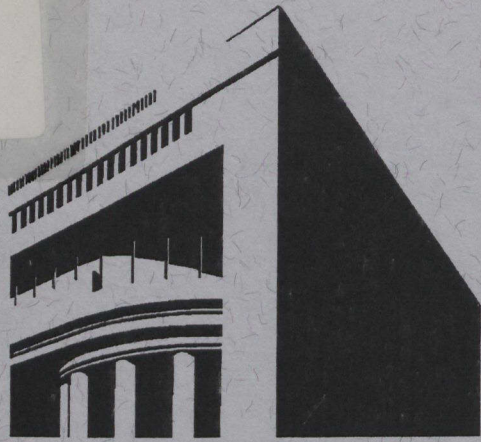


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Balancing Preservation and Forestry: Public
Lands Policy in British Columbia

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From January 18-June 6, 1997

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Submitted to the Canadian Government Faculty Research Program
January 1997

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**Balancing Preservation and Forestry:
Public Lands Policy in British Columbia**

Both Canada and the United States face difficult policy choices as they balance their timber and natural resource industries with environmental protection and the demands of indigenous peoples. The United States is in the process of a major reassessment of public lands policies, particularly in the western states. In Canada, public lands policy is much more a responsibility of the provinces. In the early-to-mid 1990s, British Columbia pursued an extremely ambitious effort to revise its public lands policy. It produced major new legislation, planning activities, and public participation processes that represent a remarkable attempt to involve the public in land management decisions. The purpose of this research is to explore the British Columbia public lands policy initiatives, assess their likely impact on the province, and discuss the implications of the Canadian experience for the Pacific Northwest.

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For several years, westerners in the U.S. have organized "sagebrush rebellions," "wise use" movements, political campaigns, and litigation strategies aimed at increasing local control over federal lands in their states. The election of Bill Clinton in 1992 and the selection of Bruce Babbitt as Secretary of Interior in 1993 led to a flurry of legislative and administrative proposals to change public lands policy. Promises to change grazing, mining, timber, water, and wilderness policy were met with tremendous opposition, and few changes were made during the first two years of the Clinton administration.

Species like the threatened northern spotted owl are also caught in the middle of the conflict over which jobs and industries will be advantaged as a result of public lands policy and the debate between loggers who want to clear cut remaining forests in order to keep the timber industry healthy for several more years and environmentalists who want to preserve the forests. The owl's primary habitat is in the national forests and Bureau of Land Management lands in California, Oregon, and Washington. It mainly eats Douglas firs. Because of low reproductive rates and low survival, it was listed as a threatened species by the U.S. Fish and Wildlife Service in 1989. It is believed to be an indicator species, since it feeds at the top of the food chain. If old-growth forests may also be threatened. The U.S. Forest Service held a summit meeting in Oregon in April 1993 to try and come up with a plan. It recommended later that year the creation of a reserve system that would also protect watersheds and riparian areas. The plan would see the exporting of raw logs for processing in other countries. Logging communities. Neither the timber industry nor the U.S. Forest Service supported the proposal; they did not agree on what level of timber harvest was acceptable. Environmentalists pushed for a logging ban in old growth forests. The plan would favor logging at the expense of fishing jobs.

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For several years, westerners in the U.S. have organized "sagebrush rebellions," "wise use" movements, political campaigns, and litigation strategies aimed at increasing local control over federal lands in their states. The election of Bill Clinton in 1992 and the selection of Bruce Babbitt as Secretary of Interior in 1993 led to a flurry of legislative and administrative proposals to change public lands policy. Promises to change grazing, mining, timber, water, and wilderness policy were met with tremendous opposition, and few changes were made during the first two years of the Clinton administration.

Species like the threatened northern spotted owl are also caught in the middle of the conflict over which jobs and industries will be advantaged as a result of public lands policy and the debate between loggers who want to clear cut remaining forests in order to keep the timber industry health for several more years and environmentalists who want to preserve the forests. The owl's primary habitat is in the national forests and Bureau of Land Management lands in California, Oregon, and Washington that contain Douglas firs. Because of low reproductive rates and low survival rates of young owls, it was listed as a threatened species by the U.S. Fish and Wildlife Service in 1990. The owl is believed to be an indicator species, since it feeds at the top level of the forest, and other species in these old-growth forests may also be threatened. The Clinton administration held a summit meeting in Oregon in April 1993 to try and come up with a compromise plan. It recommended later that year the creation of a reserve system for many old-growth areas that would also protect watersheds and riparian areas, changes in tax policy to discourage the exporting of raw logs for processing in other countries, and financial assistance to logging communities. Neither the timber industry nor the conservation community was happy with the proposal: they did not agree on what level of timber cutting was sustainable; environmentalists pushed for a logging ban in old growth forests, while timber companies were permitting to make thinning and salvaging cuts; and allowing cuts around salmon streams would favor logging at the expense of fishing jobs.¹

The Northwest Forest Plan became the centerpiece of the Clinton approach. The administration brought together biologists, hydrologists, economists, and other scientists in a

Forest Ecosystem Management Assessment Team that identified ten options for managing all or part of 17 national forests that provide habitat for the spotted owl. The options ranged from preserving all remaining old-growth forests to reaffirming existing management plans, and included alternative designations of reserve areas and levels of logging outside those protected enclaves. The team also assessed the impact of alternatives on biodiversity, finding that the viability of some 1,300 species was a direct function of the size of old-growth reserves. The option the Clinton administration ultimately selected was one of the least environmentally protective. It designated about half of the old-growth forest acreage outside of wilderness areas as timber-producing lands. In exchange for opening lands to produce about 1.2 billion board feet of lumber a year, the plan increased the threat to some 400 species whose habitats became more isolated and fragmented.

The July 1993 Northwest Timber Plan allowed logging of about 12 billion board feet of timber over 10 years, or about 1.2 billion annually on Federal lands in the Northwest that produced more than 5 billion a year in the 1980s; established reserves for the threatened northern spotted owl in which logging would be limited to dead and dying tress and thinning of some live ones, but only where that poses no threat to the owl; set up 10 special management areas where experimental harvesting techniques would be used; established no-logging buffer zones around sensitive streams and protects entire watersheds to try to avoid endangered salmon and other wildlife; proposed that Congress appropriate \$1.2 billion over five years, including \$270 million in the fiscal year 1994, to assist the region's economy through economic development grants, small business zones, job training money and funds to have loggers restore rivers damaged by excessive logging; and asked Congress to encourage more domestic milling by eliminating a tax subsidy for timber companies that export raw logs.²

Much of the debate among the Clinton administration, environmentalists, and timber stakeholders focused on the impact on timber jobs. The option selected was projected to result in a loss of 6,000 jobs. Preserving all old-growth forests was projected to cost 13,000 jobs. Industry representatives had projected a loss of 60,000 jobs. The plan also included federal assistance to help communities diversify their economies.³ In October, the administration reached agreement with 12 different environmental groups. Logging will be permitted in some Northwestern forests while promising that they, the Clinton Administration, will work against any legislation in Congress that seeks exemption from environmental laws or promotes a long-term logging plan. In Clinton's proposed 10-year plan, logging would be reduced to 1.2 billion board feet per year. This is about a quarter of the timber that is usually extracted.⁴

The evolution of the Clinton administration's plan to balance the concerns of environmentalists and the timber industry in protecting the spotted owl, old growth forests, jobs, and profits, is a particularly interesting case study of the interaction of Congress, the president, executive branch agencies, Federal courts, national environmental and industry interests, and local organizations. Environmental groups were rather successful in challenging the power of the timber industry and in developing a two-tiered strategy of judicial challenges and political lobbying to protect old-growth forests. The courts, in

particular, played a major role in upsetting the traditional power structure of industry, federal agencies, and congressional oversight committees and expanding the concern from a regional one to a national issue.

However, the election of the Republican Congress in 1995 shifted the locus of policy change to Congress, where virtually every environmental and natural resource law has come under challenge. Proposals to increase salvage timber sales, privatize public lands, revise the Endangered Species Act, develop the oil resources of the North Slope and the Arctic National Wildlife Refuge, reduce the size of national parks and reserves, and require compensation to landowners when regulations affect their property values are all part of the Republican agenda in the new Congress. The political clout of environmental interests has been greatly weakened, and Congress is clearly oriented toward resource development and reducing public regulation of timber and other natural resources.

Forest policy in the Northwest has a long history of controversy. An earlier spotted owl management plan was rejected by a federal court because its Environmental Impact Statement was incomplete and included outdated scientific evidence and false assumptions. The Supreme Court prohibited the Forest Service from permitting timber cutting in areas that served as habitat for the spotted owl.⁵ Logging of old-growth forests in the Northwest was described by Judge William Dwyer, a Reagan appointee, as "a remarkable series of violations of the environmental laws" and "a deliberate and systematic refusal to comply with the laws protecting wildlife."⁶

How does the experience of British Columbia compare with the problem-plagued policies of the Pacific Northwest? At one level, this comparative policy study focuses on the similarities between public lands issues in the two nations as they seek to weigh economic and environmental goals. Part of the value of the comparative study, however, lies in the differences in political structure between the two countries and in exploring the debate over how to balance national and regional policy making authority. The great interest in the United States in devolution of federal authority to the states in public lands policy (as well as in other policy areas) can help shed light on Canadian efforts to balance federal and provincial authority. The Canadian perspective on federalism is also useful in exploring those issues in the U.S. Most of the comparative studies of environmental and natural resource policy in Canada and the United States emphasize the similarities in laws, the differences in regulatory style--Canadian regulation is more decentralized and discretionary, and the difficulty in assessing the consequences of these similarities and differences on environmental quality itself.

