: one is the level of financing it requires to properly fulfill its responsibilities; the other is the continuity of support required to enable it to undertake programmes that necessarily extend over decades.

The urgency of greater public support for the Forest Service was emphasized in the reports of each of the three earlier Royal Commissions of Inquiry into provincial forest policy; but in retrospect, those recommendations appear to have been largely ignored. Over the years, the staff and appropriations of the Forest Service have increased, but they have not kept pace with the growth in demands on forest resources, let alone the increasing public and governmental demands for improved resource management.

The Forest Service itself, referring to its limited financial resources in its brief to the Commission, observed:

It is unfortunate that the importance of British Columbia's forest resource and the magnitude of the administrative, technical and planning responsibilities involved is often not fully recognized. For example,

British Columbia has the greatest diversity of climatic, topographic and "forestry" conditions in Canada.

British Columbia has Canada's greatest range of social benefits derived directly or indirectly from the forest resource, including the nation's most important and diverse fishery resource.

British Columbia has Canada's most complex system of forest tenures, with some still-active tenures originating in the last century.

British Columbia has the most "intensive" stumpage appraisal system in Canada with its major demand on Forest Service capability.

British Columbia has a greater acreage of productive forest land and a greater annual harvest from these lands than all the United States National Forests combined.

In view of the above, we contend that British Columbia requires a greater level of integrated resource use planning than any other Province and, we believe, a good start has been made in this process. However, the magnitude and ever-increasing complexities of "forestry" in this Province are such that the British Columbia Forest Service and other resource departments will not be able to make any significant advance in integrated resource planning beyond the present, less than satisfactory level, with the present staffing capabilities.

Until we can upgrade the integrated planning of forested lands to provide the full range of goods and services which can be derived from them, our ability to respond to increasing demands will be progressively more limited: the benefits derived from each resource sector will continue to be far from optimum.⁴

⁴ British Columbia Forest Service, "Forest Resource Planning in British Columbia", *op. cit.*, pp. 29-30.

Meaningful comparisons with other jurisdictions are tenuous because of differing circumstances and public responsibilities, but perhaps the closest parallel is the U.S. Forest Service. That agency administers a comparable area yielding about the same timber harvest as the public forest lands of British Columbia. Its total staff numbers 32 thousand, compared with less than 3 thousand in the B.C. Forest Service; and it employs 4,897 professional foresters while the B.C. Forest Service has 327. The U.S. Forest Service's Pacific Northwest Region covers forest conditions most similar to those in British Columbia, and though the land area is somewhat smaller its timber yield equals the harvest in the Vancouver and Kamloops Forest Districts combined. Within these two comparable regions, the U.S. Forest Service employs a staff of 4,800 of which 678 are professional foresters, while the B.C. Forest Service has a staff of 774 of which 44 are professional foresters.⁵ In the wake of new budgetary restraints introduced by the provincial government in 1975 the full-time staff of the Forest Service has been reduced by some 15 per cent.

These stark comparisons, and others, are of concern not only to the Forest Service but also to licensees and representatives of the forestry profession. It is pointed out also that this province is one of the few jurisdictions on the continent that spends considerably less on forest administration than it receives in direct timber revenues (although this undoubtedly reflects as much about the lower timber value and less sophisticated revenue systems elsewhere as it does about the adequacy of funding).

But the adequacy of forest financing can properly be assessed only in terms of the Forest Service's capability in dispatching the responsibilities assigned to it by the Legislature and government. There is plenty of evidence, in addition to Forest Service testimony, that it is inadequately staffed and funded to carry out its forest management responsibilities to the standards expected of it and to which it aspires. In Chapter 19 I pointed to the present inadequacies of resource planning. Elsewhere I have referred to the Forest Service's inability to maintain adequate surveillance of forest operations and sufficient checking and supervision of licensees' operations and forestry work. I have also mentioned the lack of administrative attention to minor products, the need for more site specific regulation and regional professional staff. In spite of a repeatedly stated objective to rehabilitate the backlog of lands that require rehabilitation and reforestation there remain some 1.8 million acres—five or six times the area currently logged each year—in need of reforestation. And licensees are constantly frustrated by the inability of the Forest Service to provide the staff necessary to resolve problems that lead to costly delays and interruptions in operations.

Moreover, while some of my earlier recommendations relating to tenure policy, marketing controls, and harvesting regulations would both simplify administration and shift some responsibilities to other agencies, it is clear that the solution to many of the problems I have discussed calls for expanded Forest Service activity. Direct responsibilities for developing access to timber, less dependence on licensees for planning, and expansion of the zone forester system will all require increased funding and personnel.

The government, the Legislature, and the public must come to grips with two opposing sentiments in this province: one is the historical predilection

⁵ For a more detailed comparison, see *Ibid.*, Appendix A.

toward retaining public ownership and responsibility for resource management; the other being a traditional distaste for growth of governmental bureaucracies. But if Crown title is to be retained, and if, as my terms of reference imply, a high standard of stewardship is expected, an extremely onerous burden of responsibility falls on the Forest Service and hence also on the provincial government to provide the financial resources required to dispatch those responsibilities. It appears that we have tended to regard our Forest Service in much the same light as public forest agencies are regarded in other provinces, but their responsibilities are hardly comparable. In none of the other provinces is public ownership so pervasive or the timber so valuable; nowhere in North America are forest conditions so varied and difficult and other forest values more intermixed. And in no other jurisdiction is the economy more heavily dependent on forest resources. If, as development of our forests for their multiplicity of values progresses, the present standard of management is to be maintained, let alone improved, a considerably broader and more secure base of public funding will have to be provided.

But in present circumstances it is extremely difficult for me, or indeed for the Legislature, to quantitatively assess the deficiency of Forest Service financing. Below, I propose means of overcoming this problem. But my recommendations rest also on the special need for continuity in funding.

CONTINUITY OF FUNDING

Many resource management projects and programmes can be efficiently executed only through planned progress over a number of years, and interruptions in funding can result in misallocations and waste. For example, the reforestation programme requires a long-term effort to build up the necessary expertise and nursery facilities, maintain the seed collection and improvement schedule, prepare seed, grow (for two or more years) the particular species and type of seedlings to meet expected needs, and have them planted. Once embarked on a production schedule, any interruption will result in wasted effort. Yet in 1975, the first year in which seedling production targets were met by the nurseries, unanticipated budgetary restraints left insufficient funds to plant the available stock. Other inventory, development, and silvicultural programmes are similarly susceptible to interruptions in funding.

Much concern was expressed at my public hearings about the lack of continuity in forestry appropriations, and several solutions were suggested. A popular one was the creation of a special forestry fund, perhaps through an earmarked portion of forest revenues. Indeed, the Forest Service has had considerable experience with funds established for particular purposes, but they have rarely endured. The Forest Protection Fund is no longer really a fund, insofar as revisions to the Forest Act in 1955 replaced it with provisions for a minimum annual allocation for fire suppression; surpluses cannot be carried over from one year to the next. A Forest Development Fund established in 1948 was abolished in 1966. The Scaling Fund was abolished this year, after large deficits had accumulated. An Accelerated Reforestation Fund set aside in 1972 had a short life insofar as the monies appropriated now have almost been exhausted. Provisions for two other funds, the Silviculture Fund and the Forest Reserve Fund are still made in the Forest Act; they require annual appropriations to them, but both have been ignored for some years.

In my judgment such funds are not appropriate for financing most governmental activities. They usually depend on an earmarked share of revenues, or allocations under some formula that rarely conforms to the needs of the planned programme. Moreover, as experience has shown, they are not invulnerable to the vicissitudes of government budget priorities, although that is presumably one of their purposes.

A continuing fund offers an advantageous means of financing a public programme only where the government is committed to carry out functions that require unpredictable expenditures over time, and hence cannot be systematically provided for through annual budgets. The only significant example in forest administration is fire protection, the cost of which is high, extremely variable from year-to-year, and totally unpredictable for purposes of budgetary planning. Moreover, standards of protection can be set readily and governments are not much inclined to alter them. In this case a fund, supported by a regular budgetary allocation in an amount which, based on recent experience, will be required in an average year and may be carried forward until needed, can be a significant convenience in public financing. It can also enhance the security of the Forest Service's financing of its other activities, by removing a source of highly variable demands on its budget. I therefore recommend that the Forest Protection Fund be put on a firmer footing and financed in this way, although there will have to remain provisions for supplementary allocations in years of extreme need. But other Forest Service programmes and responsibilities do not require such stochastic expenditures, and hence can be financed through regular budgets.

TOWARD FINANCIAL PLANNING

Suitable public financing of forest management and administration requires reconciliation of two conflicting principles. On the one hand, for reasons explained above, the Forest Service needs to be able to plan its operations and programmes over periods of years, and the implications of any change in governmental support—in terms of its impact on the Forest Service's ability to carry out its responsibilities—must be visible to the Legislature and the public. On the other hand, the Legislature must retain its ultimate authority over the expenditures of public funds and reserve the right to reallocate financial priorities.

The most suitable means for dealing with this problem appears to me to be through explicit long-term planning of Forest Service objectives and programmes with their expected costs. The Forest Service should be required—under the new Forest Act I recommend in the following chapter—to prepare a forestry programme for the next five years, providing estimates of annual costs for the various activities. After consideration and possible revision, the government should approve a programme in principle; it should be included in the Forest Service Annual Report and tabled in the Legislature for the information of elected representatives and the public at large. This will provide the much needed framework for assessing the activities of the Forest Service and for revealing the implications of annual budgetary appropriations for progress toward explicit objectives of management and administration. The newly constituted Auditor-General's office should be well placed to assist with evaluating government's performance of its forestry programme.

The plan could be revised from time to time, and a new programme designed each five years.

Somewhat related schemes have recently been introduced in at least two other jurisdictions. In 1972 the government of Ontario approved in principle a silvicultural programme to regenerate unproductive lands and to achieve a specified level of sustainable harvest by the year 2020.⁶ While I do not support the methods used to determine the particular targets or the narrowness of the objectives in this case, it is a significant commitment on the part of a provincial government to a long-term forestry programme with an explicit budgetary plan. The other is the United States Forest and Rangeland Renewable Resources Planning Act of 1974, which requires the U.S. Forest Service to prepare 10-year assessments of forest resources, needs, problems, and opportunities, with projections of supply and demand for timber and (significantly) their relation to price trends, as well as 5-year resource management programmes.⁷

In several earlier chapters of this report I have referred to the way in which public funds are used indirectly to finance forestry and development through abatements to licensees' stumpage assessments. As I have explained, it is often expedient to have licensees undertake such functions rather than the Forest Service itself (although I have recommended that the Forest Service assume a wider direct role) and when they do, adjustments to their stumpage liability offer an expedient way of reimbursing approved costs. Financing public forestry programmes, roads, and other developments in this way is obviously an alternative to direct budgetary appropriations, and so should be considered jointly with the Forest Service's budget; but under present arrangements the Legislature cannot exercise systematic surveillance over the substantial portion of forest expenditures that is financed through stumpage adjustments. The proposed Forest Service's programme and budgetary plan should therefore contain estimates of expenditures under both categories—direct outlays of the Forest Service itself and stumpage offsets for reimbursable expenditures by licensees.

This kind of forward planning will undoubtedly be beneficial for the internal purposes of the Forest Service itself; but a programme endorsed by the government would, for the first time, give the Legislature and the public a clear indication of needs, priorities, and financial implications. It would almost certainly result in more systematic funding, and the consequences of any deviations in the Legislature's appropriations to the Forest Service will be readily identifiable. A necessary concomitant of this innovation is an annual reporting, in the Annual Report of the Forest Service, of its progress under the approved plan.

⁶ See *Report of the Timber Revenue Task Force to the Treasurer of Ontario and the Minister of Natural Resources*, Government of Ontario, 1975, 113 pp.

⁷ For a critique see Stuart Rich, ed., "Ecology, Environmentalism and Future Timber Supply", *Proceedings of Current Issues Conference*, Forest Industries Management Center, College of Business Administration, University of Oregon, Eugene, 1975, 108 pp.

POLICY IMPLEMENTATION AND REVIEW

Throughout this report I have stressed the critical role of forest policy in moulding the environmental, economic, and social fabric of British Columbia. I have also emphasized the importance of clarity in forest policy for effective public administration, efficient private investment planning, and essential public understanding. These considerations converge on the urgent need for reform of the instruments of policy and for continuing policy review, the subjects of this chapter.

The instruments of policy to which I refer include legislation, regulations that supplement statutes, licence contracts and permits, and the less formal rules and procedures of administration. It is the interaction of all of these in the context of the tenure system that determine how our forest resources are used and developed, and in the course of this inquiry it has become clear that each is in need of overhaul.

There is also a conspicuous lack of provision for systematic resolution of differences between the Crown and private parties in the interpretation of rights and obligations, and I propose some innovations to deal with this problem as well. Finally, owing to the complexity of forest policy and the dynamic nature of the issues involved, means for reviewing policy and administrative problems are required, and so I suggest several approaches aimed at ensuring that policy and its administration keep pace with changing circumstances and public objectives.

POLICY INSTRUMENTS

Having already discussed administrative practices and procedures in some detail, I intend to focus attention here on needed changes in the more formal instruments of policy: legislation, regulations, and contractual arrangements. While I discuss these separately, it is important to bear in mind the need for a systematic relationship between them in the context of the tenure system. Legislation, being the fundamental expression of policy and intent on the part of the Legislature, should articulate the philosophical thrusts of policy and confer the powers needed by government to transact the public's resources; regulations should supplement statutes to provide more detailed procedures for the guidance of officials in the day-to-day administration of the tenure system; and contracts executed pursuant to statutes and regulations should set out the specific undertakings between the Crown and private parties. As a result of decades of evolution, the special functions of these different devices have become seriously mixed and confused.

