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ENVIRONMENTAL IMPACT ASSESSMENT IN PRACTICE: EXPLORING THE CONTRADICTIONS

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Abstract. *Since its introduction into Canada in 1973, Environmental Impact Assessment (EIA) has been controversial. Proponents argue that EIA is a practical means of achieving sustainable development because major projects are subject to an independent review before they are issued a license to proceed. However, the government's role in promoting resource-based development such as the ALPAC pulp mill (northern Alberta) and the Repap mills (northern Manitoba) has attracted considerable resistance. Public opposition to pulp and paper megaprojects in western Canada has reinforced the contradiction between the government's role as development promoter and as protector of northern resources and aboriginal populations.*

Analysis of the ALPAC and Repap controversies indicates that the EIA process is a highly imperfect means of resolving environmental disputes. EIA in Western Canada is being held hostage to overriding political conflicts, notably the demands of economic development, such as provincial governments anxious to promote growth by selling their resources in global markets, and environmental preservation. This contradictory commitment to economic development and environmental preservation has been played out through the evolving EIA review process.

Since its introduction to the United States in 1969 and its spread into Canada in 1973, Environmental Impact Assessment (EIA) has been a source of controversy even as it has become the norm in the assessment of projects which are potentially environmentally invasive. Proponents have argued that EIA is a practical means of achieving sustainable development because major projects are subject to an independent review before they are issued a license to proceed (Sadler and Jacobs 1990). Since EIA is case specific, it is seen as an important alternative to regulatory policy, a "shotgun approach" in which universal rules are applied across all cases (Sinclair 1988), and to direct legislative action where the policy process may be overwhelmed by the demands of "government overload" (Mishra 1984).

On a more theoretical level, EIA is held to advance the cause of environmental rationality within bureaucratic planning as a goal which must be considered alongside the traditional commitment to economic growth (Dryzek 1990). EIA has also encouraged scientific research on ecological concerns and enhanced democracy through public participation in the EIA process (Parenteau 1988). One writer has viewed these positive consequences as "opening the door to the administrative state" (Paehlke 1990).

Opponents argue that EIA in practice has been narrow in scope and reactive in nature, largely concerned with mitigating some of the worst consequences of developments whose approval is not in doubt (Rees 1980, 1990). The alleged gains for scientific research and political democracy have proved illusory. Scientific research has been truncated by the narrow focus of inquiry while public participation has been restricted in favor of technocratic decision-making (Fairfax 1978). At best, critics assert, EIA represents a legitimization exercise designed to maintain public support for a "mobilization of bias" (Schrecker 1984) in favor of continued economic growth and business as usual in the face of environmental concerns.

While a full discussion of public policy issues related to the EIA process is beyond the scope of this paper, several themes relevant to EIA in practice will be explored through an analysis of the environmental controversy surrounding two pulp and paper megaprojects proposed for the Western Canadian boreal forest. One is the Japanese-owned Alberta Pacific (ALPAC) mill to be sited on the Athabasca River in Northern Alberta. Billed as the world's largest pulp mill when completed it would have the capacity to produce 1,500 tons per day of bleached hardwood pulp. The other is the proposed expansion and conversion of the former provincially-owned Manfor mill located in The Pas in northern Manitoba. In this project Repap Enterprises of Montreal would convert the mill into a bleached pulp operation and expand production from 400 to 500 tons per day. Both are large scale bleached kraft mills designed to process virgin fiber from the prairie boreal forest north of the 53rd parallel and transform it into export market pulp.

It is contended that the EIA process reflects the contradiction between economic expansion and environmental preservation which is at the core of the notion of sustainable development. Schnaiberg (1980) refers to the "societal-environmental dialectic" in which economic expansion imposes costs or externalities on the natural environment which can ultimately threaten economic expansion itself. Environmental preservation requires non-market intervention to counter the commodification of resources and to protect them from market pressures. Such non-market intervention, however, can restrict economic growth, at least in the short run.

The contradiction between economic development and environmental preservation has been transformed by the globalization of the world economy with its separate geographies of resource extraction, production, consumption, and management. As the world economy becomes a single "space of flows" (Castells 1989) it gives rise to a related backwash of externalities which is the global division of environmental risk. Environmental externalities accrue in jurisdictions far removed from ownership, processing, or consumption of a resource such as forest products.