While Canada has played a major role in international efforts to protect the environment, it faces considerable challenges at home as it struggles to ensure ecologically sustainable economic growth. Provinces have enacted most of the environmental laws in place in Canada, and the country's environmental future lies to a great extent in what happens in the provinces and the ability of provincial leaders to balance economic demands with environmental protection. Some scholars argue that the Canadian system tolerates too much departure from national policy goals by independent minded provincial leaders, and

that policy making is fragmented and sometimes fails to deal with problems that cross provincial borders. In the late 1980s, Canadian courts began to be more involved in environmental disputes, complicating regulatory efforts. Canada-U.S. economic relations, shaped by NAFTA and other accords, also affect environmental policy and the sustainability of natural resources. Public lands policy in Canada is particularly complicated by the debate over the rights of indigenous peoples. Like their neighbors to the South, Canadians have been primarily concerned with ensuring that lands and natural resources were available for the use of the polity as a whole, and native peoples were either removed to reservations or encouraged to assimilate into white society. While relatively few claims for Aboriginal lands remain in the United States, there are a growing number in Canada that are being pursued in the courts and in Parliament. While both Congress and Parliament have broad power to regulate native peoples lands, Canadian courts have been much more willing to subject the acts of Parliament to stringent review to protect the interests of the First Nations. One of the greatest differences between the two nations lies in the traditional Canadian opposition to Indian self-government. Unlike the widespread acceptance in the United States of tribal government, the Canadian federal government has kept very strong reins on the tribal councils it established to govern tribes and reservations.

A dramatic breakthrough occurred in 1991 when the government of Ontario formally recognized the inherent right of native peoples in that province to be self-governing. In an agreement with the Chiefs of First Nations, the Ontario Premier became the first Canadian government leader in the country to acknowledge the right of self government. The agreement refers to the 14,000 members of native tribes in the province as "distinct nations with their governments, cultures, languages, traditions, customs and territories" and proclaims their right to self-government "flows from the Creator and from the First Nations' original occupation of the land." The ill-fated Constitution of 1992 gave unprecedented recognition to the right of aboriginal self government. The agreement negotiated between representatives of the federal government and aboriginal peoples emphasized that the Constitution should recognize the inherent right of self-government for aboriginal peoples. The proposal would have made Aboriginal governments one of three constitutionally recognized orders of government within the Canadian federation. The mechanisms of self-government were to ensure that the needs and circumstances of Aboriginal communities across Canada were addressed, and that all Aboriginal peoples would have equitable access to this negotiating process. Laws enacted by Aboriginal governments would have to be consistent with "federal and provincial laws essential to the preservation of peace, order and good government in Canada.

The defeat of the constitutional reforms in 1992 have created great uncertainty concerning how natural resource development, environmental protection, and rights of First Peoples will be balanced. Many Canadians, like U.S. residents, believe that since their nations have cut down their old-growth forests and polluted the atmosphere with their coal cannot without great irony lecture to the less developed countries about how to engage in sustainable development or how to preserve the land rights of native peoples. Disputes over salmon fishing have brought together Aboriginal peoples in Canada and the U.S. with Federal, state, and provincial officials.

An Overview of British Columbia Forests

British Columbia forests are largely made up of coniferous or softwood species, but there are some deciduous or hardwood species such as aspen, alder, and birch. Some forests have been logged for years and are in a constant cycle of cuts, replanting, and growth. Some 95 percent of British Columbia's 95 million hectares is publicly owned; 85 percent of the province has been designated as Provincial Forests, more than half of the public forest lands--50 million hectares--are roadless, backcountry areas. About half of the total public lands are productive forests, and half of these lands--more than 25 percent of the designated lands--are currently available for timber harvesting. Each year, about one percent of the forests are actually harvested: 1992-93, 196,000 crown and 25,000 private hectares were harvested.⁷ More of British Columbia's forests are publicly owned than in any other country: in B.C., nearly 99 percent of the forests are publicly owned; in Canada as a whole, 92 percent are public. In contrast, the percentage of forests publicly owned in the United States is 28 percent: in Sweden, 26 percent; in the U.K., 40 percent; and in Japan, 32 percent.⁸

B.C. forests include national parks, provincial parks, and ecological reserves that are completely protected against development (6.4 million hectares, 6.8 percent of the province) and recreation and wilderness areas that are partially protected (1.0 million hectares, 1.1 percent of the province). Another 10.1 million acres are Protected Areas Strategy study areas, 10.7 percent of the province. B.C. is Canada's most biologically diverse province and is home to at least 85 freshwater fish species, 280 mammal species, 500 bird species, 21 amphibian species, and from 50,000 to 70,000 invertebrate species.⁹ Some 33 pairs of Spotted Owls and 15 nesting sites have been discovered in Canada, all in Lower Mainland B.C. and only in forests at least 120 years old. The owls were designated as endangered in Canada in 1986. They are considered indicator species for the overall health of forests.¹⁰ Residents of B.C. make some 47 million visits to provincial forests each year and an additional eight million visits are from non-residents. Recreationists spend an estimated \$2.5 billion a year as part of their visits.¹¹ The Forest Service also issues approximately 2,000 grazing permits and licenses and earns \$2 million in revenue each year. Grazing permits are good for five years; licenses, for ten years. Selective thinning of dense forests occurs in order to protect forage against forest encroachment.¹²

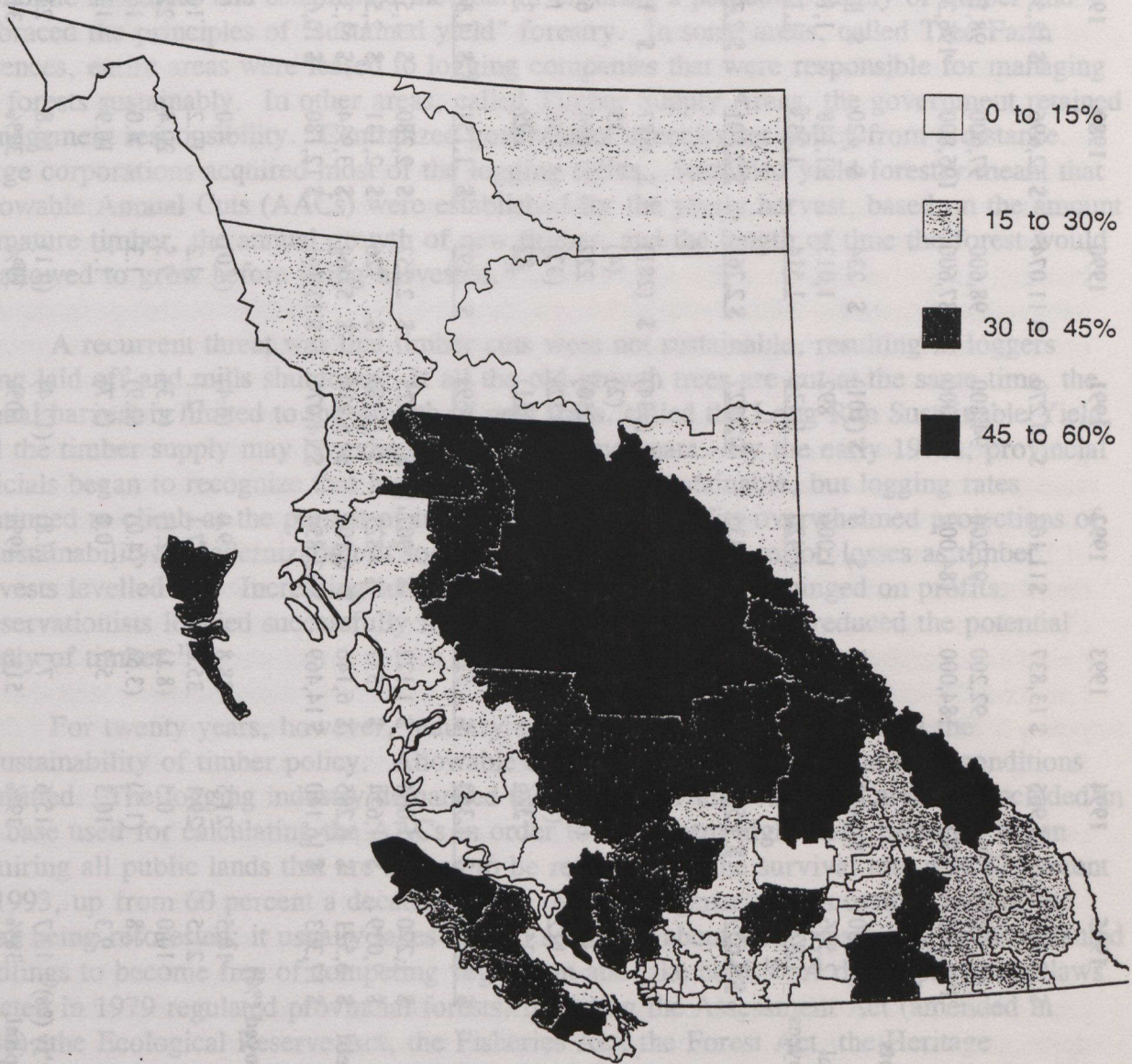
The temperate rainforest of British Columbia's central coast is one of the great wilderness areas of North America. It is a vast expanse of snow and glaciers, archipelagos and fjords, abundant fish and game, and clean water. These 26 million acres of giant Sitka spruces, red cedars, and western hemlocks have largely escaped the timber cuts that have occurred throughout the southern part of the province and form the largest old-growth forest on the continent. The lands include 6,000 square miles of the ancestral home of the Heiltsuk Indians but were claimed by the British in the late Nineteenth Century. The Heiltsuk are trying to regain control of the lands before the provincial government allows timber companies to cut down the forests. But the tribe members are not united; many view logging as an economic boon and support industry efforts and even seek the jobs they offer. The claim is expected to take five years to wind its way through the Canadian courts.¹³