FOREST LEGISLATION AND REGULATIONS

It falls to an informed Legislature, in our parliamentary system, to articulate through statutes the government's responsibilities over public forest resources and to provide public officials with the necessary powers to dispatch them. Today's Forest Act has its roots in legislation enacted in 1912: the first Forest Act which established the Forest Service and reformed and codified the earliest forest policy. I should note that the name of this statute was changed in 1976 to the Department of Forests Act to accommodate a recent reorganization of government departments, and it now serves as the statutory foundation of the Department of Forests as well as a repository of forest policy. I have not adopted the new name in this report because the Forest Act is a much more familiar and concise title.

Over the decades this statute has been repeatedly amended to implement successive waves of public policy, but it has never undergone comprehensive revision. As a result it has become thickly encrusted with amendments, its structure is outdated, and its language fails to clearly express important features of policy.

A serious deficiency of current legislation is its failure to indicate the policy objectives to be pursued by the government. Management of natural resources as extensive and disparate as the forests of this province inevitably calls for decisions that take account of the special characteristics of individual sites in their physical, economic, and social contexts. Thus legislation should not presume to anticipate all the innumerable circumstances that will arise in the course of forest administration, but it should provide clear guidance to public officials, resource users, and others about the government's objectives and hence the manner in which discretion is to be exercised. Moreover, legislation should clearly specify the responsibilities of the public officials and agencies involved.

Today, some of the most fundamental policies are ignored by the legislation, and the degree of discretion given to officials is often excessive. Surprisingly, the Forest Service is under no formal obligation to manage most forests on a sustained yield basis, or even to designate Public Sustained Yield Units. Indeed, the latter term can be found nowhere in the Forest Act. The various planning procedures which have been adopted from time to time to rationalize forest development have been overlooked as well, technically leaving it open to the Forest Service to authorize timber operations without reference to any other agencies charged with administering resources. The stumpage appraisal system affords another conspicuous example; although it yields millions of dollars to the public treasury and constitutes the critical financial link between licensees and the Crown it is given only passing reference in the legislation. By simply altering its internal procedures the Forest Service can implement basic changes in its methods of evaluation which have a profound impact on the financial obligations of licensees. These are only a few examples of the lack of direction which generally pervades the Forest Act.

A second major shortcoming in statutory provisions relates more specifically to forest tenure arrangements: the failure of the Forest Act to circumscribe in unequivocal terms the dimensions of the authority given to government to deal in the public's resources. Many of the issues I have confronted

in this report have arisen from this feature of forest policy. The "quota" system, which has played such a profound role in the tenure system and has had a great influence on industrial development, rests entirely on Ministerial discretion and a sort of administrative *legerdemain*. Cloudy provisions concerning the duration of and rights to renew Tree-farm Licences and old temporary tenures are other examples.

Third, the legal foundations of some forms of tenure straddle both the Forest Act and the licence contracts, sometimes inconsistently, giving rise to serious ambiguities. For example, restrictions on the transfer of Tree-farm Licences set out in the Forest Act are at odds with parallel provisions in the licence documents themselves, and jigsawed provisions for renewability of old temporary tenures are found in both the legislation and the contracts.

Finally, the Forest Act gives detailed treatment to many aspects of forest policy which have diminished in importance with the passage of time. The inordinate statutory attention given to the fire protection responsibilities of railways has become largely anachronistic with the predominance of truck logging and the replacement of coal by diesel power. Royalties payable on minor forest products—such as ties, fence-posts, and even lagging and hop-poles—are recited in excruciating detail in the legislation. Thus the present legislation tends to place unwarranted emphasis on policy matters having minor significance, while it ignores others which are critically important.

Having considered these inadequacies, and reflected on the breadth of statutory reform implied by my other recommendations, I have concluded that a comprehensive overhaul of the Forest Act is warranted. In proposing a revision of the Act to the Legislature, the government should adhere to a few principles which will enhance the clarity of tenure rights and generally improve the usefulness of the legislation to administrators and citizens.

- i) It is critical that the new legislation set out at least the fundamental attributes of all of the policy governing forest land in the province. For example, the basic policies governing the acquisition of rights to Crown forest resources, planning procedures, and resource pricing should all be clearly specified in statute. Conversely, finer details and minor matters should be prescribed in regulations. Fundamental policy questions should not be left to unqualified Ministerial discretion, as has been the case in the past with "quota" arrangements and informal planning procedures.
- ii) It will inevitably be necessary for legislation to confer some discretionary powers, in recognition of the wide range of resource conditions, operational problems, non-timber values, and so on. However, where such powers are necessary, legislation should state the factors to be considered and the broad principles to be applied by officials in reaching their decisions. There are many examples of powers which should be qualified in this manner; the discretionary powers inherent in the stumpage appraisal system and planning procedures are two of the most obvious.
- iii) A sharp line should be drawn between the legislation required to authorize government to enter into contracts on behalf of the Crown and the rights actually conveyed by the contracts. The legislation should be devoted to conferring on government the requisite powers to bind the

Crown, specifying the basic procedures to be followed in exercising them, and qualifying their scope by designating the central features of each form of licence. Thus it is generally unnecessary and inappropriate for legislation itself to set out the terms and conditions that will govern the parties; those should be set out in contracts.

- iv) In the rare instances where it becomes necessary to alter existing contractual rights through legislation, the language of the amendments should be unequivocally framed, leaving no room for doubt about its intended application.
- v) While the Forest Act defines in the broadest terms the jurisdiction of the Forest Service as a whole, it tends to delegate to the office of the Minister inordinate direct powers, while largely ignoring the roles of the Deputy Minister, Chief Forester, and District Foresters. The decentralization of authority recommended in earlier chapters should be given formal recognition, with specific responsibilities delegated in statute to senior headquarters and District staff. While comparisons between different natural resource fields are precarious, the provincial Water Act, which assigns responsibilities to regional staff and provides avenues of appeal from their decisions, may serve as a helpful model.
- vi) The revised Forest Act should not be used to establish the Department of Forest and Wildlife Resources I proposed in the previous chapter. A separate enactment for that purpose will bring the forest administrative framework into conformity with well-established legislative practice.

I have emphasized the need for these basic revisions to the legislation because it is now so antiquated and incoherent that it is quite inadequate for its purpose as a vehicle for legislative control. Certainly, anyone who looks to the present Forest Act to acquaint himself with British Columbia's forest policy will obtain a most bewildering and distorted picture; and to those who must abide by it and administer it, it must be a most frustrating obstacle. I hope therefore that the present Forest Act will not be patched with yet more amendments, but will be subjected to a comprehensive redrafting.

CONTRACTS

Serving the fundamental function of transferring resource rights from the public domain to private parties, licence contracts are the cutting edges of tenure policy. They should set out the rights and responsibilities of licensees and the Crown, consistent with the legislation that empowers the government to bind the Crown. Within the minimum terms and conditions specified in the legislation, licence contracts can accommodate the variety of conditions respecting the resource, the industry, the environment and the social setting across the province.

But it is important that these contracts express in clear and unequivocal language the intentions of both the Crown and the licensee; ambiguities undermine the security of licence holders and create confusion for public administrators. In earlier parts of this report I have identified features of contracts that are seriously inadequate in this respect, particularly in view of the value of the rights to Crown assets they convey. The Pulpwood Harvesting Area Agreements are particularly vague, and there are serious ambiguities in Tree-

farm Licences and other contracts as well. Many contracts leave open to doubt the interpretation of crucial provisions for renewability, a matter that should be carefully circumscribed as I have recommended in previous chapters.

Other contracts, notably modern forms of old temporary tenures, Timber Sale Harvesting Licences, and many Cutting Permits contain the startling condition that the right to interpret the agreement rests with the Minister. Use of this provision should be discontinued. For the government to reserve to itself the power to interpret a bilateral agreement in which it is one of the contracting parties is grossly unfair and undermines judicial recourse. Nor, obviously, should the licensee be given the right to determine the scope of his rights, as appears to have happened in at least one instance.

If future tenure contracts are drafted with closer attention to detail, making full use of the legal expertise available to the government, they will be less likely to present these problems. And the resulting improved clarity and definitiveness of contracts, quite apart from the nature of the rights they convey, will substantially enhance the certainty and security of licensees' rights and simplify the task of public administration.

SUPPLEMENTARY AUTHORIZATIONS

In Chapter 19 I reviewed the planning requirements and the rather complicated arrangements for obtaining authorizations for operations under the various tenure forms. These supplementary authorizations give the Forest Service an important degree of flexibility in regulating the activities of licensees under their general contracts. But with the development of planning procedures, these arrangements require some modification.

First, the required planning and approval procedures should be specifically prescribed in the licence contracts, which should oblige the Forest Service to issue Cutting Permits once these procedures have been complied with. All new licences should provide that an operational plan be prepared for the District Forester's approval. The Forest Service can adapt the rigour and detail of the plan to the needs of the particular circumstances; in some cases a comprehensive resource folio plan, covering several years of logging, will be required, while in others a relatively modest prospectus will be necessary, as explained in Chapter 19. The Forest Service itself will be expected to prepare plans for the revised Timber Sale Licences.

Then, once the operational plan has been submitted, amended as necessary, and approved, authority to commence logging on prescribed areas should take the form of Cutting Permits which should set out the requirements for operations on those areas.

In some cases Cutting Permits, and not licences, provide for the cutting plan, having the effect of making the cutting plan the ultimate harvesting authorization rather than the Cutting Permit. In the interests of clarification of the licensee's responsibilities, licence contracts should specify the planning requirements that will condition the granting of Cutting Permits.

These proposals are consistent with the current arrangements for Tree-farm Licences, but for other licences they offer some simplification. Thus, in the new Forest Licence the separate cutting plan (now required under Timber Sale Harvesting Licences) should be consistent with the operational

plan and be approved prior to issuance of the Cutting Permit. A parallel procedure should be adopted for the revised Timber Licences, eliminating the present operating plans. In all cases, the Cutting Permit will become what the term implies—a final authorization to begin harvesting.

PROVISIONS FOR APPEAL

Throughout this report I have stressed the importance of clear and secure arrangements between resource users and the government, and of consistency and fairness in administering legislation, contracts, and the other instruments of policy. *Many of my earlier recommendations would add substantial equity to current policy:* eliminating inconsistencies between various forms of tenure, clarifying statutory language and contractual rights and obligations, and specifying the criteria governing the exercise of discretionary powers by public officials. However, beyond these reforms there is still the need for administrative structures to meet certain other potential inequities in tenure administration, and so I propose new appeal procedures to rectify this deficiency.

The Forest Act makes limited and inconsistent procedural avenues available to licensees to appeal decisions of government officials. In an earlier chapter I drew attention to the 1974 amendment which repealed a long-standing right of Tree-farm Licensees to take recourse to the superior courts following cancellation of their rights by the Minister, and replaced it with the right to appeal to Cabinet. This procedure is not available to holders of other tenures, and rights to appeal other decisions are closely circumscribed.

The Forest Act provides that any decision of the Deputy Minister or an "officer of the Forest Service" may be appealed to Cabinet. This procedure is triggered only where the decision in question is specifically conferred on one of these officials in the Act, but not, for example, where it is formally given to the Minister and delegated by him to his Deputy or another Forest Service official. The statute divides responsibilities between the Minister and his officials along fairly arbitrary lines, so any advantages offered by this procedure tend to be rather unevenly distributed.

Finally, passage of the Crown Proceedings Act in 1974 removed obstacles that traditionally sheltered the Crown from private lawsuits, enabling aggrieved subjects to sue the Crown for breach of contract (among other things). Hence licensees wishing to dispute the manner in which government interprets their rights may launch judicial proceedings and obtain a court's interpretation of their contractual or statutory rights.

Having reviewed the provisions for appeal contained in the Forest Act I have concluded that they suffer from serious shortcomings and are unnecessarily limited and inconsistent. The security offered by a right to appeal decisions of either the Minister or Forest Service officials to the Cabinet is rather illusory. To my knowledge this procedure has never been invoked, and where similar appeals have been taken under other provincial resource legislation it is my understanding that supplicants' appeals have seldom if ever been successful. Not surprisingly, there is a tendency for the Cabinet to ratify the decisions taken in government departments. This procedure should therefore be abandoned.

Equity in public forest management requires that licensees faced with financial assessments, penalties, or other sanctions imposed by the Forest

Service be given the right to have such decisions reviewed by independent authorities. As agent for the Crown in forestry matters the Forest Service has a direct interest in the outcome of any of its decisions affecting licensees; it is therefore inappropriate to place that agency in the position of acting as the arbiter of disputes. By doing so (as it has in the past) the Forest Service is an interested party in disputes it is asked to judge, and this inherent conflict is aggravated by the Crown's near monopoly ownership of forest land in the province. Hence disputes appealed up through the ranks of bureaucracy are not appropriate; nor, for the reasons I have explained, are appeals to Cabinet. The courts or an independent tribunal offer sounder security to licensees while relieving the Forest Service of conflicting interests.