National governments lose their ability to cope with these economic flows while local governments are forced into a competitive bidding of places as commodities (Logan and Molotch 1987). They offer natural and human resources to the international marketplace, and assume environmental risks, in a process termed "administrative re-commodification" (Offe 1984). This accentuates the conflict between places as commodities in the global economy and as communities committed to enhancing the welfare of their members (Daly and Cobb 1989). The conflict is particularly acute in situations of resource extraction, such as the forest products industry, where the force of economic dependency (Gould 1991) must be weighed against significant social and environmental risks.

Local governments have found themselves in a contradictory position as promoters of economic development and as environmental regulators. They have embraced the EIA process as a new political formulation which can mediate between these contradictory functions, provide legitimacy for major economic developments and adjudicate distributional claims arising from environmental disputes. However, political mobilization surrounding the EIA process has challenged government attempts to base decisions on technocratic expertise at arms length from the political arena. In the two pulp mill developments in question, it has challenged the EIA process itself. These issues can now be discussed in greater detail.

World Demand for Paper and the Canadian Boreal Forest

One of the major concepts to emerge from the literature on technological change over the past decade has been that of the information society (Bell 1981). In an information society the production, transformation and exchange of information displaces the production and exchange of tangible goods as the primary focus of economic activity. It is clear that information related activities have increased in the advanced nations. Between 1960 and 1980 in the United States such activities grew at an average rate of 8.4% per annum (Hurwitz 1987). The mass media, advertising, printing and publishing, data

processing, and communications have expanded enormously in the postwar period. Similar trends have been noted in Canada, Western Europe, and Japan (OECD 1986).

One consequence of the spread of information technology has been a large increase in the institutionalized consumption of paper. Despite the reliance on electronic communications, paper remains the preferred communications medium. There has been a pronounced upward trend in office paper use for the past several decades. Paul Strassman found that "office paper usage, per information worker, has been growing steadily since 1946 at a rate about double that of the growth in the G.N.P." (1985).

While overall paper consumption has increased in the 1980s, there has been a switch to the forms of paper associated with the newer information technologies. The strongest increase has come in the category of fine papers which includes the bond paper used in offices and the coated paper used in magazine publishing. Between 1980 and 1987, worldwide shipments of printing and writing paper used in information industries increased by 40% while the other mainstays of the paper industry, newsprint and packaging, increased by 19% and 18%, respectively (Canadian Pulp and Paper Association 1989). Bleecker (1987) estimated that American business generates 190 billion pages of documentation every day.

The spread of information industries throughout North America, Western Europe, and Japan in the 1980s has led to increased demand for wood fiber, the basic ingredient in paper-making. World pulpwood consumption increased by 12% or 16 million tons between 1980 and 1987 with North America accounting for 46% of consumption, Western Europe 24%, and Japan 8% (CPPA 1989). Softwood forests in the temperate zones of North America and Western Europe, long the mainstay of the world pulp and paper industry, have been depleted or subject to environmental restriction. Just as the oil industry has expanded its search for new sources of oil as existing sources run out, so the paper industry has looked for new sources of wood fiber in the rain forests of the southern hemisphere (Kellison and Zobel 1987) and in the boreal forests of the Canadian north.

The vast boreal forest—huge stands of slow growing spruce, jackpine, tamarack, and aspen stretching across the central and northern tier of the prairie provinces—represents Canada's last great untapped forest. The size of this western forest has been estimated at 4241 million cubic meters or 18% of Canada's supply of merchantable timber (Statistics Canada 1986). However in 1986 this area produced only 8.8% of Canada's total primary forest output and 8.9% of pulpwood production. Until recently the harsh climate, distance from major markets, and relatively low density of tree growth inhibited resource

exploitation (Mathias 1971). Increasing world demand for paper has made the boreal forest more attractive as a source of pulpwood fibre.

Hence the linkage between the expansion of the information industry worldwide and the announcement of pulp and paper megaprojects in the boreal forest, notably ALPAC and Repap. Furthermore, information industry requirements have included demands for whiter, brighter, and stronger papers to produce glossier magazines or more sharply defined laser printing. The market has shifted toward the stronger bleached and chemical pulps used for printing and writing paper and away from the unbleached and mechanical pulps used for newsprint (Sinclair 1988). The bleached kraft method of chemical pulping which uses sodium sulphate and sodium hydroxide to "cook" the pulp and chlorine to bleach it produces a stronger pulp than alternative methods and has become dominant in the industry.