The forest industry has been a major element of British Columbia's economy for generations. It is the largest employer in the province: in some areas, forest industry jobs make up from 45 to 60 percent of the total employment (see Figure 1). According to the Forest Alliance of British Columbia, in the Vancouver metropolitan area, 19,500 workers or 2.4 percent of the total workforce is employed in the forestry sector; an additional 113,000 workers, or 16.3 percent of the labor force, are estimated to be dependent on the forest industry for employment. More than half (52 percent) of the forest-dependent jobs are in the Vancouver metro area. Revenues from the industry provide to the public provides wages for 25,000 doctors, nurses, teachers, social workers, and other public employees and generates nearly \$3 billion a year in provincial revenues. The industry represents about 18 percent (more than \$6 billion) of the province's annual Gross Domestic Product.¹⁴

Sales of forest products doubled between 1986 and 1995, from more than \$9 billion to nearly \$18 billion. Employment has remained quite constant over the past decade: some 97,500 workers were employed in the forest industry in 1995 and another 195,000 workers provided supplies and services to the timber industry or were otherwise indirectly employed by the industry.¹⁵ Forest industry employees earned an average of more than \$45,000 a year, nearly one-and-a-half times the \$31,000 earned by the average industrial worker in the province. Twenty-six percent of the industry's earnings are returned to the provincial government through stumpage fees and income taxes and other payments made by or on behalf of forestry workers; the government receives additional taxes and revenues from those indirectly employed in the industry. Net earnings of the industry have been uneven. In 1995, the industry had net earnings of nearly \$1.3 billion, but in 1990-1992 it suffered net losses due to a decline in prices and demand. The annual log harvest in 1995 was 76.5 million cubic feet, down from a decade high of 90.1 million cubic feet in 1987, but still slightly higher than that of three of the four previous years. Annual logging costs have more than doubled, from \$33/million cubic feet in 1986, to \$79 in 1995. The return on shareholders' equity was 13.7 percent in 1995, down from decade high of 26.3 percent in 1987. See Table 1.

Figure 1

The Importance of the Forest Industry in British Columbia
Percent of Regional Employment Attributable to Forest Industry



Source: Government of British Columbia, "British Columbia's Forest Renewal Plan" (Victoria, B.C.: Queen's Printer, 1994): iv.

Table 1: The Forest Industry in British Columbia

Summary Financial Data 1986-1995¹

(\$ millions)

	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986
Sales	\$ 17,676	\$ 15,965	\$ 13,837	\$ 11,162	\$ 10,270	\$ 11,074	\$ 12,696	\$ 12,547	\$ 11,958	\$ 9,352
Direct Employment	97,500	95,900	92,200	92,200	94,800	98,600	97,600	98,100	95,000	94,600
Indirect Employment	195,000	192,000	184,000	184,000	190,000	187,600	195,800	196,200	190,000	189,200
Payments to Governments										
Federal	\$ 280	\$ 413	\$ 165	\$ 9	\$ (101)	\$ 234	\$ 420	\$ 455	\$ 360	\$ 298
Provincial and Municipal	2,506	2,414	1,439	1,006	892	1,013	1,148	1,138	1,079	596
Related to Direct Employees	1,873	1,740	1,560	1,420	1,436	1,514	1,233	1,170	1,128	974
Total	\$ 4,659	\$ 4,567	\$ 3,164	\$ 2,435	\$ 2,227	\$ 2,761	\$ 2,801	\$ 2,763	\$ 2,567	\$ 1,868
Net Earnings (Loss)										
Lumber	\$ 479	\$ 1,136	\$ 1,235	\$ 182	\$ (334)	\$ (281)	\$ 77	\$ 175	\$ 530	\$ 523
Plywood	46	65	70	24	(2)	(4)	35	18	42	75
Market Pulp	393	(103)	(479)	(178)	(250)	227	694	654	481	336
Newsprint	112	(64)	(188)	(220)	(152)	(33)	36	163	164	247
Other Operations	250	326	(118)	(70)	(131)	82	309	330	159	134
Total	\$ 1,280	\$ 1,350	\$ 520	\$ (262)	\$ (869)	\$ (9)	\$ 1,151	\$ 1,340	\$ 1,376	\$ 1,315
Capital Expenditures	\$ 1,270	\$ 1,064	\$ 1,122	\$ 907	\$ 1,525	\$ 2,252	\$ 2,280	\$ 1,537	\$ 1,075	\$ 553
Cash Flow	\$ 2,039	\$ 1,624	\$ 537	\$ 823	\$ (678)	\$ 726	\$ 2,131	\$ 2,559	\$ 2,826	\$ 1,442
Short and Long Term Debt	\$ 6,521	\$ 6,285	\$ 6,146	\$ 6,102	\$ 5,934	\$ 5,064	\$ 3,934	\$ 3,358	\$ 2,579	\$ 3,309
Capital Employed	\$ 17,303	\$ 16,140	\$ 14,469	\$ 13,854	\$ 14,074	\$ 13,141	\$ 12,180	\$ 10,690	\$ 8,864	\$ 8,090
Return on Capital Employed (%)										
Lumber	10.5	21.5	28.8	9.0	(6.4)	(4.0)	4.0	6.3	18.7	7.6
Plywood	21.5	29.1	35.0	17.1	2.1	1.2	19.2	10.7	21.9	22.1
Market Pulp	10.0	0.5	(8.1)	(2.1)	(4.3)	7.5	20.4	22.8	22.2	9.5
Newsprint	5.8	(1.2)	(3.5)	(4.0)	(2.9)	1.3	4.0	16.4	18.3	16.8
Total	9.3	10.3	5.7	0.8	(3.7)	1.7	10.9	13.9	17.4	10.2
Ret'n on Shareholders' Eq'ty (%)	13.7	15.6	7.1	(3.8)	(12.4)	(0.1)	16.8	21.9	26.3	14.8
Debt as a % of Total Capital.	38%	39%	51%	49%	50%	39%	32%	31%	29%	41%
Log Harvest (millions of m ³)	76.5	75.6	79.2	74.0	73.7	78.6	87.6	87.1	90.9	78.0
Average Logging Costs (\$/m ³)	79	69	54	48	47	46	44	41	35	33

Note

1. B.C. operations only.

Source: Price Waterhouse, "The Forest Industry in British Columbia 1995." Vancouver, B.C.: Price Waterhouse, 1996: 33.

British Columbia Forest Policy

British Columbia's forests were heavily harvested in the Nineteenth and Twentieth centuries. Little value was given to forests: timber cuts were expected to continue until the trees were gone and the land could be used for agriculture. The Forest Service first planted seedlings in 1930, and had planted three billion seedlings by 1993. By the 1940s, people began to realize that the provincial forests were not limitless, and timber companies began replanting areas that had been clearcut. The Forest Act of 1947 recognized the forests as economic resources and established the goal of ensuring a perpetual supply of timber and embraced the principles of "sustained yield" forestry. In some areas, called Tree Farm Licences, entire areas were leased to logging companies that were responsible for managing the forests sustainably. In other areas, called Timber Supply Areas, the government retained management responsibility. Centralized government agencies set policy from a distance. Large corporations acquired most of the logging rights. Sustained yield forestry meant that Allowable Annual Cuts (AACs) were established for the yearly harvest, based on the amount of mature timber, the annual growth of new timber, and the length of time the forest would be allowed to grow before being harvested.¹⁶

A recurrent threat was that timber cuts were not sustainable, resulting in loggers being laid off and mills shutdown. If all the old-growth trees are cut at the same time, the annual harvest is limited to the growth of new trees, called the Long Run Sustainable Yield, and the timber supply may be exhausted during some years. By the early 1970s, provincial officials began to recognize that logging rates were not sustainable, but logging rates continued to climb as the pursuit of immediate jobs and profits overwhelmed projections of unsustainability. Modernization of logging technology resulted in job losses as timber harvests levelled off. Increasing international competition also impinged on profits. Preservationists lobbied successfully for the creation parks that also reduced the potential supply of timber.¹⁷

For twenty years, however, industry and government officials ignored the unsustainability of timber policy. Allowable annual cuts were kept higher than conditions permitted. The logging industry demanded that remote or uneconomical areas be included in the base used for calculating the AACs in order to keep them high. The province began requiring all public lands that are logged to be reforested. The survival rate was 87 percent in 1993, up from 60 percent a decade before. Natural regeneration is used in half of the areas being reforested; it usually takes natural seedlings about three years longer than planted seedlings to become free of competing vegetation and take hold.¹⁸ A dozen provincial laws enacted in 1979 regulated provincial forests, including the Assessment Act (amended in 1986), the Ecological Reserve Act, the Fisheries Act, the Forest Act, the Heritage Conservation Act, The Land Act, the Ministry of Forests Act, the Park Act, the Range Act, the Social Service Tax Act, the Taxation (Rural Area) Act, and the Water Act. Other provincial laws affecting forests are the 1982 Wildlife Act and the 1987 Motor Fuel Tax Act and Regulation. Two federal laws, the 1979 Fisheries Act and the 1985 Indian Act also affect forests.¹⁹