Earlier in this chapter I recommended that the objectionable clause contained in many contracts giving the Minister the power to interpret their terms and conditions be deleted in future. Coupled with the Crown Proceedings Act this reform will open the door to judicial interpretation of the respective rights and obligations of the Crown and licensees specified in tenure documents.¹ Thus any ambiguities that arise in the interpretation of rights and obligations can be resolved by the courts if the parties are unable to reach a mutually satisfactory solution.

In this connection there is a valuable role to be played by the judiciary with regard to cancellation of licences. As I recommended in Chapter 10 this remedy should be used as a last resort, and licensees should have the contractual right to remedy alleged defaults within a stated period. Further, I proposed that the power of the Minister to cancel licences be carefully prescribed and that this remedy should be available only where the licensee substantially fails to fulfill his contractual or statutory obligations. It is important that when this power is exercised licensees are able to take recourse to the courts. This procedure will improve licensees' security of tenure significantly by transferring the ultimate power to cancel contracts from the Minister or Cabinet to the courts. To expedite judicial proceedings the new Forest Act should prescribe a summary procedure for bringing matters before the court.

It should thus be open to the courts to perform their traditional role in interpreting disputed provisions in contracts. But many of the differences that arise between the Forest Service and licensees are not of sufficient moment to warrant judicial determination, or tend to be highly technical in nature. According to testimony given at my public hearings licensees are sometimes asked to accept alterations in working plans and Cutting Permits imposed unilaterally by the Forest Service, for example, and in other cases honest differences of professional opinion concerning technical matters are a source of friction. To deal with these disputes I propose that licensees have the opportunity to be heard by a relatively informal administrative tribunal.

The Task Force on Crown Timber Disposal recently recommended that a specialized Appraisal Board be constituted to arbitrate similar issues arising from stumpage appraisals prepared by the Forest Service.² I endorse that recommendation and suggest that such a tribunal would be well suited to

¹ Under that statute the courts are not given jurisdiction either to order the Crown to abide by its contracts or to restrain it from acting inconsistently with its contractual obligations. They may merely make a declaration of rights and obligations, but I assume that in such cases the government will in practice give effect to such determinations.

² *Task Force 2nd Report, 1974*, pp. 136-143. This proposal has not been implemented at the time of writing this report.

deal with other technical forestry issues as well as appraisal matters. Indeed the two are interrelated; in cases where the government imposes new harvesting conditions, licensees' objections are often rooted in inadequate provisions for compensation. Therefore, in addition to resolving appraisal problems the Board should be given jurisdiction to hear appeals concerning disputed questions of fact which arise in connection with administration of management and development plans, waste billings, cut control penalties, Cutting Permits (including suspensions), and other similar technical matters. Licensees should be given the option of either referring such questions to the Board for binding decisions, or pursuing them in court.³

POLICY REVIEW

If he were not already aware of it, any reader who has persevered through the lengthy chapters of this report will be struck by the complexity of forest policy in British Columbia. In some respects it is too complicated, and many of my recommendations aim at simplification. But as I argued at the outset, public policy that must cope with issues of such enormous importance to economic and social welfare, and satisfactorily accommodate the wide diversity of the resource base, industrial demands, and environmental requirements will inevitably be complex. Moreover it must constantly change. If we have learned any lesson from history it is that policies designed to deal with circumstances of the time will sooner or later be rendered unsuitable as a result of the inexorable forces of technological advance, economic development, and shifting social attitudes and expectations.

In this report I have tried to unravel what I perceive to be the most conspicuous knots in a confusing web of policies that has become exceedingly tangled over the decades. I have endeavoured to propose new policies that will better meet the needs of our time and the foreseeable future, but apart from my hope that they will enhance flexibility I do not pretend that they will be suitable for the next generation. The prescription of natural resource policies that will serve the public interest for all time, enduring exogenous change, is too much to expect of any single advisor, or indeed, government or Legislature.

Forest policy must continue to evolve, and in view of its importance in this province the government and Legislature should receive guidance from the full spectrum of public and private expertise in reviewing and revising it. During my public hearings many participants emphasized the need for continuing policy review and proposed various institutional arrangements for this purpose. A frequent suggestion was a permanent forestry commission or council which would serve as a policy overseer and advisor to the government on forestry matters. This proposal has strong appeal insofar as it holds the potential for an independent and continuing assessment of policy and I have considered it carefully. However in light of the needs as I perceive them and the record of permanent commissions elsewhere I have decided to reject it. I fear that while such an agency might well inject a fresh and vigorous view initially, with the passage of time its vitality and independence would

³ I have considered alternative suggestions for *ad hoc* arbitration boards of foresters, appointed by the parties, for resolving such disputes. The flexibility of this approach is appealing, but I have concluded that a continuing board hearing all disputes would yield more consistent results. For suggestions about the structure and operation of the proposed board, see *ibid*.

tend to diminish through constant dealings with public agencies, the industry and other groups, and it might even become identified with the interests of one or another. More fundamental is the need to preserve and develop the Legislature's involvement in policy-making, and this will be most effectively ensured if a Minister of the Crown is clearly and directly accountable for policy development and administration. Moreover, the kinds of issues needing reassessment vary widely from very technical problems to matters of high policy, calling for a variety of approaches. I therefore propose a more eclectic approach to policy review.

Before turning to mechanisms for external reassessments of policy I should note that certain of my recommendations imply a spreading of responsibility for forest related matters within the government itself. As the forest economy has expanded and the demands on the resource have multiplied in kind, the Forest Service has assumed responsibilities well beyond the administration of forests, to matters in which it cannot reasonably be expected to have a special capability or, indeed, even the best expertise available within the public service itself. As a result, the time and effort of specialized Forest Service staff may often be mis-spent and the quality of programmes calling for other experts has suffered. I refer especially to the planning of regional industrial growth, highway development, the regulation of markets for certain products, and export controls. Even if the Forest Service is provided with the expanded and more systematic support I have recommended in the previous chapter, it should remain a specialized forestry agency and not be burdened with responsibilities that lie outside its sphere of expertise and that can be administered better by others.

Thus I have reviewed the increasing participation of other resource agencies in resource planning and proposed means of improving their effectiveness. I have drawn attention to the obvious role of other agencies of government such as the Department of Economic Development in determining priorities for regional development, and that of the Department of Highways and Public Works in planning main road construction. I have also proposed measures to engage regional authorities in determining appropriate objectives for local forest practices.

In addition, I wish to reiterate the urgent need for a specialized agency—such as the Forest Products Board of British Columbia—to maintain surveillance over intermediate forest products marketing and export controls, and to advise the government on these matters. I have stressed the critical (though in some respects subtle) influence of these markets, not only on public revenues but also on the structural patterns of industrial growth, and indicated serious deficiencies in current arrangements. This problem calls for the continuing attention of a specialized body, however modest in structure.

MECHANISMS FOR POLICY REVIEW

To obtain the full benefit of the expertise in the province for the task of policy review it will be necessary to seek means beyond the public service and regulatory boards, such as research institutions, consultants, task forces, and Commissions of Inquiry. Each of these is most suitable for particular purposes, and having had some experience with all of them I consider it important

to recognize the strengths and limitations of each in contributing to reassessments of public policy.

Research Institutions. There are now several more or less independent research institutions in the province that can contribute to examinations of forest policy issues, and should be encouraged to do so. Undoubtedly the largest and most independent are the universities, especially the University of British Columbia with its strong Faculty of Forestry, specialized natural resource institutes, and natural resource programmes in several disciplines. The universities contain much of the most highly qualified expertise that can be brought to bear on policy questions and in recent years (in rather sharp contrast to a decade ago) there has been a burgeoning research interest in this area.

However, university research is properly directed toward the more fundamental theoretical or conceptual problems, and academic researchers have research priorities which do not necessarily correspond to those of governments. They are not well adapted to direct their attention suddenly and single-mindedly to immediate policy issues, and governments should not expect them to do so. Nevertheless, certain kinds of resource policy problems are well suited to university research, and attention can be directed to them through appropriate research funding. I refer to problems of a scientific nature, such as ecological and silvicultural impacts of harvesting regulations; economic questions such as controls on markets, international trade, or taxation; and problems in other disciplines such as engineering, business, and law. In short, the government can benefit from university research into fundamental analytical problems, but university researchers are not well placed to deal with problems of immediacy, or those that call for mainly data collection, practical knowledge, value judgments, or the definition of the public interest.

Most other research organizations are more specialized. The federal government sponsors the Western Forest Products Laboratory in Vancouver and the Pacific Forest Research Centre in Victoria. It should perhaps be noted that this province receives considerably less federal spending for forestry, in relation to its forest resource base and production, than most other provinces. Nor can the federal effort in forest research in British Columbia compare with its extensive activity in agricultural research and experimentation, in spite of the overwhelmingly greater importance of forests to the environment and economy of this province.

The federal government should be urged to increase its contribution to forest research in British Columbia, but not necessarily through its own research institutions. Federal research institutions respond to priorities in scientific research perceived by that government, and for obvious reasons tend to avoid problems of provincial policy. Moreover, purely governmental research organizations often lack vitality, avoiding controversial questions, adopting more cautious attitudes toward dissemination of research findings, and offering less stimulus to critical commentary. To promote research into matters of policy, especially, the federal government should therefore be urged to direct its funding through universities and other independent institutions.

The Research Division of the Forest Service specializes in silvicultural research, although the new Special Studies Division has been expanding its expertise in economic and industrial affairs. The Forest Research Board is

a consultative committee of relevant provincial, federal, and industrial research interests which performs no independent functions but attempts to identify priorities and co-ordinate the research efforts of its member organizations.

Last year saw the establishment in Vancouver of a western division of the Forest Engineering Research Institute of Canada, which is supported by matching contributions from the forest industry and the federal government. At several points in this report I have stressed the need for more attention to the economic implications of regulations governing such matters as utilization and road building and this institution is well placed, and I understand willing, to undertake the assembly of the needed information from private companies for the guidance of the Forest Service and others.

Although these various institutions can contribute to the resolution of forest policy problems in various ways, there is a conspicuous absence of any independent research organization devoted to public policy analysis. Unlike other jurisdictions—particularly the United States, where there is a plethora of such specialized institutions serving a valuable research role that neither universities nor the government can play—we have none, the fledgling B.C. Institute of Economic Policy Analysis having been disbanded this year. Yet in many respects they are even more urgently needed here, particularly in the natural resource fields, because of the pervasive impact of governmental policy and the importance of public understanding of it. This province needs at least one such institution to serve as a continuing forum for expertise drawn from a broad base to investigate problems relating to natural resource policies. Preferably it should be funded jointly by several governmental and private sources to strengthen its independence and stability.⁴

Consultants. During the last couple of decades an impressive forest consulting industry has developed in British Columbia, serving not only domestic firms and governments but clients in foreign countries as well. Much of their work consists of practical studies of project feasibility, operational engineering, and forestry planning, but many consultants today can help to throw light on special problems related to forest policy, particularly those of a non-contentious nature. Clearly, specialized forestry, economic, and other consultants offer a flexible means for gathering information necessary for policy decisions and conducting special studies when the public service lacks the personnel for such tasks.

In recent years the Forest Service has sought assistance from these quarters on such matters as the role of the forest industry in British Columbia's economy, future wood fibre demand, regional development, and some of the more esoteric aspects of stumpage appraisals. I recommend in Chapter 24 that the government retain managerial consultants to assist with a review of forest resource administrative structures and it should continue to utilize this source of expertise as the need arises. But consultants are generally less suited to conduct analyses of the kind done in research institutions, or for reviewing the broad issues of public policy where diverse interests conflict.

Task forces. Small, informally constituted and short-lived panels of experts afford a valuable means of examining issues of a highly specialized or tech-

⁴ A good model is Calgary's new Energy Research Institute, which is funded jointly by the Province of Alberta, the federal government, and private sources.

nical nature. Such task forces offer a number of advantages. Appointed to review a specific aspect of policy, they are capable of mobilizing quickly and usually inexpensively the combined expertise of a handful of professionals familiar with the issue. Their informality does not preclude discussion with interested members of the public, but neither does it call for the formal trappings and more elaborate procedures associated with Commissions of Inquiry. But this implies that task forces should be used discriminately, for addressing problems in which the interested members of the public are easily identifiable and whose views can be informally solicited. They must be given very explicit terms of reference which do not require them to make value judgments.

Thus the 1974 Task Force on Crown Timber Disposal provided an efficient medium for a comprehensive review of the stumpage appraisal system and certain royalty policies, and a parallel group investigated rangeland administration. In this report I have urged a similar arrangement for a thorough review of methods of harvest scheduling, and for log scaling. Once the objectives of policy are clearly identified, other problems can also be most suitably addressed in this way. One candidate is professional and technical forestry education in the province—an issue I have not been able to deal with in this inquiry; another is the organization of forest related research.

Inclusion of appropriate government personnel on a task force often will be advantageous, providing a reliable channel of communication to the public servants responsible for administering the impugned policy and enabling studies to be based on a sound understanding of the details and problems of government policy. By the same token where the policy under review has serious implications for forest users whose specialized knowledge would make an important contribution to the study, the task force should be struck accordingly. Depending on the problems to be investigated, it may be advantageous to include in task forces either public servants or experts drawn from industry. But I stress that in neither case should either government personnel or other experts be appointed to act as *representatives* of any public agency or private interest group; indeed, appointees should be encouraged to sever any direct affiliations for the duration of the study. Maximum effectiveness and integrity of these groups will be realized only if the independence of their members is unquestioned.