In 1965 the bleached kraft method accounted for 48% of Canadian pulp exports but by 1988 that figure had risen to 74% (CPPA 1989). Thus it is not surprising that both the Repap and the ALPAC projects are bleached kraft mills. The bleached product, however, makes heavy demands on the environment through the generation of greater volumes of chemical waste. One estimate holds the pulp and paper industry responsible for about 50% of all waterborne pollution in Canada (Sinclair 1988). Much concern has been expressed about toxic organochlorines, notably dioxins and furans, products of the bleaching process which must be disposed of in the form of sewerage effluent (von Stackelberg 1989). The environmental risks associated with bleaching and resource harvesting are borne at the production rather than the consumption end.

Harvey Brooks (1986) applies the concept of "technological monocultures" to technological systems that have become so powerfully ingrained that alternative modes of production and consumption are precluded. The development of information technology and its spread throughout the world, along with the concomitant demand for paper, is linked to a "technological monoculture" in the pulp and paper industry. The elements of this dominant technological regime include dependence on bleached and chemically processed paper made from virgin fiber; the concentration of production in megamills which must draw on vast forest resources in order to be economically viable; and the growth of industrial forestry in which huge sections of public forest land are turned into privately managed tree farms for the production of pulp.

All of these elements are present in the Repap and ALPAC projects under which the sparsely utilized boreal forest will be subject to the regime of industrial forestry for the benefit of global markets. The Repap facility, for

example, will discharge 750 kilograms of highly toxic adsorbable organic halogens per day into the North Saskatchewan River. Estimates for the ALPAC mill are 525 kilograms of adsorbable organic halogens per day into the Athabasca River based on revised and probably somewhat optimistic estimates. The information industry, often portrayed as environmentally benign, is a potential threat to the vast boreal region.

Northern Communities and Global Economic Flows

Information industries are quintessentially urban, the product of the transactional activities of business, government, and communications. The spread of information industries drives the expansion of the global economy into new regions in search of scarce raw materials—in this case virgin fiber to maintain the constant paper flow. Pulp mill expansion into the Canadian boreal forest represents the backwash of externalities from world economic flows. The geographical separation of consumption from resource harvesting masks the distributional and environmental consequences of a globalized economy.

The Provinces of Manitoba and Alberta expected that pulp mills would open up a new economic frontier of development in the north. This is part of the competitive hierarchy of places in which local governments offer up their natural and human resources as commodities in the global market. Large scale pulp exports, however, accentuate the position of both provinces as dependent resource suppliers. In the developments slated for the western boreal forest, semi-processed pulp is to be exported for the benefit of paper-making and information industries in the U.S. and Japan. The Repap conversion in Manitoba will eliminate the present paper-making capacity and transform it into purely a pulp mill to supply an American plant which makes glossy magazine grade paper. The Japanese-owned ALPAC mill will supply markets in Japan and the U.S. with raw market pulp.

While modern pulp mills are expensive to build they create relatively few permanent jobs in comparison to their capital cost. They rely heavily on mechanization and automation to maintain efficient operations. The initial Repap expansion and conversion, for example, will not increase permanent employment despite higher output. The ALPAC mill will create about 1,000 jobs for an investment of about \$1.5 billion or about \$1.5 million per job. Northern forests are placed at risk for only modest employment gains.

However, provincial governments in Alberta and Manitoba have enthusiastically supported exploitation of the boreal forest as a means of economic development and diversification of the northern economy. The northern econo-