The Timber Supply Review Project was initiated in 1992 to review timber cutting throughout the province and determine sustainable levels of annual allowable cuts. The project resulted in reduced cuts of about a million and a half cubic meters of wood and the loss of more than 2,000 jobs, as the study found that logging rates could not be sustained over time. It concluded that in 1990, some 10.47 million cubic meters of timber was cut while the sustainable harvesting rate was only 7.78 million cubic feet. Most of the resultant job losses occurred in the resource communities, and policy makers did little to alleviate the problem. The job losses were blamed on environmentalists; displaced workers complained that protecting endangered species had become more important than preserving the livelihood of families. Tension, conflict, and anger split communities and made collective efforts to find solutions almost impossible.²⁰

In 1993, the provincial government, prompted by projections that forest harvests were likely to decline by 15 to 30 percent over the next fifty years, established a Forest Sector Strategy Committee. The committee, made up of representatives from industry, labor, environmentalists, local governments, provincial agencies, First Nations, and other stake holders, sought to find ways to balance the competing values of forests, as sources of timber, habitats for fish and wildlife, watersheds, recreational areas, home to Native peoples, and ecosystems of critical importance to current and future generations.²¹

By the mid-1990s, British Columbia had put in place a number of policies aimed at public lands, natural resources, and timber. The Forest Renewal Plan seeks to increase the value of timber resources, through investments in value-added manufacturing, worker training, and environmental quality. The Protected Area Strategy seeks to double the amount of lands protected as wilderness and parks. The Forest Practices Code is the provincial law that regulates timber harvesting and seeks to protect watersheds and wildlife. The Commission on Resources and Environment was created to help resolve land disputes and guide a comprehensive planning effort to develop broad regional plans and more specific Land and Resource Management Plans is the fourth element in the province's land use policy. These policy efforts are affected by other programs, including the provincial Timber Supply Review, which collects information on resources and recommends harvest levels and the B.C. Treaty Commission, Interim Measures, and First Nations' Policy Forums, established to help resolve treaty disputes and ensure recognition of the rights and concerns of First Peoples.

The province has undertaken a very ambitious policy effort to assist the timber industry and other industries to ensure economic growth, protect environmental quality, and provide for broad public participation. How well have they achieved these goals? How appropriate are the goals, given the challenges and opportunities represented by the province?

The Forest Renewal Plan

The British Columbia's Forest Renewal Plan, released in 1994, was touted as the result of co-operation and shared vision among stakeholders that was "unlike any in the world today."²² The Forest Renewal Plan promised to achieve five goals:

- 1) renew the land and keep the forests healthy,
- 2) invest in the forest lands which generate much of our wealth,
- 3) ensure sustainable use and enjoyment of our forests,
- 4) ensure the continued availability of good forest jobs, and
- 5) ensure the long term stability of communities that rely on the forests.²³

These goals are to be pursued through two major efforts: renewing forest health, and increasing the value added to forest products in provincial industry. Renewing forest health focuses on replanting of harvested areas; improving the thinning, spacing, pruning, and fertilization of trees; planting marginal agricultural and other lands with trees; and increasing research on improving timber yields. About half of the projected spending on the plan is aimed at these efforts. The investments promise to offset the projected decline in timber cuts and perhaps even increase future harvest levels, protect timber jobs and create new jobs in forest renewal, and stabilize timber communities. The plan also calls for investments in cleaning up rivers and streams damaged by logging, restoring watersheds and hillsides marred by roads, protecting fisheries and wildlife, research on more environmentally-sensitive logging practices, and greater sharing of responsibility for management of the forests with other stakeholders. Forest output is to be increased by creating incentives for cutting less commercially desirable types of timber and salvaging more of the residual material left in harvested areas and selective harvesting rather than clearcutting in some areas.²⁴

The second priority, adding more value to the province's timber resources, includes financial assistance to new and existing companies that add value to timber, research and development funding for new wood manufacturing technologies and products, and investments in forest worker training for new harvesting techniques and new jobs in forest renewal and environmental restoration. The ultimate purpose here is to reverse the trend towards fewer and fewer jobs for each unit of timber harvested. Every program is to include special initiatives to encourage the participation of First Peoples, such as joint ventures with First Nations' companies; training and employment opportunities; and resource management efforts. Forest communities are to be strengthened through economic development planning grants, assistance in diversifying local economies, and additional funding under other economic development programs.²⁵

The Forest Renewal Plan is financed by an increase in the stumpage fees that companies pay for the opportunity to harvest timber on provincial lands. These fees are expected to produce, on average, some \$400 million a year to fund the plan. Funding is expected to remain constant despite fluctuating timber revenue; excess revenues from some years will be saved for spending during other, lower-revenue years. Implementation of the plan is the responsibility of Forest Renewal BC, a new agency made up of representatives from government, industry, workers, communities, First Nations, and environmental groups. The agency reports to the Minister of Forests and the provincial legislature.²⁶

The Forest Practices Code

The Forest Practices Code is a comprehensive set of legal requirements for timber harvesting in British Columbia. The Code includes the act itself, regulations, and standards. The government has also published a series of guidebooks that provide recommendations on how to comply with the standards and regulations. The guides become legally enforceable when inserted in plans, prescriptions, and contracts. The code was passed in July 1994; the regulations were approved in January and February, 1995, and the code took effect on June 15, 1995. Companies were to substantially comply with the code in 1995 and to be in full compliance by June 15, 1997. The code is a massive undertaking that provides for strategic planning, specifies forest practices for forest and range agreements, and outlines procedures and administrative structures for implementation. Its topics include planning; forest roads, trails, and landings; timber harvesting; silviculture; soil conservation and erosion control; domestic water quality; riparian management; range management; wildlife and habitat; biodiversity; recreation and visual landscape; culture and heritage; and wilderness. The regulations establish the type and contents of plans and prescriptions required before forest operations may commence and may specify a particular practice or process. The standards expand on the regulations and provide for specific practices. They can be issued by the chief forester, and they may be incorporated into the regulations.²⁷ The regulations under the code address the following topics:

Planning	Strategic Planning Operational Planning
Field Practice	Forest Fire Prevention and Suppression Forest Service Road Use Range Practices Silvicultural Practices Timber Harvesting Practices Tree Cone, Seed and Vegetative Material
Administration	Administrative Review and Appeal Procedure Forest Practices Board Provincial Use Board Security for Forest Practice Liabilities
Enforcement	Administrative Remedies
Transitional	Cutblock and Road Review ²⁸

The code requires resource objectives to be consistent with the provisions of the Land and Resource Management Plans. The code requires operational plans for forests, including Forest Development Plans, five year blueprints for where and how logging will occur, how riparian areas will be protected, silviculture prescriptions, and other decisions related to harvesting; Five-year silvicultural plans for stand management; and Range-use plans governing livestock grazing, building of fences, and limiting the spread of noxious weeds.

These plans are subject to public review and comment and approval by the forest district manager and others. Once the plans are approved, the forest practices regulations, standards, and guidebooks provide specific provisions for carrying out the approved activities. Timber harvesting practices regulations, for example, require that companies delineate the boundaries of cuts. The Boundary Marking Guidebook specifies that the markings should be "clearly marked with blazes or blue paint, enhanced with fluorescent orange flagging tape at five-metre intervals. The boundary line should be visible from at least five metres."²⁹

An interagency committee oversees the implementation of the code and its interaction with the ministries of Environment, Lands and Parks and Energy, and Mines and Petroleum Resources. A number of independent bodies are created in the code. The Forest Practices Code Appeals Commission hears appeals of enforcement actions and penalties. The Forest Practices Code Board investigates complaints raised by third parties. The Forest Practices Advisory Council brings together environmentalists, industry representatives, leaders of First Nations, and the general public to review the code's implementation and make recommendations. The Forest Practices Code Enforcement Office reviews enforcement policy and efforts. Enforcement of the code, the Forest Act, and regulations is a responsibility of the Ministry of Forests, and is enforced through inspections and audits.³⁰

The most common violations that occurred during the first year of the code's operation included:³¹

Damage to crown timber	85
Practices not in specifications	65
Regeneration shortfall	19
Environmental damage	19
Avoidable damage	18
Building trail not in plan	8
Logging out of specifications	7
Damage to log/leave tree	6
Unauthorized road construction	6
No new operation plan	6

The Protected Areas Strategy

In May 1992, B.C. announced its Protected Areas Strategy, a commitment to double its parklands and protected areas by the year 2000 to 12 percent of the province. The 12 percent goal came in response to a United Nations' recommendation to all nations to preserve at least that amount of their territory as wild lands.³² By 1996, 9.2 percent had been designated as protected areas. As of April, 1996, the following "Protected Areas" had been established in British Columbia:³³

<u>Category</u>	<u>Number</u>	<u>Hectares</u>
Provincial Parks		
Class A	443	6,838,617
Class B	2	3,778
Class C	21	562
Recreational Areas	25	816,774
Environmental and Land		
Use Act Designations	25	452,989
Ecological Reserves	139	159,477
Wilderness Areas	1	19,273
National Parks and Reserves	6	632,280
Wildlife Management Areas	13	23,372
Creston Valley WMA	1	1
Migratory Bird Sanctuaries	7	3,091
National Wildlife Areas	5	2,301
Other	98	116,000
Total	786	9,068,515

Protected areas include Tatshenshini-Atsek Wilderness Park, the largest internationally-protected area in the world, that connects national parks in the United States and Canada; Kitlope Valley, the world's largest protected coastal temperate rainforest; Khutzeymateen Valley, the first grizzly bear sanctuary; Ts'Yl-Os Provincial Park, formed through negotiations with 37 representatives of local and provincial organizations and the Nemiah Valley Indian band; old growth rainforests on Vancouver Island; and a great variety of mountains, lakes, and streams.³⁴ The following management principles provide guidance for protected areas:

The system, rather than individual areas, provides for the diversity of ecosystems, special features and outdoor recreation opportunities and experiences sought.