Commissions of Inquiry. On four occasions the government of British Columbia has sought forest policy advice from Commissioners appointed under the Public Inquiries Act. Commissioner Sloan, in his 1945 report considered that a periodic, comprehensive review of forest policy by means of a formal public inquiry was of such importance that he recommended that one be appointed each decade. This proposal was met with his 1955 appointment, but almost twenty years elapsed before I was appointed to conduct the present inquiry.

Had a Commission of Inquiry been struck ten years ago, in the mid 1960's, it would have perched on the threshold of the dramatic events that occurred during the past decade: rapid growth of the Interior pulp industry, adoption of new utilization standards throughout the province, consolidation of tenure holdings, the groundswell of public concern about the integrity of the environment, and so on. Viewed with hindsight, it is apparent that at least some of

the problems that have since become so confusing and intractable may have been forestalled had those issues been publicly investigated at that time.

As a vehicle for obtaining an independent assessment of the major themes of policy, Commissions of Inquiry are particularly well suited. Their legal status protects their independence, their structure permits a concerted effort to be directed to specific areas of public policy, and their stature generates participation and advice from a wide range of interest groups. Particularly if they invoke public hearings, as Commissions traditionally have, their value—even apart from their recommendations—as outlets for expressions of concern on the part of both private interests and the governmental bodies, forums for interchange of conflicting views, and media for public education and discussion are benefits that cannot be overlooked.

Indeed, while Commissions' reports attract most attention for their recommendations, of at least equal value to government are their identification and articulation of policy problems with the benefit of diverse opinion and experience. This serves a most useful purpose for policymakers, who can hardly be expected to undertake such intensive inquiries themselves. If their reports are thorough, they can thus serve as a touchstone for debate on needed changes and enable governments to choose among alternative reforms with much better information than otherwise.

For all these reasons I support the previous Commissioner's endorsement of the value of Commissions of Inquiry, but I am reluctant to recommend any particular periodicity for them. He was clearly thinking in terms of a thoroughly comprehensive review of forest policy each decade. I hold that Commissions of this sort should be used more flexibly, to address particular areas of policy that demand attention from time to time. I am concerned that forest policy has grown so complex, and is of such great importance to the economic, social, and natural environment of the province that it cannot be adequately reviewed by one comprehensive inquiry per decade. It is more important that investigations be timely than regular. The government should therefore be guided by events, striking inquiries any time fundamental issues of policy that can best be reviewed by this method are raised. Having said this, I agree that none of the basic elements of forest policy should go unreviewed for more than a decade.

However, in endorsing the formal Commission approach to reviews of basic questions of forest policy, I consider it important to add three caveats that apparently did not concern earlier Commissioners. First, Commissions should be directed by their terms of reference to matters of manageable scope that emerge as pressing from time to time. My terms of reference, unlike those of earlier Commissions, did this. Thus I was instructed to focus my inquiry on matters relating to tenure policy, specifically excluding certain contentious issues of stumpage and royalty policy which had been reviewed by other means. Had I been required to investigate these and other matters such as forest education, research, and silviculture, it would almost certainly have diluted the attention that I, and participants at my public hearings, have been able to direct to the structure of the forest tenure system and would have delayed this report considerably. Prescription of some issues for investigation to the exclusion of others is hazardous insofar as many are inextricably related, but to the extent that the breadth of the inquiry can be circumscribed

it will result in a more systematic and thorough investigation of the main issues at stake.

Second, forest policy now has such a pervasive influence on life in the province, and touches so many divergent interests, that Commissioners should not be forced to prescribe the broad objectives of public policy. This is the proper responsibility of political authorities, and should be recognized in drafting Commissions' terms of reference. Again, my terms of reference broke with tradition in this respect; and although the goals of policy set out in my terms of reference were so broad as to leave plenty of room for debate in application, they were extremely helpful. They eliminated the necessity of deciding many basically political questions relating to the objectives of tenure policy and marketing controls, and provided a valuable framework for evaluating policy alternatives. The efforts of Commissions will be much simplified, and their recommendations more applicable, to the extent that they can direct their efforts toward predetermined public objectives.

Finally, I want to emphasize in the strongest possible terms the need for documentation of policy itself, preparatory to Commissions of Inquiry. In conducting this inquiry I have been dismayed at the lack of documented information on the policies I have tried to assess. Nowhere was I able to turn for reliable descriptions of such basic policies and procedures as those relating to harvest regulation, utilization controls, the taxation system, export and marketing restrictions, the structure of the forest industry, or even (apart from one study in anticipation of this inquiry) the forest tenure system. Reliable information about current policies is an obvious prerequisite to the prescription of needed reforms, and public hearings are not an appropriate means for obtaining it. Indeed, it should be available in advance of public hearings to facilitate discussion and criticism.

Undoubtedly the most frustrating and time-consuming part of my investigations has been the task of unravelling current policies, and the necessity of describing them in this report has impinged on its brevity and readability. And in spite of the efforts of my staff and myself to gain understanding through interviews with those who administer policy, and notwithstanding their consistent willingness to assist us, I fear that there may remain misunderstandings of current policies and procedures reflected in this report.

The value of articulating policies extends well beyond facilitating the work of Commissions of Inquiry, of course, to providing essential information for legislators and the public at large. To the extent that documentation is accompanied by analysis of problems (which touches on my earlier remarks about research) its value will be increased. But the point I wish to emphasize here is that a Commission should not be placed in the position of having to initiate studies of current policy, or inferring it from fragmented evidence; that information should be already publicly available so that the Commission can turn its attention to its special task—that of identifying problems and needed reforms.

Other media for policy review. I have not discussed policy review by the Legislature itself. For this purpose, legislative committees can play a useful role, but they are undoubtedly best suited for reviewing matters of broad policy rather than issues of more detail or of a technical nature. Again, it is to be emphasized that this kind of review mechanism can be efficient and

productive only if the advisors are equipped with clear and reliable documentation of existing policies and procedures.

For a brief period in the late 1950's a permanent Forest Advisor was retained to advise government on policy matters. I do not advocate that this permanent office be reintroduced, for the same reasons that I have rejected the idea of a permanent forest commission. However, if the government undertakes a major overhaul of forest policy of the kind I have recommended in this report (whether the reforms conform to my proposals or otherwise) it may well be advantageous to retain temporarily a forest advisor to assist with implementation of the changes decided upon. I make this suggestion in light of the enormous task that will be involved in redrafting legislation, reviewing contractual arrangements and regulations, negotiating structural changes in administration, and so on. These special tasks may prove to be an excessive burden on Ministers, Deputy Ministers, and others who must attend to regular matters as well as decide the general directions of policy change.

RETROSPECT

In the course of this rather lengthy report, I have made numerous recommendations, ranging from minor suggestions to proposals for fundamental shifts in public policy. I have not attempted a summary listing of all of them, because that would inevitably be disjointed, and hardly comprehensible in isolation from the discussion of the problems that the reforms are meant to resolve. But because of the complexity of the issues dealt with in preceding chapters and the difficulty of dealing with them in an orderly sequence, my recommendations may appear to lack coherence; so in this concluding chapter I review the major thrusts of my proposals in the context of what I perceive to be the most urgent issues in forest policy.

I devoted an early chapter to identifying general priorities for reform of forest tenure policy, and those priorities provide a useful framework for this retrospective review of my recommendations. There, I concluded that the public interest could best be served by maintaining the traditional policy of public ownership of forest lands, and that the central issue in this report was therefore the design of suitable contractual arrangements between the Crown, as landlord, and forest users. The broad public objectives that these arrangements must be designed to meet are set out in my terms of reference, reproduced in the Preface. My assessment of present policies, in light of these objectives, led me to identify five issues in most urgent need of attention in policy revision, namely: clarification of resource management goals; articulation of a deliberate policy for the pattern of industrial development; improvement of the security of timber supplies provided through the tenure system; enhancement of the scope for governmental flexibility in the allocation of rights to public timber; and development of improved structures and procedures for the administration of forest policy. Many of my proposals overlap two or more of these priorities, but I shall nevertheless attempt to summarize the way in which my main recommendations are designed to advance each of them.

RESOURCE MANAGEMENT GOALS

Because industrial forestry is typically in the vanguard of development in British Columbia, because timber crops take decades to grow, and because forestry has such broad ramifications for both the province's economic health and the protection of other values, the proper development of forest resources calls for careful planning. Planning will be effective only if conducted pursuant to clearly stated objectives. Some of my most fundamental recommendations are directed toward clarifying and revising the present explicit or implied objectives in resource management, so that forest rights can be

allocated and exercised in a manner that will systematically and reliably serve the broad public interest.

This issue has several dimensions. One of the most important is the rate at which timber should be made available for harvesting. During the last three decades the Forest Service has developed a rigorous system of sustained yield regulation, based on a calculation that shows the harvest that should be taken each year over a full crop rotation in each regulated unit. The mechanisms for these controls are well established, and it is now time to thoroughly reassess the objectives sought, the data on which the system is based, the criteria for determining the available timber supply, and the manner of achieving the desired results through tenure contracts.

The reliability of the system depends heavily on estimates of the forest inventory and rates of growth, and it is now apparent that current forest inventory data are deficient for purposes of harvest regulation. As a result, there are grounds for serious concern about the present calculated rates of sustainable harvests. In some regions, the allowable annual cuts almost certainly exceed those that better inventory data would indicate, and in others they probably under-estimate sustainable yields. Further, the criteria presently used in calculating harvesting targets from these data fail to take account of important economic and technological factors that influence the benefits and costs associated with alternative rates of harvesting.

Thus I have found that in important respects the present arrangements for determining harvest rates—or the scope for allocating harvesting rights—fail to provide the assurance, called for in my terms of reference, that “. . . the public interest is protected in the . . . policies . . . affecting the allocation and use of forest resources . . .”. To rectify this, I recommend that the sustained yield policy be directed more systematically toward enhancing industrial and environmental values. This calls for a shift in emphasis, from the traditional effort to achieve maximum equal annual harvests from all the province's timberlands, to attainment of the fullest long-run economic and social benefits from available forest resources and to enhancement of their productive capacity. Toward this end I recommend that specific measures be undertaken to obtain more reliable working estimates of recoverable timber and that a new approach be adopted for harvest regulation that systematically recognizes economic values, technological trends, and industrial constraints. I also propose a new system of forest land classification to guide long-term planning for harvesting and silviculture, and adoption of more meaningful timber supply regions for purposes of regulating the flow of timber. Further, I suggest more flexible enforcement of controls on harvest rates under tenure contracts, in order that the value of the harvest can be maximized in the face of changing economic circumstances.

These recommendations imply rather fundamental changes in the arrangements for regulating the available timber supply, which govern the size and pattern of development of the province's largest industrial sector. They are designed to provide a more dependable base for providing raw material supplies to the forest industry and to facilitate administration of a secure and resilient system of harvesting rights. Most of my proposals relating to this issue appear in Chapter 17.

Another aspect of the general need for redirection of resource management goals concerns the reconciliation of conflicting demands on the resource

base, a problem which has been thrust to the forefront of public controversy over forest development in recent years. The Forest Service, other agencies, forest operators, and other resource users all recognize the urgency of finding mechanisms and procedures to ensure that values other than timber—wildlife, fisheries, recreation, other non-industrial uses of forests, and the general integrity of the natural environment—are properly accommodated in the course of timber development and harvesting.

Much effort has been devoted to this task, and with mixed success a variety of methods focusing on integrated resource development, planning, and approval procedures has been tried. The present provisions are, in some cases, simply inadequate. In others they have become so burdensome that they exceed the capabilities of licensees and government agencies, threatening to obstruct orderly operations and to divert co-ordinated effort from areas of highest priority. Accordingly, I have made a number of recommendations directed toward ensuring that "The full contribution of the forest resources . . . is realized in terms of the diverse commercial and environmental benefits they potentially may generate . . .".

Hitherto, planning effort has been concentrated at the operational level, but it is clear that operational planning can proceed efficiently only in the context of explicit developmental objectives for resource management units and economic regions of the province. Responsibility for prescribing regional objectives or plans should not rest entirely with the Forest Service, and therefore I have recommended that other departments and agencies participate in identifying regional development goals to provide a clear framework for long-term forest development planning. Planning for individual management units has been confined almost entirely to Tree-farm Licences, and I propose a concerted effort be made to attain comparable standards for the forests managed directly by the Forest Service.

The most critical immediate need, however, is to find more effective procedures for formulating and approving operational plans; the present bottlenecks at this level prejudice further progress in integrated resource use. At present, the alternative to excessively rigorous and time-consuming procedures is reliance on uniform standards or guidelines which are inappropriate to the widely varying forest conditions and needs in the province; they are often ineffective in protecting important values and impose high and unnecessary costs on both forest operators and the Crown. I urge that such indiscriminating regulations give way to controls geared to the circumstances of individual sites, with attention being paid to the values to be protected and the costs involved. I recommend that the most promising approach to site-specific management planning—the resource folio system—be developed and modified to ensure that the available planning resources are focused on areas of highest priority in terms of their silvicultural and environmental sensitivity. I also propose clarification of the responsibilities of licensees and various public agencies in planning, and rectification of the current diffusion of accountability among public authorities. Finally, I recommend more systematic provisions for public participation in the planning process. These matters are dealt with in Chapters 19 and 20.