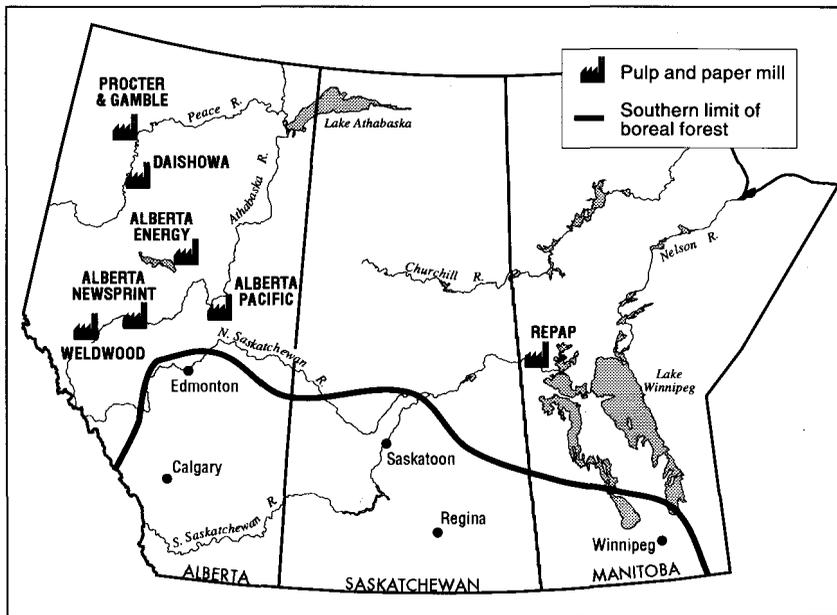


Figure 1. Map of provinces of Alberta, Saskatchewan, and Manitoba showing Canadian boreal forest.

mies in both provinces have long been characterized by higher unemployment and lower incomes than the south. Northern Manitoba is younger, poorer, and more native than the province as a whole. One third of the population of northern Manitoba is fourteen years of age or under, 29% is native, while per capita income in 1987 was \$8500 versus \$11,500 in the province as a whole (Keewatin Community College n.d.). Data from 1986 show that almost 40% of Alberta natives live in the north. In the same year average family income in the north was 86% of the Alberta average (Northern Alberta Development Council 1990).

In Manitoba, Repap Enterprises of Montreal purchased the provincially-owned Manfor pulpmill in The Pas in May 1989. Manfor was a money losing operation that operated one of the few unbleached kraft mills in North America which produced fibre for brown paper bags. Repap agreed to convert the Manfor mill into a bleached kraft operation and expand its output from 400 to 500 tons per day. The current employment level of 650 would be maintained. Bleached pulp would be shipped to Wisconsin where a Repap-owned paper mill would convert it into high grade magazine paper.

In return, Repap gained access to cutting rights over 104,000 square kilometers of forest in northern Manitoba which translates into about 20% of the province's land mass and 40% of its forest resources (Lett 1989). Its annual allowable cut will be 3.2 million cubic meters or about 10 million trees, a 450% increase over current levels. Royalties to the provincial government will be about \$2.48 for a stand of trees which converted into bleached kraft pulp will yield about \$950. The province also pledged \$17 million in new road construction to aid logging.

In Alberta the provincial government put up 221,000 square kilometres of public forest lands covering about one third of the province for lease and seven major pulp mill startups or expansions of existing facilities are underway (Nikiforuk and Struzik 1990). The largest of these developments was the giant Alberta Pacific (ALPAC) mill, a joint venture of two large Japanese multinationals, Mitsubishi Corporation and Honshu Paper Company. In return for agreeing to build a giant bleached kraft mill on the Athabaska River with a 1993 startup, ALPAC was granted cutting rights over 73,430 square kilometers of forests in the eastern Athabaska region with an annual allowable cut of 3 million cubic meters (Alberta Pacific Forest Industries 1990). It received \$250 million in government loans and another \$75 million in road and rail construction to assist logging (Government of Alberta 1990). It also received very favorable royalties on stumpage estimated at \$1.40 per stand and subject to fluctuation with world market prices for pulp.

The rapid commitment of the western boreal forest to large scale pulp mill developments has aroused political controversy. Northern pulp mill development will impact on fishing, trapping, tourism, and other resource industries on which the northern economy is dependent. The bleached kraft method of chemical pulping will dump thousands of cubic meters of highly toxic effluent containing organochlorines into northern rivers every day, threatening the productive fisheries and other aspects of the northern eco-system (Bonsor, McCubbin, and Sprague 1988). In assessing the environmental impact of these projects two points must be considered. One is the transfer of vast tracts of public forest land from common to private usage and control. The second point is the significance to the northern economy of traditional activities such as fishing and trapping which are the major economic activities on northern Indian Reserves and which have depended on common use of the land and water.