Zones within protected areas should range from areas which exclude public access in order to protect fragile and vulnerable ecosystems and sensitive, rare and endangered species, to zones which accommodate and/or enhance recreational and cultural opportunities and experiences.

Protected areas are established in perpetuity so that the ecological systems they encompass can continue to evolve with the minimum of intervention. Active management/habitat manipulation may be allowed when the structure or formation of ecosystems is seriously altered and manipulation is the only possible or best alternative available to restore ecological integrity.

Use of protected areas will be encouraged, where appropriate and consistent with the principle of maintaining ecological integrity, in order to realize the spiritual,

recreational, educational, cultural, tourism and health benefits that protected areas can provide.

Land use activities and traditional cultural uses that have changed a landscape and have acquired significance in their own right, may be recognized and respected.

The Protected Areas Strategy respects the treaty rights and Aboriginal rights and interests that exist in British Columbia. Aboriginal peoples may use protected areas for sustenance activities and traditional ceremonial or spiritual practices, subject to conservation objectives.

Developments within protected areas should be fully compatible with the principles of maintaining ecological integrity and minimum intervention with natural processes.

Recognition and special consideration will be given to existing tenures, licences, authorizations, and public use where uses are compatible with the objectives for which the area was established.

Protected areas are not islands; they exist as part of larger ecosystems and cultural landscapes. Therefore, management decisions, both inside and outside of protected areas, should be coordinated and integrated to the greatest extent possible while recognizing that resource development activities outside of protected areas are appropriate and necessary.

Protected areas are a public trust and opportunities for the public to provide input into the planning and management of protected areas system and individual protected areas must not be abridged. Planning and management should be done in partnership with key public stakeholders and government resource agencies. Protected area management plans will be established through an open public process.³⁵

Designated wilderness areas are part of provincial forests that are set aside as wilderness by an Order in Council. Nondesignated wilderness areas are provincial forest lands allocated to wilderness through integrated resource management plans.³⁶ Logging, mining, hydroelectric development, power lines and other rights of way, tourist resorts, marinas, and other developments are not allowed in protected areas. Grazing, hunting, fishing, horse and pack animal use, water control structures, lodges and cabins, off-road activities, motorized activities, watercraft, aircraft access, scientific research, and ecosystem and habitat restoration are permitted, subject to the provisions of the relevant management plans.³⁷

Land Use Planning

In 1992, the B.C. government established a Commission on Resources and Environment (CORE) to give provincial residents an opportunity to participate in the formulation of land-use plans for their regions. Regional plans were formulated for

Vancouver Island, Cariboo/Chilcotin, West Kootenay-Boundary, and East Kootenay. Two years of meetings, drafting and discussion recommendations, and the preparation of reports resulted in the publication of the four plans in 1994 and 1995. The goal of these plans is to ensure "community stability, secure jobs for workers, and a healthy environment" by providing for "land-use certainty." With these plans in place, the government proclaimed "it's time to get on with renewing the local forest industry so that we use the available timber smarter, better and more fully."³⁸

The Vancouver Land Use Plan divided the island into four main categories:

Protected areas: 13 percent of the island is dedicated to parks, ecological reserves and recreation areas, including the creation of 23 new parks;

Forest land reserves: 81 percent of the land is set aside for timber cuts, ranging from low-to-high intensity logging areas;

Settlement land: 3 percent of the land is settled by humans;

Agricultural lands: 3 percent of the land is secured as farm lands.

The plan established Community Resource Boards to advise the government on implementation of the plan, created a new position for a Forest Jobs Commissioner to help secure forest jobs, and created a jobs strategy to offset job loss in the timber industry with opportunities in other sectors.³⁹

The Cariboo-Chilcotin Land Use Plan divided the area into three main categories:

Protected areas: 12 percent of the land is dedicated to parks, ecological reserves and recreation areas, including 17 new protected areas;

Resource Development Zones: 80 percent of the land is set aside for resource development, including an enhanced resource development zone (40 percent) for intensive development at a moderate level; special resource development zone (20 percent) where logging, mining, and grazing takes place but must be balanced with ecological and recreational objectives; and integrated resource management zones (14 percent) for sustained resource development;

Settlement lands: 8 percent of the land is human settlements.

A Regional Resource Board provides for local participation in the implementation of the plan. A Resource Jobs Commissioner will coordinate efforts to secure jobs and provide transitional assistance. An Economic Action Forum will develop economic strategies in response to the plan.⁴⁰

The East Kootenay Land Use Plan divided the area into three main categories:

Protected areas: 16.5 percent of the land is dedicated to parks, ecological reserves and recreation areas, including 7 new protected areas;

Resource Development Zones: 74 percent of the land is set aside for resource development, including integrated resource management zones (55 percent) for sustained resource development at a moderate level; the special resource development zone (11.3 percent) where logging, mining, and grazing takes place but must be balanced with ecological and recreational objectives; and an enhanced resource development zone (7.7 percent) for intensive development;

Settlement lands: 9.1 percent of the land is human settlements.

A Resource Jobs Commissioner, a Rapid Response Team, and a Regional Transitional Review Board are created to develop new economic opportunities.⁴¹

The West Kootenay Land-Use Plan also divided the area into three main categories:

Protected areas: 11.3 percent of the land is dedicated to parks, ecological reserves and recreation areas, including the creation of 9 new protected areas;

Resource Development Zones: 74 percent of the land is set aside for resource development, including integrated resource management zones (50.4 percent) for sustained resource development at a moderate level; the special resource development zone (17.6 percent) where logging, mining, and grazing takes place but must be balanced with ecological and recreational objectives; and an enhanced resource development zone (10.8 percent) for intensive development;

Settlement lands: 9.9 percent of the land is human settlements.

As above, a Resource Jobs Commissioner, a Rapid Response Team, and a Regional Transitional Review Board are created to develop new economic opportunities.⁴²

Other consensus-based, land use planning roundtables for specific areas give stakeholders an opportunity to help shape land and resource management decisions. These roundtables have been organized by the Forest Alliance of British Columbia, non-profit organization that seeks to promote sustainable forestry. By July 1996, Land and Resource Management Plans had been initiated for Dawson Creek, Prince George, Fort John, Fort St. James, Fort Nelson, Lillooet, Lakes, Bulkley, Kalum, Okanagan-Shuswap, Robson Valley, and Kalum. The Kispiox and Vanderhoof plans were in the final stages of approval. The Kamloops plan was being implemented. Figure 2 is a map of the location of the plans.⁴³