A third important area in which present resource management goals are inconsistent with the objectives in my terms of reference is that of utilization policy. To ensure that the full value of harvested timber can be realized,

fundamental changes in current recovery regulations will be necessary. The existing controls impose rigid, uniform standards over widely varying conditions; they confuse licensee's obligations with administrative problems in reconciling inventories and timber depletion; they are not sufficiently sensitive to silvicultural and environmental needs; and they fail to stimulate entrepreneurial incentives for full utilization of timber.

I have made several recommendations to improve utilization policy. One involves the development of tenure arrangements in which the licensee's payments to the Crown are based on the standing timber he is authorized to cut rather than on the logs he actually recovers from the stand, a system that elsewhere has proven highly successful in generating incentives for close recovery, as well as offering other advantages. I propose that minimum utilization standards should vary with the forest conditions, the circumstances of logging, and specific environmental and silvicultural needs. The stumpage system should provide sharp incentives to recover marginal timber, and requirements to harvest sub-marginal material should be linked to identifiable management requirements that justify the losses involved.

These are the three main areas in which I have recommended a re-evaluation of management goals and a re-orientation of policies to conform more closely to the objectives in my terms of reference. There are others, having to do with reforestation and silviculture programmes, harvesting priorities, and cut control regulations. Two related themes run through these proposals. One is the need for less uniformity and more flexibility in regulatory policy, and especially the need for greater sensitivity to the conditions and needs of particular tracts of forest. The second is the need for more attention to economic evaluation in fixing objectives and controls. Most of these recommendations are presented in Part V of the report. In the aggregate they are designed to provide a more secure framework for allocating timber rights in the province and a system of regulation that is more consistently directed toward realizing the full range of potential forest values.

INDUSTRIAL POLICY

One of the main advantages of public ownership of forest land is that the government, through its resource policies, can mould the pattern of industrial development to best serve its economic and social objectives. Indeed, even in the absence of defined objectives, the methods the government chooses to allocate rights and regulate forest operations will almost inevitably affect the form of industrial growth. In view of the importance of this industry to the provincial economy, I have emphasized that the system of allocating rights to forest resources should be based on a clear industrial policy. I have drawn particular attention to two issues: one is the need for a policy framework that will allow the industry to achieve higher levels of efficiency and thereby increase the latitude for its growth; the other is the importance of an articulate policy toward the structural pattern of industrial development.

The province's forest industry has passed through a period of remarkably rapid expansion and change, but it is now clear that it faces serious obstacles to further growth. Its profitability has declined in recent years, its traditional advantage in superior timber is eroding, and its costs are high relative to

those of competitors elsewhere. In the foreseeable future, its growth will be constrained not so much by the physical limits of the timber supply but by its ability to produce forest products and profitably sell them at prices determined in competitive international markets. To ensure that "... the efficiency and vigor of the forest industry is maintained . . .", the government should therefore pay careful attention to avenues for reducing costs on the one hand and improving markets on the other, and I have found scope for both.

Two of the most conspicuous sources of excessively high costs imposed by governmental regulations are the present rigid utilization regulations and extensive road building requirements. I have already referred to several of my proposals concerning utilization policy. With respect to roads, I have recommended that the current controls on harvesting patterns be reassessed, with special attention paid to the environmental and economic consequences of the road construction they necessitate.

To enhance the value of timber, I recommend measures to develop more vigorous markets for intermediate products: in particular to revitalize the coastal log market, and to free chip marketing from some of its present governmental restrictions. In addition to these and other measures to bolster domestic markets, I have proposed changes to take better advantage of export markets for these products.

A more complicated policy issue is the government's role in shaping the structural pattern of industrial development, and my concern for this matter runs through many parts of the report. I have addressed this issue from three premises: first, the government and the public have an important interest in the pattern of development of the forest industry; second, the most advantageous industrial structure is one which includes a wide range of entrepreneurial forms with competition and opportunities for new entrants at all levels; and third, while British Columbia's forest industry is capable of sustaining these desirable features, current trends threaten to eliminate them. While the rapid concentration of timber rights into the hands of fewer, larger corporations in recent years is related in part to economic and technological changes, public policy has stimulated the process in important ways. In order to restore and maintain a balanced and diverse industrial structure I have made extensive recommendations to create a more neutral policy.

Small, unintegrated, and new enterprises are now, for the most part, facing serious disadvantages when they seek access to timber. On the Coast, most of the best timber is held by large companies under Crown grants, old temporary tenures, and long-term Tree-farm Licences. Elsewhere, the "quota" system has stimulated consolidation of rights, leaving little opportunity for those other than the established licensees to compete for the available Crown timber. I have therefore proposed changes in the tenure system which would accommodate a wider range of enterprises and make rights to Crown timber more accessible. Most important are my recommendations for a flexible new Timber Sale Licence system for competitive sales of certain rights, for varying the division of management and development responsibilities between licensees and the Forest Service, and for improving the methods used to reimburse approved costs incurred by licensees.

It is important to ensure a measure of balance not only between firms of different size but also among operations of differing structure. Hitherto, public policy has favoured integrated companies. There can be little doubt, however, that both the industry itself and the public interest can better be served by an industrial structure whose integration rests, in part at least, on a diversity of specialized firms operating in particular sectors or levels of processing, linked by freely competitive markets for intermediate products. Thus my proposals to invigorate log and chip markets are also designed to ensure that "The marketing arrangements for timber products permit their full value to be realized and are consistent with an efficient economic structure . . .".

A rather wide variety of other recommendations is aimed at promoting diversity, flexibility, and balance in the industry. These include relaxation of appurtenant mill requirements in licence contracts, abandonment of procedures that link timber rights to licensees' mill capacities, and adoption of clearer and more flexible rules for transferring rights. A chapter is devoted to arrangements for special products operations, with recommendations generally aimed at promoting development of this sector of the industry. New policies are also proposed to facilitate small scale forestry on Crown lands, and to encourage development of a forestry services industry.

My report reveals many opportunities for improving forest licensing arrangements in British Columbia, but it is probably safe to say that the government's most difficult challenge is to design a tenure system that will shape industrial development in the desired pattern, encouraging and maintaining production and marketing structures that will best serve the broad public interest in resource management and economic development. This, I have suggested, will call for deliberate and careful shifts in priorities and introduction of new arrangements, but these new policies should build on the strength of established structures and enterprises, and respect the commitments the Crown has already made. The problem is urgent because continued acquiescence to current trends will soon foreclose options that could better serve the public interest. In the long-run, the government's response to this challenge is likely to have the greatest implications for the success of forest policy. Many of my more fundamental recommendations are designed to assist the government in creating the policy environment needed to ensure balanced industrial development.

SECURITY OF TIMBER SUPPLIES

One of the most pervasive concerns of forest companies in the province is for the security of their access to raw material. This anxiety is justified. Orderly industrial planning, investment, and operations require assurance of raw material availability, either through dependable markets for the inputs required by manufacturers or through rights to standing timber, both of which currently suffer from serious shortcomings. I have already referred to the inadequacies of log and chip markets and my recommendations for improving them. With respect to timber rights, I have found that the tenure system is riddled with inappropriate terms, inconsistencies, ambiguities and discretionary elements that threaten the security of licensees' rights and undermine the legal clarity required of contractual undertakings between the Crown and private parties. These features undoubtedly impinge on systematic

industrial planning and development, create confusion for public administrators, and generate friction between the industry and regulatory agencies.

Accordingly, I have made extensive recommendations for improving the definitiveness of rights and obligations under all the major forms of licensing. In the Public Sustained Yield Units a major issue is the "quota" system which, although it now governs the allocation of most timber, lacks a contractual foundation. I recommend that this discretionary device be abandoned in favour of licences with appropriate terms and explicit renewal privileges. I propose that Timber Sale Harvesting Licences, which are the main embodiment of "quota positions", be transformed into new Forest Licences that will confer rights to defined tracts of timber, with terms of 10 or 15 years, provisions for advance renewal, and matching bid privileges to holders of expiring licences. Other Timber Sale Licences should be revised to provide adequate terms for orderly operations, increased scope for competition, and less onerous managerial and development responsibilities.

While the Tree-farm Licence system has proven highly successful in terms of improved forest management, significant changes are needed to clarify the respective rights and obligations of the Crown and licensees and to provide more suitable contractual terms and conditions. Among other things, I have recommended clear specification of the licensee's harvesting rights over the term of his licence, clarification of renewal privileges, and an "evergreen" arrangement to provide for more orderly periodic renegotiation of contracts.

I have found that the old temporary tenures are in need of substantial overhaul, many of their terms and conditions being either unclear or inappropriate for modern needs. I have proposed that the several old forms of licences in this category be rationalized under a revised Timber Licence system that will ensure a consistently high standard of forest practice, and provide for orderly harvesting and liquidation of these tenures. This requires important changes in their present terms and renewability provisions, both within and outside Tree-farm Licences. I have found that Pulpwood Harvesting Area Agreements serve a valuable purpose in the tenure system, but the present contracts are so ambiguous that they should be renegotiated and simplified. My specific proposals for new Pulpwood Agreements will provide their holders with clearly defined options to timber in the event of interruptions of chip supplies, without impeding the use of timber for more valuable sawmilling purposes in the meantime.

Other recommendations to enhance the clarity and security of rights range rather widely. They deal with arrangements governing exchanges and transfers of licences, suspensions, cancellations, the Crown's obligation to issue authorizations supplemental to licences, the scope for discretionary interpretation of contracts, and provisions for appeal. Related recommendations include streamlining and clarifying administrative procedures and accountability, and major revisions in legislation, regulations, and contracts to provide a more solid and reliable policy framework.

There are two dominant themes in these recommendations. One is that the complex forest tenure system has, over the years, accumulated numerous features which are now inadequate for orderly industrial operations and effective public control, and these shortcomings should be rectified as quickly as current contractual commitments permit. The other is that many critical aspects of the system rest only on understandings, discretionary practices,

and in some cases arrangements having questionable legal validity. My proposals imply that new emphasis be placed on clear legislation, explicit contracts, and well defined administrative procedures.

FLEXIBILITY

While the tenure system must provide the forest industry with secure rights to timber, it must also preserve the Crown's flexibility to reallocate timber and redefine rights over time, to meet changing industrial needs and public priorities. This means that the duration of contractual commitments should be no longer than necessary to provide the assurance for systematic investment planning and resource development. They should also afford regular opportunities for review, revision, and reallocation, without resort to arbitrary administrative intervention or infringement on contractual undertakings.

The present tenure system has preserved substantial legal flexibility, but some of its important features unduly restrict the Crown. Conspicuous are the established "quota positions" which, although not legally binding on the Crown, licensees have been encouraged by the government to regard as akin to rights, of indefinite duration. I have recommended changes that will acknowledge these "understandings", while converting the licensing system to one that provides clearly defined terms and renewal privileges. Other examples are the remaining Tree-farm Licences that ostensibly bear perpetual terms. I have recommended legislation to clearly establish finite terms for these licences, with appropriate provisions for renewal.

In nearly all cases where renewability is provided in contracts or legislation, the scope of the licensee's renewal right is undefined. I have therefore proposed that these important privileges be specified clearly. For certain tenures I recommend that renewal rights extend to a minimum percentage of annual harvest authorized under the expiring licences, leaving a margin of flexibility to the Crown.

To provide additional flexibility (as well as for other important purposes) I have proposed restoration of orderly procedures for allocating certain forms of timber rights by competitive bidding. Proposed revisions of the Timber Sale Licence system, especially, are designed to provide flexibility in the allocation of Crown timber, by combining relatively short non-renewable terms with provisions for unrestricted competition. Recommended planning procedures for longer-term licences, reformed Pulpwood Agreements, and new arrangements for exchanges of rights will also contribute to flexibility in the system.

PUBLIC ADMINISTRATION

The fifth priority I identified at the outset of this report is the need for improving the framework of public administration for implementing forest policy. My proposals on this matter take three general forms: needed changes in the formal instruments of policy such as legislation, regulations, and contracts; reforms in the organization of administrative agencies and their financing; and new approaches to planning forest operations and reformed administrative procedures for regulating them.

One of the most obvious priorities is a thorough overhaul of the Forest Act which, as a result of its age and a succession of patchwork amendments since 1912, is now a ramshackle statute, grossly inadequate as the basic instrument of forest policy. I have recommended that the Act be revised in its entirety, with close attention being paid to the appropriate roles of statute, regulations, contracts, and other instruments of policy. I have already referred to the need for clarity of contracts and explicitness of contractual rights and obligations. Other proposals under this head include those relating to mechanisms for appealing administrative rulings, and procedures for external policy review.

The organizational structure of resource agencies should be reassessed. I have recommended certain specific measures, such as incorporation of both the Fish and Wildlife Branch and the Forest Service into a new Department of Forest and Wildlife Resources. I have also recommended that the Forest Products Board of British Columbia, as provided for in the Timber Products Stabilization Act, be established and charged with a variety of important functions relating particularly to development of log and chip markets. As well, I draw attention to organizational problems within the Forest Service and recommend that these be the subject of a special external investigation.

I propose a host of changes in administrative practices and procedures to ensure that "Proper provisions are made for the efficient management, protection, and enhancement of the forest resources and for the regulation of harvesting and utilization practices". Especially important are the procedures for planning forest development and operations; proper provisions should be made not only for silviculture but also for other forest uses and environmental values. I have already referred to my recommendations for improving the processes of integrated resource use planning. Some of the present rules governing operations, particularly those relating to cut control and recovery specifications, appear unnecessarily fastidious and divert administrative effort from more crucial field management responsibilities. Thus I have found that in some respects forests are over-regulated and under-managed, and many of my recommendations are aimed at correcting this imbalance.