The fishery will be used as an example. Information supplied by the Freshwater Fish Marketing Corporation—a federal agency based in Winnipeg—indicates that the Saskatchewan River Basin, into which the Repap

mill will drain, supports 100 licensed commercial fishermen each employing one or two assistants. The region has the capability to produce 2.2 million lbs. of walleye, pike and other quota species worth about \$3.5 million annually (Hay 1989). There is also a large domestic fishery for natives and a growing sport fishery. Spokesmen for the fishery have raised concerns about the impact of pulp mill effluent on fish health and quality, especially as some of the best areas are located downstream from the plant (Bodnar 1989; Manitoba Keewatinowi Okimaknak 1989).

In Alberta the stakes are even higher because the Peace Athabasca Delta, which will receive effluent from ALPAC as well as three other kraft mills, supports a wide variety of traditional and aboriginal activities in northern Alberta and the Northwest Territories. The greatest impact will be on the northern fishery. The Lac La Biche Fisheries Task Force Report (1988) estimated that the commercial fishery generates \$0.5 billion annually for the Alberta economy. The town of Fort Chipewyan on Lake Athabasca, for instance, has 42 fishermen whose catch of 80,000 kg. of walleye benefits 400 people, about one third of the community. The environmental impact does not stop at the Alberta border. Since the Athabasca River flows into the Northwest Territories, the buildup of organochlorines can affect the fishery on Great Slave Lake which employs 200 and produces 3.7 million lbs. of fish with an annual value of \$3.0 million for the northern economy (Government of the Northwest Territories 1989; Bergunder 1989).

Repap, ALPAC and other new kraft mill projects slated for the western boreal region are geared to economic development through the export of natural resources to metropolitan markets. Vast tracts of public land in Manitoba and Alberta have been turned over to management by foreign and domestic multinational forest corporations. In terms of the backwash of externalities, the boreal forest will pay the price exacted by clearcut logging and the dumping of toxic chlorine-based chemicals. Alternative forms of employment such as fishing, trapping, and tourism which are sustainable activities geared to the ecology of the boreal region, with competing claims on the land and water, have been placed at risk.

Contradictions of the EIA Process

While the Manitoba and Alberta governments have been promoting pulp and paper projects in their respective provinces, their roles have in fact been contradictory as both promoter and referee. Social scientists such as O'Connor (1973) and Offe (1984) have noted the complex relationship between the

government's role as promoter of economic development (accumulation) and as welfare state provider (legitimation). A somewhat similar mechanism drives the public position on environmental issues. The state requires a degree of environmental preservation in order to support economic growth over the long run and to enhance its public acceptance. This would be a politically acceptable form of sustainable development.

However, the primary commitment of the state is to economic growth and environmental constraints can hamper economic growth. Regulating the negative externalities of economic expansion, such as pollution, runs the risk of slowing down the drive toward economic expansion or "decelerating the treadmill" (Schnaiberg 1980). On the other hand, the goal of environmental preservation has received considerable public support over the past decade and governments have come under democratic pressures to take a more active role in protecting the environment (Paehlke 1989). Aboriginal groups, in particular, have become more militant in resisting potential threats to their economic and cultural pursuits. This conflict has been acutely experienced by local governments such as Canadian provinces who have been forced to balance the need for competitive positioning in the world economy with demands for the preservation of places as communities which would maintain traditional and aboriginal activities.

Torn between the traditional commitment to economic development, or a "technological social paradigm," and growing public support for environmental protection embodied in the more recent "ecological social paradigm" (Olsen, Lodwich, and Dunlap 1992), state policy has searched for a compromise which would involve some political response to the claims of environmentalists while maintaining the priority of economic growth. Redclift (1987) has termed this compromise "environmental management." Characterized by interventions of a modest nature designed to facilitate rather than curtail economic development, "environmental management, imbued with the contradictions that afflict all management science, represents an attempt to mediate the contradictions of industrialized society by minimizing the social costs of conflict" (Redclift 1987).

The environmental assessment and review process has become the chief means through which governments have attempted to resolve their contradictory commitments to economic development and environmental protection. The scope of this approach is typically narrow while a facade of technological objectivity is maintained (Rees 1980; Schnaiberg 1985). Conflict between the political and the technical inherent in the environmental review process has been observed in the Canadian context by Sadler and Armour: "Because basic

differences in interests and values are involved, environment and development issues are not matters of misunderstanding that can be cleared up by additional information" (Sadler and Armour 1989).