Figure 2

Strategic Land-Use Plans in British Columbia

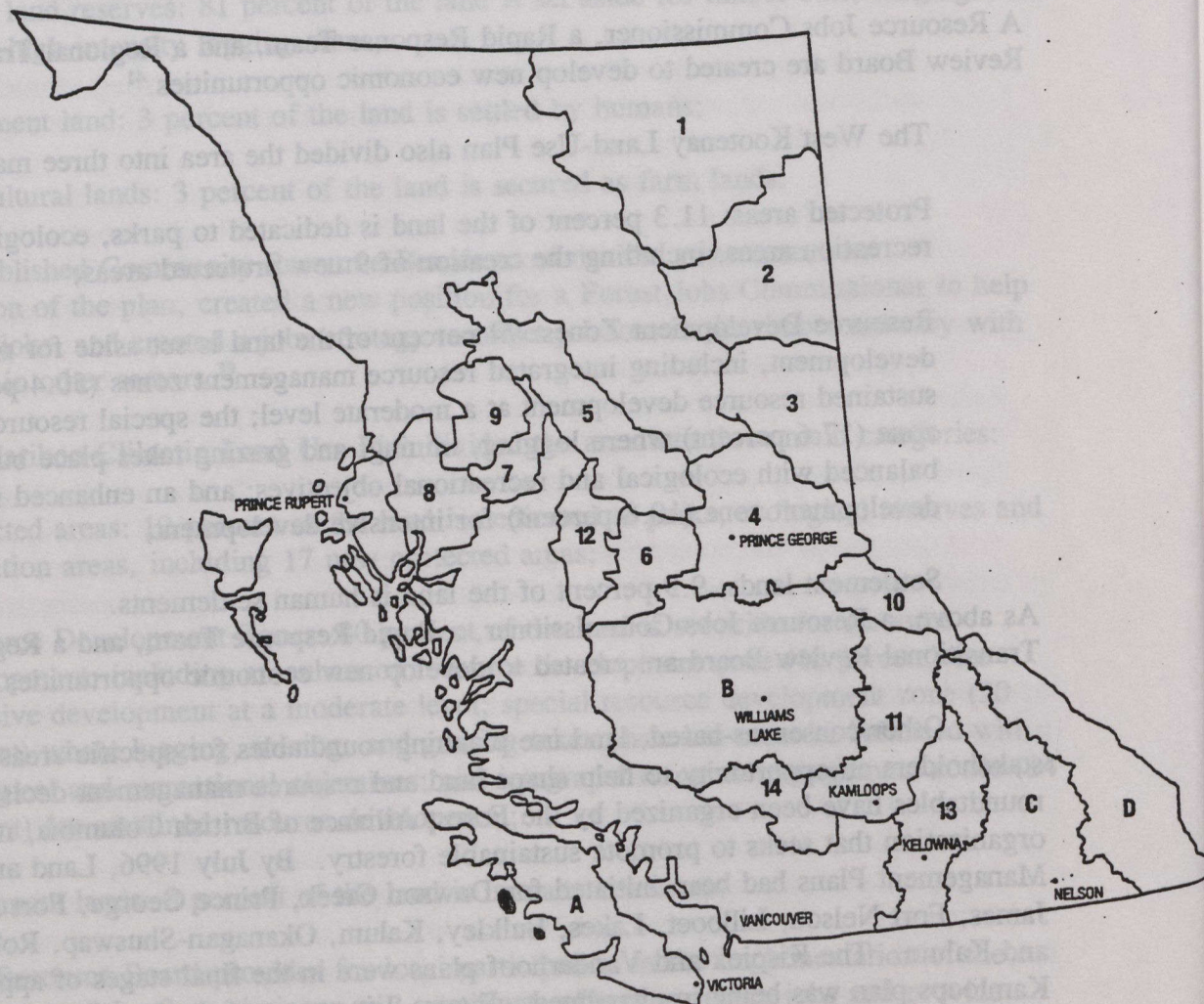
(Completed or in Progress)

Regional Plans

- A Vancouver Island
- B Cariboo/Chilcotin
- C West Kootenay-Boundary
- D East Kootenay

Land and Resource Management Plans

- | | |
|------------------|---------------------|
| 1 Fort Nelson | 7 Bulkley |
| 2 Fort St. John | 8 South Kalm |
| 3 Dawson Creek | 9 Kispiox |
| 4 Prince George | 10 Robson Valley |
| 5 Fort St. James | 11 Kamloops |
| 6 Vanderhoof | 12 Lakes |
| | 13 Okanagan-Shuswap |
| | 14 Lillooet |



Province of British Columbia, Land Use Coordination Office, "Status Report on Land and Resource Management Planning" (July 1996).

Assessing British Columbia Timber Policy

Those interested in forests usually take one of two positions. Preservationists believe that forests have intrinsic values as diverse ecosystems as well as instrumental environmental values such as stabilizing climates and serving as watersheds. Use of public forests should be limited to human activities that do not disrupt these critical ecological functions. But the predominant view has been that trees are crops and public forests are to be harvested as a product. There is no consensus over exactly how public forests can produce maximum yield. One approach seeks to manage trees of about the same age and size in a kind of industrial forestry approach where forests are tree farms. The biodiversity of old-growth forests is replaced with a monoculture of fast-growing trees that can be economically harvested. These forests are often logged through clear-cutting, where all trees in an area are cut at the same time and then the area is reseeded for the next generation of growth. Alternatively, forests could be harvested through the tree-seed approach, where some trees are left to provide seed for the next growth. Clear cutting is a simple, easily managed, economically efficient logging approach, that requires a minimum of management and planning. It facilitates the growth of desirable trees by ensuring they have access to sunlight. It also results in destroyed habitat and reduced biodiversity, soil erosion, water pollution, flooding, and reduced recreational uses of forests. A second approach maintains trees at different ages and sizes. Selective timber cuts are aimed at mature trees with high economic value are cut, but logging is carried out in a way that encourages the growth of smaller trees, promotes biological diversity, and accommodates multiple uses of forests. Vegetation is naturally regenerated and less erosion and damage to watersheds occur than in clearcutting. Some foresters believe selective cuts are less profitable than clear cuts. Strip cutting is a middle strategy, involving clear cuts along sections of the forest but leaving surrounding areas intact; in this way, an entire forest could be eventually clear-cut, but over a long-enough period of time that forest health is significantly preserved.⁴⁴

The Government's Critics

Logging interests have been critical of the Forest Practices Code as a burdensome, bureaucratic infringement on their business. The code and accompanying regulations and guidelines form a pile of paper more than three feet high. They acknowledge some benefits such as protection of water, wildlife, and biodiversity; some stability to exports; and consistency in logging practices across the province. But the costs of the code, industry officials, charge, are too high. Workers are afraid of losing their jobs. Companies are afraid of fines from inadvertent violations of the detailed provisions that could cost them \$1 million, although during the first year, violations resulted in stop-work orders or remediation orders, or penalties of less than \$10,000. Typical violations include damaging Crown timber, practices that don't conform to specifications, causing environmental damage, or building trails that were not provided for in plans. Industry officials argue that the environmental benefits of compliance with the codes are not just offset by increased costs, but also by increased risks to loggers. Narrower roads that leave less of a footprint result in fewer landslides, less soil compaction, and more wildlife habitat, as well as less of a safety zone for loggers who may need to flee rolling logs.⁴⁵

As a result of the code, industry estimates conclude that logging costs in B.C. are now among the highest in the world; B.C. pulp is the most expensive to manufacture in the world. The cost of compliance to industry in 1995 was \$10/cubic meter of wood sold on the coast and \$8/cubic meter sold in the interior, for a total cost of \$600 million or one-half of the industry's \$1.28 billion in earnings that year. One industry economist argued that the total cost to the provincial economy was \$2.1 billion in 1995. The costs come not from compliance activities but from lost revenues as trees are left behind for wildlife reserves, buffer zones, and other ecological purposes. No comparable study of the benefits of the code has apparently been completed.⁴⁶ Despite the massive size of the Forest Practices Code, it still gives lots of discretion to district managers.

There has been some opposition to logging, and a few modest restrictions have resulted. The International Coalition to Save British Columbia's Forest, part of the Rainforest Action Network, charged in 1995 that only 15 of the 92 unlogged temperate rainforest watersheds of 12,000 acres or more that once existed in the province remain. Of the 15 remaining, six are unprotected, including three in Clayoquot Sound, another slice of the Pacific coastal temperate rainforest along Vancouver Island's western coast that was once part of the temperate rain forest that stretched from Northern California to Alaska. Clayoquot is a particularly critical ecosystem, 670,000 acres of wilderness forests and beaches that is home to more than 4,500 known species of sea and land creatures, five species of Pacific salmon, two species of whales, the bald eagle, the endangered marbled murrelet, and many other sea mammals, migrating waterfowl and shorebirds, wolves, cougars, and bears. Some 415,000 acres of the sound were temperate rainforests, but 20 percent of the forest has already been clearcut, and an additional 54 percent is slated for logging. The provincial government has protected about 13 percent of Vancouver Island, preserving only six percent of the ancient forests. The coalition argues that at least 40 percent of the island will need to be set aside in reserves in order to preserve most of its wildlife. Current provincial plans will result in loss of half of the island's wildlife. Logging also threatens the salmon industry and ecotourism.⁴⁷

In 1993, the provincial government opened nearly 75 percent of the forests to clearcutting to MacMillan Bloedel and other timber companies, the last stretch of Vancouver's old-growth forests, including trees that were 1,200 years old. Protestors blockaded logging roads for several months during the summer and fall of 1993 in the largest act of civil disobedience in Canadian history; more than 900 of the thousands of protestors were arrested. The Nuu-chah-nulth people joined with environmental groups to protest the logging. Public opposition led to an Interim Measures Agreement issued by the B.C. government that gave First Nations shared management power over the Sound and created a panel of scientists to study logging in the area. In the U.S., environmental groups formed the Clayoquot Rainforest Coalition to raise awareness of the issue and encourage consumers to pressure the B.C. government and logging companies. More than 50 percent of the province's forest products are exported to the U.S. In 1995, the provincial government accepted the recommendation's of the scientific report, agreeing to conduct analyses of the biological and cultural values of undisturbed watersheds before logging decisions are made,

give a clear role to the Nuu-chah-nulth in managing the forest, decreasing gradually the wood harvest from the area, and ending clearcutting altogether on the Sound. Environmental groups and the Nuu-chah-nulth are monitoring logging companies operating in the region to assure their compliance with the agreement, and are exploring ways of permanently protecting the Sound such as designating it as an International Biosphere Reserve.⁴⁸

Other protests have occurred. The Haida Islands were successful, after a twenty year battle, in blocking logging of a 50 mile long archipelago in the Queen Charlotte Islands. The Haisla Indians gained protection for 400,000 acres of their ancestral lands on the central coast.⁴⁹ Protests by First Peoples are not limited to the West. In Ontario, the Kettle and Stony Point First Nation tribe clashed with provincial police over control of the Ipperwash Provincial Park where tribal ancestors had been buried. One Indian was killed, the first death in modern Canadian history of an Indian protesting land policy.⁵⁰ Another group of militant First Peoples were involved in a shoot-out with Royal Canadian Mounted Police when they took over a privately owned lakeshore site near Gustafsen Lake that they claimed as an ancestral homeland. Chief Joseph Gosnell of the Nisga'a Indian band warned after talks with British Columbia officials to settle a land-claim dispute recently collapsed due to a federal-provincial fight over cost-sharing that violence might occur there as well.⁵¹

The B.C. government's commitment to double the size of the province's wilderness lands from six to twelve percent is, from one perspective, a major environmental achievement. As of 1996, it was half-way to that goal, having protected nine percent of the land as wilderness. Some environmental groups have supported the government's position. It is the first time the provincial government has expressly promised to double protected lands, and is more ambitious than other governments have been around the world. A number of environmental groups, funded by U.S. foundations, formed the B.C. Wilds coalition to work with the government.