Finally, there is a pressing need for more systematic forest financing arrangements, to provide legislators and the public with a clear framework for assessing the adequacy of Forest Service operations and to enable that agency to plan and dispatch its long-term responsibilities in an orderly fashion. I have proposed a system of budgetary planning that will permit the Legislature to appropriate funds with a clear appreciation of their implications for achieving defined objectives, and that will bring under surveillance both the direct expenditures of the Forest Service and the public funds that are spent indirectly by licensees under stumpage abatement arrangements. My proposals for more direct Forest Service involvement in resource management and development imply a heavier onus on orderly forest financing, increasing resource revenues on the one hand and Forest Service budgetary requirements on the other.

OTHER ISSUES

While most of my major proposals fall under one or more of these five priorities for policy revision, my terms of reference have required me to deal with other important problems as well. One is the complex system of public

charges (other than the stumpage formula and certain royalty arrangements) on timber and forest land, and on this matter I was instructed to ensure that ". . . the various forms of public revenues . . . are systematic, equitable, and consistent with general taxation policy in the Province".

My analysis of the total structure of taxes and miscellaneous levies, and the impacts of each on the others, reveals considerable scope for rationalization and simplification. Certain charges are circuitously levied and charged back to the Crown, including the costs of cruising and advertising timber sales, scaling costs, and the forest protection tax on Crown land. I recommend that these be abolished. I have found that where royalties apply to Crown-granted land they are so low in relation to the costs of collection, and are offset to such an extent in property tax yields, that they should also be eliminated. The present annual rentals on licensed Crown lands are inconsistent and inadequate, and I propose that they be rationalized and increased. Finally, the property tax system as it applies to forest lands is seriously deficient, and I have recommended an entirely new and simpler approach aimed at exacting a consistent share of the annual productive value of taxable lands.

I was specifically instructed to investigate the controls on exports, and to design recommendations toward ensuring that "The regulation of exports of forest products serves the best economic interest of the Province". My review of this question has led me to the conclusion that existing federal and provincial restrictions on the export of logs and chips depress the value of timber and impede efficient utilization. Accordingly, I have proposed major modifications to these controls.

I have also found it necessary to deal at some length with other matters relating to the rights and obligations of forest operators. A special chapter is devoted to the complicated issue of roads. I have recommended a more systematic approach to their planning, construction, and financing, and more consistent arrangements to govern their legal status and use. I have also tried to untangle the existing provisions for forest protection, and propose that these be rationalized.

In short, I have found that there is substantial scope for improving nearly all of the arrangements that fall under my terms of reference. In view of the dominance of timber production and manufacturing in the economy of British Columbia, the critical role of forests in the province's natural environment, and the central position of the government in regulating their development and use, attention to the deficiencies of forest policy deserves high public priority. I trust that my identification of problems will stimulate effort to resolve them, either through the reforms I have proposed or by alternative means.

GLOSSARY

- allowable annual cut* the regulated yearly harvest prescribed for a managed forest unit under sustained yield criteria, or the annual harvest authorized by a licence over its term.
- bone dry unit (B.D.U.)* the usual measure of pulp chips in the Interior, consisting of 2,400 pounds of chips in an oven-dry condition (see also gravity packed unit).
- board foot* a measure of lumber, or lumber content in logs, equal to the volume of a board measuring 12 x 12 x 1 inches (see also Mfbm).
- "close utilization" standard* a measure of the sound timber in a stand, contained in all trees 9.1 inches in diameter at breast height or larger on the Coast and 7.1 inches in the Interior, between 12-inch high stumps and (usually) 4-inch diameter tops.
- controlling company* (as used in this report) any company that holds rights to timber or logs, or manufactures forest products, including the holdings and activities of other firms in which the company holds 50 per cent or more of the outstanding voting shares.
- cunit (C cf)* 100 cubic feet of wood.
- forest inventory* the stock of timber covering an area of land, measured to a specified standard of utilization.
- forest land* under the Forest Act, land which, in the opinion of the Minister, will find its best economic use under forest crop. The Taxation Act defines this term, for property tax purposes, as lands under the old temporary tenures.
- gravity packed unit (G.P.U.)* the measure of pulp chips normally used on the Coast, consisting of a gross volume of 200 cubic feet of uncompacted wood chips (see also bone dry unit).
- "intermediate utilization" standard* a measure of the sound timber in a stand, contained in all trees 13.1 inches in diameter at breast height or larger on the Coast and 11.1 inches in the Interior, between 18-inch high stumps and 8-inch diameter tops.
- Mfbm* one thousand board feet (see also board foot).
- mean annual increment (M.A.I.)* the average annual growth in volume of a stand, averaged over its life; usually expressed in cubic feet per acre.
- Minister* unless otherwise indicated, the Minister of Forests.
- old-growth* old mature stands of timber, usually natural stands several centuries old.
- old temporary tenures* Timber Leases and Licences, Pulp Leases and Licenses, and Timber Berths.
- rotation age* the age at which a forest crop is harvested and replaced by a new stand.

- royalty* the payment due to the Crown for timber harvested from private lands granted since 1887 and from old temporary tenures.
- second-growth* a stand of timber that has replaced a former or old-growth stand, and is in an immature and thrifty condition.
- stumpage* the price determined under Forest Service appraisal procedures and paid to the Crown for Crown timber harvested from Crown land, except the old temporary tenures. Where competitive bids have been received, stumpage includes any bonus bid.
- sustained yield* a forest management regime that involves more or less continuous harvesting, balanced by growth, over managed forest units.

ABBREVIATED TITLES OF FREQUENTLY CITED PUBLICATIONS

- Fulton Report—Final Report of the Royal Commission of Inquiry on Timber and Forestry, 1909–10* (Honourable F. J. Fulton, Chairman), King's Printer, Victoria, 1910.
- Sloan Report 1945—Report of the Commissioner Relating to the Forest Resources of British Columbia, 1945* (Honourable G. McG. Sloan, Commissioner), King's Printer, Victoria, 1945.
- Sloan Report 1956—Report of the Commissioner Relating to the Forest Resources of British Columbia, 1956* (Honourable G. McG. Sloan, Commissioner), Queen's Printer, Victoria, 1957 (2 volumes).
- Task Force 1st Report, 1974—The Task Force on Crown Timber Disposal, Crown Charges for Early Timber Rights*, Victoria, February, 1974.
- Task Force 2nd Report, 1974—The Task Force on Crown Timber Disposal, Timber Appraisal*, Victoria, July, 1974.

STATUTES CITED

- Accelerated Reforestation Fund Act, S.B.C. 1972, c. 2.
- Arbitration Act, R.S.B.C. 1960, c. 14.
- Archæological and Historic Sites Protection Act, S.B.C. 1972, c. 4.
- Assessment Act, S.B.C. 1974, c. 6, as amended.

Companies Act, S.B.C. 1973, c. 18, as amended.
 Corporations and Labour Unions Returns Act, R.S.C. 1970, c. C-31.
 Criminal Code, R.S.C. 1970, c. C-34, as amended.
 Crown Proceedings Act, S.B.C. 1974, c. 24.
 Department of Forests Act, S.B.C. 1960, c. 153, as amended. Until it was
 renamed in 1976 legislation, this enactment was called the Forest Act.
 Throughout this report the previous familiar title has been cited, in the
 interests of brevity and to avoid confusion.
 Ecological Reserves Act, S.B.C. 1971, c. 16.
 Environment and Land Use Act, S.B.C. 1971, c. 17.
 Esquimalt and Nanaimo Railway Belt Land Tax Act, R.S.B.C. 1960, c. 133,
 as amended.
 Export and Import Permits Act, R.S.C. 1970, c. E-17, as amended.
 Fisheries Act (B.C.), R.S.B.C. 1960, c. 150, as amended.
 Fisheries Act (Canada), R.S.C. 1970, c. F-14, as amended.
 Forest Act—see Department of Forests Act.
 Foreign Investment Review Act, S.C. 1973-74, c. 46, as amended.
 Government Reorganization Act, S.B.C. 1976, c. 18.
 Grazing Act, S.B.C. 1968, c. 168.
 Green Belt Protection Fund Act, S.B.C. 1972, c. 24.
 Industrial Transportation Act, R.S.B.C. 1960, c. 192, as amended.
 Islands Trust Act, S.B.C. 1974, c. 43, as amended.
 Land Act, S.B.C. 1970, c. 17, as amended.
 Migratory Birds Convention Act, R.S.C. 1970, c. M-12, as amended.
 Municipal Act, R.S.B.C. 1960, c. 255, as amended.
 National Parks Act, R.S.C. 1970, c. N-13, as amended.
 Navigable Waters Protection Act, R.S.C. 1970, c. N-19.
 Park Act, S.B.C. 1965, c. 31, as amended.
 Pollution Control Act, 1967, S.B.C. 1967, c. 34, as amended.
 Public Inquiries Act, R.S.B.C. 1960, c. 315, as amended.
 Public Schools Act, R.S.B.C. 1960, c. 319, as amended.
 Railway Act, R.S.B.C. 1960, c. 329, as amended.
 Regional Hospital Districts Act, S.B.C. 1967, c. 43, as amended.
 Taxation Act, R.S.B.C. 1960, c. 376, as amended.
 Timber Products Stabilization Act, S.B.C. 1974, c. 115.
 Vancouver Charter, S.B.C. 1953, c. 55, as amended.
 Water Act, R.S.B.C. 1960, c. 405, as amended.
 Wildlife Act, S.B.C. 1966, c. 55, as amended.

INDEX

A

Accelerated Reforestation Fund	354
administration. <i>See</i> resource administration.	
advertising costs. <i>See</i> cruising and advertising charges.	
Agricultural Land Reserve	190
<i>See also</i> small scale forestry.	
allowable annual cut	
"allowable cut effect"	228-229
biases in estimates	222-224, 226-228
"fall down" phenomenon	227-228
by Forest Districts	225
objectives	235-236
reconciliation of harvests with	243-244
<i>See also</i> timber supply, regulation of; Tree-farm Licences.	
amalgamation of rights	325
appeals	362-364
Appraisal Board	363-364
courts	363
appurtenancy requirements	323, 327
areas of interests. <i>See</i> chart areas.	

B

berths. <i>See</i> Timber Berths.	
bidding procedures, recommendations	116-117
<i>See also</i> "quota" system.	
British Columbia Hydro and Power Authority	343
British Columbia Institute of Economic Policy Analysis	367
Burning Permits	135

C

cancellation of rights. <i>See</i> suspension and cancellation of tenures.	
cash sales	204
chart areas	75
formalization of	82
Chip Export Advisory Committee	306, 315
chip marketing	301-304
chip direction	301-302
chip price regulation	302
Christmas Tree Permits	203

Christmas Trees	197
clear-cutting	280-284
aesthetics	281
fish and wildlife	280-281
hydrology	280-281
impact of	280-281
road construction	282-284
silvicultural effects	280
versus patch logging	282
"close utilization" standards and industrial development	321, 323, 327
introduction of	30, 72-74
Pulpwood Harvesting Area Agreements and	106
"quota" and	72-73
"third band" Timber Sale Licences and	73-74
Tree-farm Licences and	92
<i>See also</i> cut controls and recovery standards.	
Commercial Fisheries Branch. <i>See</i> resource administration.	
Commissions of Inquiry. <i>See</i> forest policy review; Fulton Commission; Sloan Commission 1945; Sloan Commission 1956.	
competitive bidding	
annual rental charges, recommendations	176
bidding procedures proposed	116-117
Forest Licences and Timber Sale Licences	79-80, 81, 116-117
need for	65-66
and "quota" system	71-72, 76-77
concentration of industry	
general	45-47
industrial development	324-326
lumber manufacturing	43-44
pulp and paper manufacturing	44-45
timber rights and timber production	38-43
veneer and plywood	45
consultants	367
"contractor clause". <i>See</i> contractors.	
contractors	
"contractor clause"	329-330
and industrial development	329-333
contracts, generally	360-361
"contractor clause" in tenure agreements	329-330
Cutting Permits	361-362
drafting of	360-361
interpretation of	361, 363
planning and	361-362
supplementary authorizations	361-362

- controlling company, defined 38
See also forest industry in B.C.:
ownership and control.
- courts
 - appeals to 362, 363
- Crown-granted land 22-24
 - area in 23, 26
 - harvest from (1973-75) 27
 - regulation of 181-182
 - and small scale forestry 188-189
 - sustained yield management and 23-24
 - taxation of 162
 - in Taxation Tree Farms 26
 - in Tree-farm Licences 26, 31
 - outside Tree-farm Licences 26, 33
 - See also* private forestry, regula-
tion of; Taxation Tree Farms.
- cruising and advertising charges 177
- cruising and inventories 133-135
 - operational cruising 134-135
 - See also* inventories.
- cut controls and recovery standards 241-256
 - allowable annual cut and utiliza-
tion policy 244
 - control periods and penalties, rec-
ommendations 255-256
 - control limits 255
 - cruise-based stumpage assessments,
recommendations 249-251
 - current cut control policy 241-242
 - cut control accounting, general 241-242
 - cut control accounting, recommen-
dations 253-256
 - and industrial development 323, 327
 - objectives of 247-249
 - recommendations, general 247-256
 - utilization standards and waste
control 242-244
- Cutting Permits 264
 - and contracts 361-362

D

- Department of Economic Develop-
ment and new allocations 119, 270
- Department of Environment. *See*
resource administration.
- Department of Forest and Wildlife
Resources
 - proposed 347
 - and revised Forest Act 360
- Department of Forests. *See* re-
source administration.
- Department of Industry, Trade and
Commerce 305, 306, 316
- Department of Lands, Forests and
Water Resources. *See* resource
administration.