This perspective applies to the environmental assessment and review processes carried out in relation to the Repap and ALPAC projects. In 1973 the Canadian federal government established the Environmental Assessment and Review Process (EARP) under the Minister of the Environment (Richardson 1989). In 1984 EARP was strengthened when new guidelines were issued by an Order in Council under the Government Organization Act. EARP was designed to initiate a planning process which would supplement the traditional regulatory approach to environmental pollution (Richardson 1989). However, since EARP is a set of administrative guidelines rather than a statutory requirement, the provinces have subsequently initiated their own environmental assessment procedures. Manitoba and Alberta based their environmental assessments of Repap and ALPAC, respectively, on provincial responsibility for forestry matters.

In both provinces the environmental assessment process is similar (Manitoba Environment n.d.[a]; Alberta Environment 1985). A company presents a development proposal, conducts its own review of the anticipated environmental impact, and presents the report to the provincial Ministry of the Environment. Ministry officials review the report, may hold public hearings to identify citizen's concerns and may address comments or criticisms, based on the report, back to the company. When the provincial government is satisfied that its environmental concerns have been dealt with, it issues a license to proceed. It should be noted that the review process is largely worked out in consultation between the officials of the provincial government and the companies concerned. The governments of Manitoba and Alberta attempted to depoliticize the review process and present it as an exercise in technological legitimation for development. Neither government was entirely successful in this endeavor.

Both governments sought to ensure that the review process would be narrowly focused on the technical regulation of the externalities of the megaprojects. The main focus in both cases was to be water-borne pollution from the pulping and bleaching process. Broader social and environmental concerns, such as the forest management agreements which gave both companies effective control over huge sections of the boreal forest, were excluded from the initial environmental impact statements and review processes.

In Manitoba, an environmental review before the Clean Environment Commission is statutorily defined under the 1988 Manitoba Environment Act

(Morrison 1989). However, the Environment Minister divided up the review process into separate phases. Phase one would deal solely with the expansion and conversion of the former Manfor mill into a bleached kraft operation (Manitoba Environment n.d. [b]). Questions of forest practices and how Repap proposed to manage the 20% of Manitoba land mass over which it was given control could not be raised until the next set of hearings which would start after Repap had been granted a license to proceed (Manitoba Environment n.d. [c]). The government's goal was to fast track the licensing process and limit public scrutiny of the controversial forest management agreement until after the fact.

The Alberta government waived the ministerial requirement for public hearings on its large scale forest allocations (Nikiforuk and Struzik 1989). In so doing the Alberta government was rejecting a key recommendation of its own Alberta Environmental Council which in 1979 recommended that public hearings be held in any area considered for significant forestry development (Liepa 1989). The terms of reference for the review which ALPAC carried out were confined to air and water pollution from the mill (Alberta Pacific Forest Industries 1989). No opportunity was provided for initial review of ALPAC's forestry and logging practices. Instead a separate expert review panel was convened to deal in general terms with forestry concerns and issued its report in May, 1990, well after the specific forest management agreements were concluded (Expert Review Panel 1990).

Secondly, the environmental review process was designed to achieve a degree of scientific and technological legitimation for both projects. The main documents to be presented, the environmental impact statements, were produced by consultants working on behalf of and paid by the two pulp and paper companies. Not surprisingly, their findings were favorable (Alberta Pacific Forest Industries 1989; MacLaren Plansearch 1989). No provision was made for independently produced studies of comparable breadth, depth, and detail. Evaluation of the documents would be carried out by officials of the provincial governments already committed to the developments in question. The company produced environmental impact assessments would thus become the centerpiece of an effort at technological legitimation.

Finally, both provincial governments sought to limit controversy and public debate in the review process. As Sadler and Armour have observed: "All hearings, irrespective of whether they are based on formal or informal processes, tend to be adversarial in nature" (Sadler and Armour 1989). It was precisely this adversarial public debate which both governments wanted to avoid. In the words of Leroy Fjordbottom, Alberta's Minister of Forestry, "the public hearing process scares away investors" (Liepa 1989).

In Manitoba public hearings could not be avoided because of statutorily defined provisions for hearings before the Clean Environment Commission. However, the process of dividing the hearings into phases ensured that such controversial issues as forest management and logging practices could not be publicly aired until after Repap had gained its license to proceed. In Alberta public input into the review process was to be restricted to public information sessions held when companies such as ALPAC presented their environmental impact reports (Nikiforuk and Struzik 1989). This was not equivalent to the opportunity to raise concerns before a neutral panel.