Critics argue that patching together enough lands to preserve 12 percent of the province is not sufficient to protect its biodiversity and its role in the global biosphere. How much wilderness is needed to preserve some species such as salmon, grizzlies, or wolves? We should not gamble with the preservation of these species, but should protect enough to ensure their survival. One group has argued for preservation of 40 percent of the province. One problem is the legal ability of the province to protect the lands. Some of the lands belong to First Nations, and the government has agreed to finally sign treaties with them. The first agreement, with the Nishka, included about six percent of B.C. About 90 percent of the province is Crown or provincial land; the federal government owns only a small portion of the province.⁵²

The provincial Ministry of Forests, environmentalist critics charge, is nothing more than an arm of the timber industry. It facilitates the cutting of 500,000 acres of trees a year, most of which are shipped to Asia and the United States to be turned into pulp for newsprint. Some 25 percent of the forests lining the coast and inland waterways has been clearcut. Vancouver Island forests have been logged everywhere except in a few popular tourist spots. Industry-provincial government ties are particularly tight. The ministry is the largest single

stockholder of MacMillan Bloedel, the largest timber company on Vancouver Island. The company was cited 83 times between 1971 and 1995 for violations such as illegal dumping and logging protected lands, but has paid less than \$500,000 in fines. Other companies have been caught cutting timber in prohibited areas, but have been permitted to keep their timber and pay minimal fines. As a result, there is little incentive for the province to curtail logging.⁵³ Critics charge that the provincial government parcels out public lands to the timber industry

with no regard for the natural and cultural values they embody, nor for the rights of their indigenous inhabitants.... Having already wrought havoc on the province's most accessible forests, the timber barons and their bureaucratic servants would prefer to keep these lesser-known places hidden from view. Absent massive public protests, they will be able to invade B.C.'s last remaining unlogged watersheds, get out the cut, and leave.⁵⁴

Labor groups are also particularly critical of provincial logging policies that allow unprocessed logs to be exported, rather than keeping logs in the province to be milled and processed in other value-adding industries. One estimate is that some 3,000 jobs could be created if processing occurred in the province to the unprocessed logs that are exported.⁵⁵ BC Wilds was created in 1986 by the Earthlife Canada Foundation, and includes international and grassroots environmental groups, the fishing industry, and labor unions. It has given assistance to grassroots groups, contracted with experts for reports on relevant issues, conducted public symposiums, and published reports.⁵⁶ BC Wild also attacked the results of the Vancouver Island Land Use Plan, arguing that the annual allowable cut was more than two times the long-term sustainable rate.⁵⁷

The Southeast Wildlands Alliance, made up of environmental and recreation groups, advocates wilderness preservation, protection of old-growth forests, and wetlands. It has been critical of the government's goal of setting aside 12 percent of the province as insufficient to protect the great biodiversity of British Columbia. Old-growth forests contain trees that reach 1,800 years of age and are home to eight species of reptiles and amphibians, 41 bird species, and 31 mammal species whose habitats are limited to old-growth forests; 24 species are vulnerable to extinction. The alliance targeted several areas for protection, including the Stoltmann wilderness, a 15 km stretch of forests in the Lillooet Valley where logging has damaged the balance of the 185 km-long valley; the Mehatl Valley, home to spotted owls, wolf, grizzly, and cougars; and Natatlach Lakes, home of pristine waters and beaches.⁵⁸

BC Wild and the mainstream environmental groups have pledged to work with the government to limit the size of parks to 13 percent of the Lower Mainland. The Western Canada Wilderness Committee calls for 35 to 40 percent as the minimum necessary to protect wildlife habitat. One area they have singled out, for example, is the Stoltmann Wilderness, 260,000 hectares that make up over half of all the large unlogged valleys (over 5,000 hectares) in the Lower Mainland region. The area contains, according to government estimates, eight grizzlies, 700 black bears, 55 moose, 240 mountain goats, eight wolves, and

15 cougars. A Regional Public Advisory Committee recommended in 1995 that one-fifth of the area be preserved and the rest opened to logging.⁵⁹

The Western Canada Wilderness Committee has also emphasized the importance of preserving old-growth rainforests as watersheds and called for an end to logging in the three forests that serve as watersheds for the Vancouver area. The Provincial Water Rights Board indicated that "from a standpoint of public health, it is essential that no logging be allowed on the watersheds." Logging in the area includes cutting old-growth trees such as Douglas firs that are worth as much as \$40,000 worth of lumber from each tree, creating strong incentives to increase logging despite the danger of water pollution and erosion. Old-growth forests are more biologically diverse and less likely to degrade the soil than are same-age, planted forests.⁶⁰

The International Coalition to Save British Columbia's Forest argues that the Forest Practices Code fails to give the public the right to appeal decisions; its standards for the protection of prime salmon streams is weaker than U.S.F.S. standards for fishless streams; it limits but does not prohibit clearcuts; it provides little protection for endangered species and their habitat; and it reaffirms the power of provincial forest officials and timber executives that are responsible for some of the ecologically most destructive logging anywhere. The coalition's agenda for forest policy reform includes the following:

- An end to clearcutting in British Columbia

- A comprehensive inventory of forest resources

- Protection of enough wilderness to ensure the preservation of biodiversity, including all native species, pristine watersheds, and wildlife corridors

- "Selection-based ecoforestry" where logging does occur

- A transition to community control of resources and value-added manufacturing of forest products

- A ban on the export of raw and minimally processed logs

- Full cooperation with First Nation Peoples to protect their traditional lands.⁶¹

Public Lands and Ecology

One of the major consequences of the Forest Practices Code has been to limit the maximum size of clearcuts, as shown in the following figures. B.C. clearcuts are smaller than those in Ontario but about the same as those in Nova Scotia, and smaller than those in Washington and Oregon, but larger than in many other areas of the United States.⁶²

<u>Area</u>	<u>Maximum Permitted Clearcut in Hectares</u>
Northern British Columbia	60
Southern British Columbia	40
North Ontario	260
Nova Scotia	50
State of Washington	98
State of Oregon	98
State of California	16
Higher Elevation USFS	16
Lower Elevation USFS	25
Finland	10

Ecological considerations should play a primary role in forestry policy decisions. The conventional approach to protecting biodiversity has focused on relatively small parcels of land, in part because that is all the wild lands that are left, and in part because such compromises are seen as politically essential. But that approach has failed to protect many species such as grizzlies and salmon, who require vast stretches of land to survive and thrive. Setting aside small parcels of land will not ensure the preservation of threatened and endangered species. Limiting clearcutting is an essential step in protecting forest ecosystems, since that kind of logging is so damaging. Clearcutting destroys buffer zones that otherwise reduce the impact of flooding by absorbing and holding water, removes the forest canopy that is home to insects and bacteria, reduces carbon sinks and thereby contributes to the threat of global climate change, destroys the habitat of fish and wildlife, eliminates sustainable forest industries such as fruit-picking and sap extraction, and ravages aesthetic values and recreational opportunities.⁶³

Environmental and labor groups have focused attention on the impact of logging on salmon fishing. Trees and streams have an important symbiotic relationship. Trees provide shade that moderates water temperature during the day. Fallen trees help create pools of water that serve as new habitat for fish. Needles and leaves provide important sources of food for the algae and amoeba that fish eat. Some salmon go up small ditches and tributaries in the fall to spawn that are dry during the summer. Loggers have failed to recognize these dry beds as salmon spawning areas and destroyed them as they drove through with heavy equipment. Protection of riparian zones is critical, and the buffer strips provided for in the FPC are smaller than the 100 meter-wide zones fishing and conservation groups have demanded. In the Northwest United States, riparian zones are protected by buffers 91 meters wide for fish bearing streams, and 46 meter-wide buffers for non-fish bearing waters. The FPC also gives local forest managers the discretion to approve logging roads and cuts even closer to streams and lakes.⁶⁴

There are several options the government could have pursued to reduce logging and protect timber communities: make it possible for displaced workers to work in new forests,

encourage logging companies to use selective logging and thinning, and foster the forest equipment supply industry by requiring logging techniques that employed locally manufactured equipment rather than imported technologies. Forestry is dominated by large corporations regulated by large government bureaucracies, with little encouragement to small businesses, entrepreneurs, and a diversified economy. Instead of permitting only one kind of logging--clearcut and plant--the government could have encouraged experimentation with different kinds of approaches to logging in order to find those that are most sustainable and protective of forest ecosystems. Selective clearcuts, harvesting of dead and dying trees, and more value-added work done locally could be encouraged. The government could encourage the development of forest workers who develop skill and experience in sustainable forestry, rather than employing transient tree planters. Provincial forest policy seems to be driven by the single goal of maximizing the profits of the large timber companies. Cutbacks in timber cuts are required in order to ensure a sustainable yield. Other values are sacrificed to that narrow objective.⁶⁵