Department of Recreation and Con-
servation. *See* resource adminis-
tration.

Department of Recreation and Travel
Industry. *See* resource adminis-
tration.

disease. *See* insects and disease.

E

- emergency salvage
 - current policy 195-196
 - problems and needs 196
 - proposals for 196-197
 - special timber products 198-203
 - problems and needs 198
 - recovery of 197
- environmental considerations
 - general 5, 6
 - See also* clear-cutting; forest values
other than timber; planning;
roads.
- Environment and Land Use Com-
mittee. *See* resource administra-
tion.
- Environment and Land Use Com-
mittee Secretariat
 - organization and responsibilities 343
 - and planning 259-260, 263
 - See also* resource administration.
- Esquimalt and Nanaimo Railway
 - Belt land grant 23, 166
- export controls 305-316
 - Chip Export Advisory Committee 306
 - current impacts of 308-312
 - distribution of gains 310-311
 - employment 309-310
 - industrial stability 311
 - timber utilization 312
- current policies and procedures 305-307
- export demand 307-308
- export permits 306-307
- federal policy 305, 306
- Log Export Advisory Committee 306
- recommendations, generally 312-316
- Timber Tax 307
- See also* Appendix E.
- export demand 307-308

F

- Farm Wood-lot Licences 189-190, 192
 - acreage in 32
 - introduction of 31-32
 - See also* small scale forestry;
Wood-lots.

- federal research 366
- fire protection 135-141
 - compensation for costs incurred 139-140
 - liability for damage and recommendations 140-141
 - precautionary arrangements, private responsibilities and recommendations 135-136
 - suppression responsibilities, operators obligations 137-138
 - suppression responsibilities, recommendations 138-140
- fish and wildlife 17-18
 - and clear-cutting 280-281
 - See also* forest values other than timber.
- Fish and Wildlife Branch
 - integration with Forest Service 345-347
 - responsibilities and organization 339, 341-342
 - See also* resource administration.
- Fisheries Act (B.C.) 342
- Fisheries Act (Canada) 182, 342
- folio system. *See* planning; resource folio planning.
- Foreign Investment Review Agency 331, 333
- foreign ownership and control
 - extent of 47-48
 - recommendations 331-333
 - See also* Appendix B.
- Forest Act 3
 - deficiencies in 358-360
 - proposed revision of 359-360
- Forest Districts 341, 347, 348-349
- Forest Engineering Research Institute of Canada 367
- forest industry in British Columbia
 - financial performance of 48-51
 - industrial development, generally 317-333
 - influence of public policy on 60-63
 - lumber manufacturing 48
 - ownership and control of 36, 38, 47-48
 - pulp and paper manufacturing 48
 - timber production 37, 38-43
 - veneer and plywood manufacturing 48
 - See also* Appendix B; industrial development.
- forest land 33-34
 - assessment and taxation of 164, 166
 - defined 162
- Forest Land Use Liaison Committee of British Columbia 273
- Forest Licences, proposed 78-80
 - bidding procedures 116-117
 - fire protection, recommendations 139
 - and insects and disease control 141-142
 - and non-timber resources values 143
 - renewal privileges 79-80
- rights over areas 82
- term 81, 116
- Forest Pest Review Committee 141
- forest policy review 364-371
 - Commissions of Inquiry 368-370
 - federal research 366
 - Pacific Forest Research Centre 366
 - research institutions 366
 - Forest Research Board 366-367
 - Forest Service 366
 - universities 366
 - task forces 367-368
 - Western Forest Products Laboratory 366
- forest practices. *See* private forestry, regulation of.
- forest products. *See* forest industry in British Columbia; industrial development.
- Forest Products Board of British Columbia
 - and export controls 314, 315
 - and marine log salvage 215
 - recommendation for establishment of 299-300
- Forest Protection Fund 354, 355
- forest protection tax
 - application of 173
 - recommendations 174
 - revenues 159, 174
 - See also* taxes and other charges.
- Forest Research Board 366-367
- Forest Reserve Fund 354
- Forest Reserves 339, 341
 - introduction of 28
 - recommendations 236-237
- forest resource management
 - objectives of 59-60
- forest resources, British Columbia
 - industrial and commercial value 17
 - land base 15-16
 - recreational and environmental values 17-18
- Forest Service
 - delegation of responsibilities 360
 - establishment of 28
 - financing 352-356
 - Forest Research Board 366-367
 - integration with Fish and Wildlife Branch, proposed 345-347
 - long-term planning 354
 - organization and responsibilities of 339-341, 349-352
 - range management 207
 - Research Division 366
 - resource administration 339-341, 345-347, 349-356
- Forest Service Roads
 - current policy 147, 149-150
 - recommendations 151-154
 - See also* roads.

forest tenure policy. *See* tenure policy.
 forest values other than timber, licensees' responsibilities 142-143
 forestry and management costs 143-145
 and stumpage system 144
 Free Use Permits 204, 205
 Fulton Commission 2-3

G

grading. *See* log grading.
 grazing rights
 deficiencies of 207-208
 range management 206, 207, 208-210
 Grazing Leases 206-207
 Grazing Licences, proposed 208-210
 Grazing Permits 207
 and McLean Report 207, 208
 recommendations 208-210
 Grazing Licences, proposed 208-210
 Gulf Log Salvage Co-operative Association (Gulf Co-op)
 212, 213, 214, 215

H

hardwoods 201-202
 harvesting priorities 284-286
 "old-growth first" policy 285-286
 priority stands 284-285
 hog fuel 304
 hydrology 280-281

I

improved land
 assessment of 163
 tax rates 164
 tax yields 165, 166
 Indian reserve land
 and exports 305
 and new Tree-farm Licences 118
 industrial development
 appurtenancy requirements 323
 B.C. products in world markets 317-318, 319
 capital costs 319, 320
 consumption of B.C. products abroad 318
 contractors 329-330
 cut controls 323
 foreign competition 319
 Foreign Investment Review Agency 331, 333
 foreign ownership 331-333

forestry industry 331
 future demands 318
 industrial policy objectives 60-63
 intermediate products markets 323
 labour costs 320
 log markets 323
 marketing 321-322, 323, 327
 nurseries 331
 prices 319, 320
 rail transport 322
 recovery standards 321, 322
 roads 321, 325
 structural diversity of 323-329
 amalgamation of rights 325
 firm size 324-326
 industrial integration 326-329
 Public Sustained Yield Units 324-326
 small and specialized firms 326, 328-329
 Tree-farm Licences 325, 327
 tariff policy 322
 utilization standards 323
 industry. *See* forest industry in British Columbia; industrial development.
 insects and disease 141-142
 operators' responsibilities 141
 recommendations 141-142
 intermediate products 294-304
 See also chip marketing; log markets; markets.
 inventories
 general 19-21, 220-221
 inventory data 133-134, 270
 resource values other than timber 142-143
 responsibilities for 133-135
 and sustained yield, recommendations 236-237
 See also Appendix D; cruising and inventories; timber supply, regulation of.

L

Land Commission. *See* resource administration.
 Land Use Liaison Committees. *See* Regional Resource Management Committees.
 Lands Service. *See* resource administration.
 leases. *See* grazing rights; Timber Leases; Pulp Leases.
 Licence to Cut 204
 licences. *See* Appendix A; Forest Licences; grazing rights; Pulp Licences; Timber Licences; Timber Sale Harvesting Licences; Timber Sale Licences; Tree-farm Licences.

Log Export Advisory Committee 306, 315
See also export controls.
 log grading 287-288
 log markets 296-301
 coastal 296-300
 and industrial development 321-322, 323, 327
 Interior 300-301
 logging "guidelines" 258-259
 lumber
 markets for 291, 292-293
 production of 43-44
 wood consumption 37

M

McLean Report 206, 207, 208
 grazing rights 206
 range management staff 208
 MacMillan, H. R. 327-328
 management and development re-
 sponsibilities 128-145
 division of, between Crown and in-
 dustry 128-129
 reforestation and silviculture 130-133
 fire protection 135-141
 forestry and management costs 143-145
 forest values other than timber 142-143
 insects and disease protection 141-142
 silviculture other than reforesta-
 tion 131-132
See also roads.
 management unit plans 263-264
 marine log salvage 210-215
 debris 215
 Forest Products Board of British
 Columbia 215
 Gulf Log Salvage Co-operative As-
 sociation 212, 213, 214, 215
 log spill recovery 211
 objectives 213-214
 policy outside Vancouver Log Sal-
 vage District 210-211
 policy within Vancouver Log Sal-
 vage District 211-213
 recommendations 214-215
 marketing and industrial development
 321-322, 323, 327-328
 markets
 for final forest products 291-294
 lumber 291, 292-293
 plywood 291, 294
 pulp and paper 291, 293-294
 chips 301-304
 chip direction 301-302
 chip price regulation 302
 final products markets, recommen-
 dations 294
 hog fuel 304
 intermediate products 294-304

logs, Coast 296-300
 logs, Interior 300-301
 sawdust 304
 shavings 304
 Mill Licences 111
See also Pulpwood Agreements.
 mineral rights 205
 Free Use Permits 205
 Licences to Cut 204, 205
 recommendations 205
 multiple use timberlands 236-237

N

National Parks, areas in 19
See also Provincial Parks.
 Navigable Waters Protection Act 182
 newsprint. *See* pulp and paper.
 nurseries 278-279
 and industrial development 331
See also reforestation.

O

old temporary tenures 97-104
 acreage outstanding 25, 26, 98
 cancellation and suspension 125
 export restrictions 25
 financial obligations 25, 162, 164
 harvest (1973-75) 27, 97
 history of 24-25
 initial granting 97
 location 25
 operating plans 264
 Public Sustained Yield Units, and 104
 Pulp Leases 24, 97, 98, 101
 Pulp Licences 24, 97, 98, 102, 103-104
 reforestation and 131, 133
 regulation of 33-34, 264
 royalties, rentals, and stumpage
 97, 155, 159, 175
 special extended terms 103-104
 special problems 103-104
 termination of 98
 terms 25, 98, 103-104
 Timber Berths 24-25, 97, 98, 99, 102
 Timber Leases 24, 97, 98, 101
 Timber Licences
 24, 97, 98, 102, 103-104
 Timber Licences, proposed 98-102
 transferability 25
 within Tree-farm Licences, recom-
 mendations 30-31, 85, 86, 93
 outside Tree-farm Licences, recom-
 mendations 101-102
See also Appendix A.

operational planning 257-258, 261, 262, 264
 Outdoor Recreation Branch. *See* resource administration.

P

Pacific Forest Research Centre 366
 paper. *See* pulp and paper.
 Parks. *See* Provincial Parks.
 Parks Branch
 organization and responsibilities 343
 See also resource administration.
 planning
 Department of Economic Development 270
 environmental considerations 265-266
 Environment and Land Use Committee Secretariat 259-260
 history of 257-260
 inter-agency consultation, recommendations 268-269
 logging "guidelines" 258-259
 management unit plans 261, 263
 old temporary tenures 264
 operational planning, recommendations 267-273
 operational plans 261, 264, 257-258
 other planning needs 270-271
 overview 268
 preliminary plans, recommendations 268-269
 present status 261, 263-265
 problems and needs 265-266
 and public participation 271-273
 Public Sustained Yield Units 263-264
 "referral" system 258
 Regional Districts, recommendations 273
 regional plans 261, 270
 Regional Resource Managers 260
 Regional Resource Management Committees, recommendations 260, 269
 resource folio planning 259-260
 resource folios, recommendations 267-269
 road construction 282-284
 Taxation Tree Farms 264
 Timber Sale Harvesting Licences 264
 Tree-farm Licences 257, 259, 261, 263, 264
 watershed plans 261, 264
 plywood
 markets for 291, 294
 production 45
 wood consumption 36, 37
 poles and piling
 production 197
 recommendations 199-200

policy review 364-371
 See also forest policy review.
 Pollution Control Act, 1967 182
 posts
 production of 197
 preliminary (overview) plans 268, 269
 primary timberlands 236-237
 Prince George Special Sale Area 105, 110
 private forest land. *See* Crown-granted land.
 private forestry, regulation of 181-187
 current controls 181-182
 recommendations for 184-187
 policy issues 182-184
 Regional Districts 184-187
 Water Districts 186
 See also Wood-lots.
 property tax 162-173
 roads 149
 small scale forestry 189
 See also taxes and other charges.
 protection. *See* fire protection; insects and disease.
 Provincial Parks
 areas in 16, 19
 and sustained yield 236
 public access to forest land. *See* roads and public access.
 public administration. *See* resource administration.
 public hearings. *See* Appendix F.
 Public Inquiries Act
 and Commissions of Inquiry 368-370
 Public Schools Act
 and schools tax 164
 See also Appendix C.
 Public Sustained Yield Units 38
 acreage in 29
 allowable annual cut calculations 221-229
 boundaries 237-238
 and firm size 324-326
 harvest from (1973-75) 27
 planning in 263-264
 steady harvest rates and 229-234
 timber commitments and harvest 39, 40
 See also Forest Licences; "quota" system; Timber Sale Harvesting Licences; Timber Sale Licences; timber supply, regulation of.
 Pulp Leases 24-25, 98
 See also Appendix A; old temporary tenures.
 Pulp Licences 24-25, 98
 See also Appendix A; old temporary tenures.
 pulp and paper
 markets for 291, 293-294
 production 44-45
 wood consumption 36, 37

Pulpwood Agreements, proposed	109-111
allocation procedures	120
and Mili Licences	111
in Prince George Special Sale Area	110
stumpage rates	120
term	109
uses of	120
Pulpwood Harvesting Area Agree-	
ments	105-111
ambiguities in contracts	107-108
characteristics	106-107
chip direction	106-107, 301-304
and "close utilization" policy	106
historical development of	32, 105
and industrial integration	326
introduction of	32
recommendations	109-111
reforestation and	131
<i>See also</i> Appendix A; Pulpwood Agreements.	