British Columbia forests do not compare well with those in other areas, in terms of the economic and social benefits they produce:⁶⁶

Forest	Volume logged (million m3)	Log value \$ per m3	Value added \$ per m3	Jobs per 1,000 m3
B.C.	74.6	139.36	56.21	1.01
Other Canada	86.3	259.75	110.57	2.20
U.S.	410.3	430.85	173.81	3.55
New Zealand	5.3	577.22	170.88	5.00
Sweden	60.0	242.80	79.49	2.52

The B.C. forest industry has become mechanized and capital intensive. Competition has caused companies to employ fewer and fewer loggers as a way to cut costs. Diversified forest products have been replaced by single-product production. Planting is done by transient workers with little connection to the land. Small enterprises are rare, and mainly limited to contractual work. An alternative approach is likely to produce economic and environmental benefits: encouraging small businesses, families, First Nations people, and other groups to do selective cutting. Job losses would be reversed. Ecological values could be pursued along side production. Experimentation and diversity would generate ideas for improved ways of ensuring sustainable yields and balancing cuts with other benefits of forests. Selective cuts of second-growth trees can actually enhance forest health. Most importantly, it permits loggers to ensure that forests produce a wide range of benefits, such as watersheds, habitats, and recreational areas, and not just limited to timber production. Trees can be carefully selected for harvesting, and when combined with value-adding manufacturing, can increase the economic yield from forests that are sustainable.⁶⁷

Advocates of forest policy reform argue that timber harvests are not the greatest resources contained in national forests. They argue that forests are much more important as biodiversity preserves and watersheds. About 75 percent of the West's water supplies flow

from national forests. These rivers are productive fisheries that are threatened by the runoff from clearcuts and road building. Forests provide recreational opportunities. They help nourish the diversity of life on which all living things are dependent, help maintain soil fertility, recycle nutrients, produce oxygen and absorb carbon dioxide, filter water, and provide new products for medicine and agriculture. Old-growth forests are particularly important in promoting biodiversity, but most of the nation's old growth forests have been cut down. Only small pockets remain and one large area in the Pacific Northwest and Alaska. Scientists working on the Clinton administration's forest plan for Oregon and Washington concluded that "old-growth forests in the Pacific Northwest may be unique ecosystems that developed under climatic and disturbance regimes that may never be duplicated." While some old-growth forests can regenerate over centuries, their loss will result in the extinction of some species.⁶⁸

Forests cover about one-fourth of the world's land surface. About one-half of that area forms intact forest ecosystems. Forests are renewable resources if carefully managed and cutting occurs at sustainable rates. Trees are a remarkably valuable economic resource. They produce nuts and fruits, chewing gum, ointments, perfumes, flavoring extracts, resins, adhesives, drugs, sugar and syrup, tannin, oils, dyes, veneer, turpentine, wood tar, pine oil, fuelwood, pulpwood, lumber, plywood, pressboard, poles, posts, and other products. A typical tree is worth about \$590 if sold as timber. The value of trees increases dramatically when their ecological benefits are included: forests help produce oxygen, purify air, prevent soil erosion, recycle and purify water, help maintain humidity levels, and provide habitat for wildlife. Counting those benefits, one estimate of the value of a typical tree is \$196,250.⁶⁹

Whatever logging strategy is embraced in a national forest has a major impact on its health. But other threats to forests are important. Air pollution threatens forests. Some pollutants harm humans as well as plants and animals. Oxides of sulfur and nitrogen, for example, are transformed in the atmosphere to sulfate and nitrate particles, which fall to earth in dry form or as rain, making soils and water more acidic and killing some species, and damaging human lung tissue. Carbon dioxide does not directly cause ecological damage, but its increasing concentration in the atmosphere contributes to the threat of global climatic change. Low-level ozone can also harm trees and crops and damage fragile aquatic ecosystems. In the stratosphere, ozone provides a protective layer that absorbs most of the ultraviolet rays from the sun, thereby shielding life on earth from their harmful effects. Such radiation can, if it reaches the earth, damage trees and other living things.

Fire is another primary determinant of forest well-being. Surface fires burn the undergrowth and litter on the forest floor, release nutrients stored in the undergrowth, stimulate the release and germination of the seeds of some species such as the giant sequoia and lodgepole pine, check the growth of pathogens and insects, produce vegetation that some wildlife feed on, and prevent more intense fires from occurring. If dead wood, leaves, and other material builds up over many years, crown fires sometimes result, intense conflagrations that destroy trees, threaten wildlife, and contribute to erosion. Prevention of surface and other fires tend to make more serious and damaging fires more likely. The National Park Service policy is to allow lightning-initiated fires to burn themselves out unless

they threaten humans, park facilities, or endangered species. The spectacular fire in Yellowstone National Park in 1988 triggered demands to change policy and stop fires from burning, but the size of that fire was a result of the buildup of material on the forest floor that would normally be cleared through occasional surface fires. Fire-prone forests can be thinned to help preserve forest health, but can also be used as an excuse to log forests that otherwise are protected from timber cuts. Prescribed fires may also promote forest health and help prevent more damaging blazes.⁷⁰

Truly sustainable forestry appears to require much more than current forest policy. Additional steps would include growing more timber for longer periods of time before logging, selective cutting of individual or small groups of trees, stripcutting rather than clearcutting, protecting large units of forests, minimize soil erosion and damage from road building and logging methods, and allowing dead trees to remain in forests to promote biodiversity. But forestry policy is not enough to preserve forests. Other required actions include increased recycling of paper and other paper products, development of other sources of fiber for paper products; requiring the price of timber cut in national forests to include the true costs of forests, including the cost of road building, site preparation, restoration; and ending the practice of keeping timber revenues in the Forest Service, because of the incentive it creates for overlogging, and keeping 25 percent of timber receipts in the local communities. Ultimately, Congress can decide that the primary value and importance of nation forests lies in their role as sustainers of biodiversity and environmental quality, and place timber harvesting as a subordinate goal.⁷¹

Some promising solutions include the following: First, full-cost accounting: prices should reflect the ecological benefits of forests. Part of ensuring true cost pricing is to require companies to pay the full cost of production, including construction of roads, reforestation, restoration of damaged areas. Second, provide assistance to displaced workers and to sawmills to retool for smaller, second- and third-growth trees. Third, parties to purchase protection right or easements. Fourth, tax exports of raw logs but not finished products, to encourage value-added jobs and ban exports of raw logs.⁷²

Perhaps the key question is, How much land should be preserved? The perspective from which one stands is critical. Preserving 12 percent of a province or a nation can seem rather ambitious, when compared with what other governments have done, or even as a percent of the entire landscape involved. But from a global, biospheric perspective, two additional questions are raised: 1) how much wilderness should be protected, for human and ecological reasons, and 2) how much wilderness is required to preserve the level of biodiversity that we currently have? This shift from a provincial or even national perspective to a global one is critical. From a global biosphere perspective, we begin with the wilderness lands and habitats that are available and ask how much should we preserve? There is not likely to be any clear, unambiguous answer, but we may have some idea of the magnitude of the landscape required to preserve the existing biodiversity and the biosphere as a whole. Part of the answer rests in what percentage of the photosynthetic product of the world we can safely consume for direct human needs. Part of the answer depends on the carrying capacity of specific ecosystems as well as the biosphere as a whole. Scientists do

not appear to know what percentage of the world's remaining old-growth forests should be preserved, in order to ensure an adequate carbon sink, watersheds, and other ecological functions.

How should we proceed in the face of such uncertainty? A cautious, conservative approach is compelling for several reasons. It is conservative and most protective of the survivability of humans and other forms of life dependent on their decisions. It is most sensitive to the rights and interests of future generations who have no direct representation in political decision making. It is reversible: if scientific research tells us we have preserved too much wilderness, we can always develop it later. Pursuing the precautionary principle imposes certain opportunity costs. Timber jobs, corporate profits, and government revenues may fall, although some of that may be offset, as the B.C. government and others have recognized, through value added industries. These economic losses may also be countered by increased opportunities for recreational uses of the forests. As wild lands diminish globally, those that remain will eventually become more valuable.

Protection of old-growth forests is ultimately a public goods question. In this particular case, it may be in the best interests of the global community to have British Columbia preserve all of its remaining roadless, undeveloped forests, about 60 percent of all public forest lands, just as it may be in our collective interest to preserve tropical rainforests. The distributional issues are crucial here as in other areas of environmental regulation: the benefits will be dispersed widely--even globally, while, the costs, at least the short-term and transitional ones, will be borne narrowly. One option is to provide transitional assistance to workers and managers who lose their jobs because of preservationist policies and need retraining, relocation, or other aid. Wealthy countries like Canada can redistribute resources to provide that transitional assistance, and given the disproportionate impact their residents have on the global biosphere because of their high levels of consumption, they would be morally obligated to do so. Wealthy countries would also be obligated to provide the resources for the transitional assistance in the less-developed countries, for the same reasons. Canada's timber, planning, and preservation policies pursued in the early 1990s have engaged the public, industry, and government in a major policy debate. Such a commitment to participation is a promising commitment to democracy. But if the process is to be successful, it will have to be more informed by ecological principles than simply by the goal of trying to ensure that current timber practices are sustainable in perpetuity.

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