Q

"quota" system	
bidding arrangements	71-72
bidding fees	71-72
deficiencies in	76-77
established operators	71-72
history of	70-72
"quota" allocations, introduction of	29
"quota" policy and firm size	324-325
recommendations	78-79, 83-84
<i>See also</i> Appendix A.	

R

rail transport, and industrial develop-	
ment	322
Railway Belt	
land grant	23
railway ties	
production of	202-203
range management. <i>See</i> Forest Ser-	
vice; grazing rights.	
Ranger Districts	341
Rangers	341, 350-351
recovery standards	
and industry development	321, 322
<i>See also</i> cut controls and recovery standards.	
recreation. <i>See</i> forest values other	
than timber; roads, and public	
access.	
recreation facilities	142-143
"referral" system, the	258
<i>See also</i> planning.	

reforestation	130-131, 274-279
"backlog" in Public Sustained	
Yield Units	275
financing	278
natural regeneration	277
nurseries operated privately	279
old temporary tenures, current	
policy	131
planting activity since 1971	276
priorities for	277-278
programme operated by Forest	
Service	277
Pulpwood Harvesting Area Agree-	
ments, current policy	131
recommendations	132-133
special problems concerning	274-279
Timber Sale Harvesting Licences,	
current policy	131
Timber Sale Licences, current	
policy	131
Tree-farm Licences, current policy	
	130-131

See also silviculture.

reforestation and silviculture, gener-	
ally	130-133

Regional Districts	
planning	273
and regulation of private forestry	
	184-187

regional plans	261, 262, 270
----------------	---------------

See also planning.

Regional Resource Management	
Committees	260, 269
Regional Resource Managers	260
renewal fees. <i>See</i> rental and renewal	
fees.	

rental and renewal fees	174-176
and competitive bidding	176
current policies	174-175
listed, by tenure	175
recommendations	176

research institutions	
consultants	367
task forces	367-368
universities	366

resource administration	337-356
administrative districts	347-349
Forest Districts	347, 348-349
Resource Management Regions	

	347-349
--	---------

agency organization	339-343
---------------------	---------

Commercial Fisheries Branch	339
-----------------------------	-----

Department of Environment (B.C.)	339
----------------------------------	-----

Department of the Environment	
-------------------------------	--

(Canada)	341, 344
----------	----------

Department of Forests	339
-----------------------	-----

Department of Lands, Forests and	
----------------------------------	--

Water Resources	339
-----------------	-----

Department of Recreation and	
Conservation	339

Department of Recreation and
 Travel Industry 339
 Environment and Land Use Com-
 mittee 243
 Environment and Land Use Com-
 mittee Secretariat 339, 343, 345
 Fish and Wildlife Branch
 339, 341-343, 345-347
 Forest Service 339-341, 349-356
 inter-agency consultation 268-269
 Land Commission 339
 Lands Service 339, 341, 345
 objectives of 67-68
 Outdoor Recreation Branch 339
 Parks Branch 343, 344-345
 recommendations for
 344-347, 348-349, 349-352, 355-356
 Department of Forest and Wild-
 life Resources, proposed 347
 Environment and Land Use
 Committee Secretariat 345
 Fish and Wildlife Branch 345-347
 Forest Service 349-352
 Lands Service 345
 Parks Branch 344-345
 Water Resources Service 344
 Water Resources Service 343, 344
 Wood-lots 193-194
 resource folio planning 259-260, 267-269
 Resource Management Regions 347-349
 rights-of-way 146-147
 roads
 classification of 151
 construction and maintenance 151-153
 environmental protection 282-284
 financing of 147-148
 industrial development 321, 325
 major roads 151, 152, 153
 management and development re-
 sponsibilities 128, 143
 ownership and access 148-150, 153-154
 private roads 149
 and public access 146, 153-154
 recommendations 150-154, 282-284
 resource roads 151, 152, 153
 rights-of-way 146-147
 Special Use Permits 147
 temporary roads 151
 royalties
 Crown-granted land 159-162
 liabilities and revenues 159-160
 old temporary tenures 159
 recommendations 160-162

S

salvage. *See* emergency salvage; ma-
 rine log salvage.
 sawdust 304

Scaling Fund 354
 second-growth management 286-287
 shakes
 production of 197
 recommendations concerning 200-201
 shavings 304
 shingles
 production of 197
 silviculture 130-133
 clear-cutting 280-281
 Forest Licences 133
 old temporary tenures 133
 second-growth management 286-287
 Timber Sale Licences 133
 Tree-farm Licences 131-132
 Tree-farm Licences, recommenda-
 tions 132-133
 See also reforestation and silvicol-
 ture.
 Silviculture Fund 354
 Sloan Commission, 1945 3, 29
 See also sustained yield policy.
 Sloan Commission, 1956 3-4, 85
 small scale forestry 188-194
 Agricultural Land Reserve 190
 Crown land 189-190
 economies of scale 191
 Farm Wood-lot Licence 189-190
 private forest land 188-189
 special products 191
 Taxation Tree Farms 188-189
 Wood-lots 191-194
 Special Timber Licences. *See* Tim-
 ber Licences.
 special timber products 197-203
 See also Christmas trees; hard-
 woods; poles and piling; posts;
 railway ties; shakes; shingles.
 Special Use Permits 147, 204
 stumpage system 155
 cruise-based assessments 249-251
 forestry costs 143-145
 rentals 174-176
 road financing 147-148
 See also taxes and other charges.
 suspension and cancellation of ten-
 ures 125-127
 authority to suspend or cancel 127
 licences versus Cutting Permits 125-126
 notice 127
 remedies 126
 and Superior Courts 362, 363
 sustained yield policy
 acreage under management 32
 introduction of, Sloan Report 1945
 3, 28-29, 30-31
 See also Farm Wood-lot Licences;
 Public Sustained Yield Units;
 Taxation Tree Farms; timber
 supply, regulation of; Tree-farm
 Licences.

T

tariff policy			future trends affecting	6-8
and industrial development	322		history of	2-4
task forces	367-368		and industrial integration	60-63
Taxation Tree Farms			priorities of	59-68
assessment of	162-164		recent developments	4
management unit planning	263		security of timber supplies	63-64
operational plans	264		<i>See also</i> Appendix A.	
problems with	168		tenures, generally	22-34
tax rates	164		acreage in, 1975	26
taxation of, recommendations	170-172		exchanges of	123-124
watershed plans	264		harvest by (1973-75)	27
<i>See also</i> small scale forestry; tree-			management and development of	128-129
<i>farm land.</i>			selecting form of	115-120
taxes and other charges			suspension and cancellation of	125-127
cruising and advertising charges	177		transfers and exchanges	120-124
efficiency and simplicity	158		<i>See also</i> Appendix A.	
equity	157		"third band" Timber Sale Licences	
<i>forest land, defined</i>	162		allocation of	73
forest protection tax	173-174		deficiencies in	77
<i>improved land, defined</i>	163		harvest from (1974)	74
local revenue	158		introduction of	30, 72-74
neutrality	157-158		replacement of, by Timber Sale Li-	
objectives	157-158		cences or Forest Licences	81, 84
problems and needs	166-170		term	73
property taxation	162-173		<i>See also</i> Appendix A; Timber Sale	
classification and withdrawals	172-173		Licences.	
Crown-granted land	162-173		Timber Berths	24-25, 98
Esquimalt and Nanaimo Rail-			<i>See also</i> Appendix A; old tempo-	
way Belt	166		rary tenures.	
Hospital Districts	166-167		timber inventory	19-21
Improvement Districts	166		<i>See also</i> inventory.	
improved land	163, 164, 166		<i>timber land</i>	
provincial property tax assess-			assessment of	162-163
ments	162-164		recommendations re taxation of	170-172
recommendations	170-173		tax rates	164
Regional Districts	166		Timber Leases	24-25, 98
schools tax	164, 165		<i>See also</i> Appendix A; old tempo-	
Taxation Tree Farms			rary tenures.	
163-164, 168, 169, 170			Timber Licences	24-25, 98
water users' committees	166		term and renewal recommenda-	
rental and renewal fees	174-176		tions	99-102
revenue sources	158-159		<i>See also</i> Appendix A; old tempo-	
scaling charges	176-177		rary tenures.	
stumpage	143-145, 147-148, 155		Timber Products Stabilization Act	295, 300
tax burden	157		and chip marketing	302
tax yields	165, 166		Timber Sale Harvesting Licences	
<i>timber land, defined</i>	162		chart areas	30
<i>tree-farm land, defined</i>	163		and current fire protection policy	135-136
<i>wild land, defined</i>	163		cutting plans	264
<i>See also</i> Appendix C; forest pro-			development plans	264
tection tax; property taxes;			and forest protection tax	173
rental and renewal fees; royal-			harvest from (1973-75)	27, 30, 72
ties.			introduction of	29-30
tenure contracts	360-361		planning	34, 259
tenure policy			and the "quota" system	70-72
and firm size	60-63		reforestation and	131
flexibility in	64-67			

replacement of by Forest Licences,		configuration of	96
recommendations	83	Co-operatives and	118
term	30, 72	criteria for new licences	118-119
<i>See also</i> Appendix A.		cutting plans	264
Timber Sale Licences		"evergreen" renewal, recommenda-	
allocation of	70-72	tions	90-91
area rights	75	fire protection, current policy	135-136
bidding procedures, proposed	116-117	firm size	325
cancellation and suspension of	125-127	harvest from (1973-75)	27
deficiencies of	76-77	history of	30-31
fire protection, recommendations		insects and disease	141
	136, 137	inventories	134, 226-227
harvest from (1973-75)	27, 30	management responsibilities	31
history of	28-30, 70	management unit planning	263
proposed use of	116-117	management working plans	
recommendations	81		34, 261, 263-264
reforestation and	131, 133	municipal and local governments	
rights over areas, proposed	82		118, 119
share of total harvest	74	non-timber resource values	142-143
silviculture and reforestation, rec-		number of	31
ommendations	133	operational development plans	264
and sustained yield management		ownership of	31
	28-29, 70-72	perpetual licences, recommenda-	
"third band" Timber Sale Licences	30	tions	87-90
volume allocations	30	purposes of	85
volume rights	75	recommendations	132-133
<i>See also</i> Appendix A.		recreation	142-143
timber supply regions	237-238	reforestation policy	130-131, 132-133
timber supply, regulation of	219-240	regulation of	34
forest inventory	220-221	rental and renewal fees, recom-	
harvest regulation, criteria and		mendations	174-176
methods	238-239	restrictions on transfers	121
implementation of recommenda-		"Schedule A" lands	31
tions	239-240	"Schedule B" lands	31
objectives	235-236	second-growth management	287
Public Sustained Yield Units		silviculture	131-132, 132-133
	221-229, 236-240	size and productivity	85-86
recommendations	234-240	terms	31, 87-91
classification of forest land	236-237	terms and renewability, shortcom-	
inventory revisions	236-237	ings	87-91
systems analysis	238-239	21-year licences, recommendations	
timber supply regions	237-238		87-88, 90-91
<i>See also</i> allowable annual cut; Ap-		watershed and operational plan-	
pendix D.		ning	264-265
timber tax	307	withdrawals and boundary adjust-	
<i>See also</i> Appendix E.		ments, recommendations	94-96
transfers of tenures	120-124	<i>See also</i> Appendix A; Crown-	
amalgamation of rights	124	granted land; Cutting Permits;	
exchanges of rights	123-124	old temporary tenures.	
through sale of shares	122		
transfers of licences	121-122		
<i>tree-farm land</i>			
assessment of	163-164		
tax rates	164		
<i>See also</i> Taxation Tree Farms.			
Tree-farm Licences			
acreage in	26, 31		
allocation procedures	119		
allowable annual cuts, current	86		
allowable annual cuts, revisions to			
	91-94		

U

unclassified land	237
unharvestable land	236
universities	366
utilization standards	
and industrial development	
	321, 322, 327
objectives	247-249

problems 244-247
 recommendations 249-256
 waste controls 242-243

V

Vancouver Log Salvage District.
See marine log salvage.
 veneer. *See* plywood.

W

waste controls. *See* utilization standards.
 Water Act 182
 Water Districts, Greater Vancouver and Victoria and regulation of private forestry 186
 Water Resources Service
 organization and responsibilities 343
See also resource administration.

watershed and operational planning 264
See also planning.

Western Forest Products Laboratory 366
 wild land

assessment of 163
 recommendations re taxation of 170-172

tax rates 164
 tax yields 165, 166

Wood-lots

recommendations for new policy 191-194

administration 193-194

allocation 193

charges 193

eligibility 193

expansion of present policy 191-192

rights and responsibilities 192-193

size 192

term 193

Z

zone foresters 350, 351