The efforts to avoid controversy and turn the environmental review process into a legitimization exercise proved futile. Neither government could escape the contradiction between its traditional commitment to economic development and its newfound and somewhat halfhearted commitment to sustainability. In Manitoba the Phase I hearings were held in August and September, 1989. In November the Clean Environment Commission recommended that Repap could proceed with its planned expansion and conversion (Manitoba Clean Environment Commission 1989). The provincial cabinet, to no one's surprise, agreed and granted Repap its license (Manitoba Environment 1990).

However, the public hearing process had aired substantial concerns about the Repap project from northern aboriginal groups worried about the impact on their livelihood and from urban environmental groups. Opposition from aboriginal groups, tentative at first, became more intense as comparisons were made between Repap and the Northern Flood Agreement under which a considerable portion of the Northern Manitoba trapping and fishing industries had been damaged by hydro-electric development over a twenty year period while compensation to native bands was plagued by bureaucratic delays (Tobacco 1989; Bercier 1989).

Environmentalists raised concerns about the dependence on virgin timber as a source of fiber while no consideration was given to the issue of recycling (Miller 1989). Paper represents the largest single source of solid waste in Manitoba at 35% (Manitoba Recycling Action Committee 1990) while Canada recycles only about 10% of its paper consumption, substantially less than Western Europe or even the United States (McClay 1990). Should the basic raw material in paper-making shift from wood to recycled fiber, as is currently happening in Western Europe, then mills such as Repap might soon find themselves obsolete. These criticisms found an audience. Repap, reacting to the negative publicity generated by the review process and to a downturn in the world pulp market, announced that it would not proceed with its planned expansion and conversion until the review process was complete and all

licenses had been granted (Stevenson 1990). The effort to fast track the licensing procedure had failed.

In Alberta, the attempt of the provincial government to turn the review process into a legitimization exercise with little public input ran into substantial opposition. In June 1989 a petition signed by 300,000 Albertans, one eighth the provincial population, called for a moratorium on pulp mill developments until after full public hearings (Nikiforuk and Struzik 1989). Although forestry is a provincial responsibility, the impact of the pulp mill effluent on rivers and fisheries comes under federal jurisdiction. The Athabasca River, which will receive effluent from the ALPAC mill as well as four other mills, flows north into the Mackenzie basin and will impact on the Northwest Territories as well as Alberta. The federal responsibility was reinforced by a 1989 court ruling concerning the Rafferty-Alameda dams in Saskatchewan which upheld the EARP guidelines for environmental review of all projects which come under federal jurisdiction (Robertson 1989) .

In July, 1989, a joint federal-provincial assessment panel was announced to conduct a public review of the ALPAC proposal as well as the cumulative impact of other mills on the Peace-Athabasca River system. The provincial government agreed to this joint review panel in return for the right to select four of the seven panel members and to exclude all forestry and logging concerns from the terms of reference (Environmental Impact Assessment Review Board 1990). However, under EARP guidelines, the review process required public hearings. These hearings were held in October, November, and December 1989, and generated considerable public interest and much opposition to the proposed mill from northern aboriginal groups and urban environmentalists.

Opposition from native groups was particularly intense due to the large concentration of native communities in Northern Alberta and the Northwest Territories who live in the vicinity of the Peace Athabasca Delta which will receive effluent from ALPAC as well as three other kraft mills. These communities depend, to a greater or lesser degree, on hunting, fishing, and trapping and will be potentially affected by widespread logging and pulping in one of Western Canada's finest fishing and fur bearing regions (Aboriginal Resource Development Group 1989; Fort Providence Dene Band 1989).

One of the strongest critiques of the ALPAC proposal came from the federal Department of the Environment (1989) which raised the issue of the cumulative impact of pulp mill pollution on the Peace-Athabasca Rivers system. This argument appeared convincing and in March 1990, the federal-provincial review panel issued a report recommending that ALPAC not pro-

ceed pending further study of the issue (Environmental Impact Assessment Review Board 1990).

After considerable debate, the Alberta cabinet reluctantly supported the panel's recommendation. However, the pressures for development were too great to let the matter rest for any length of time. ALPAC (Alberta Pacific Forest Industries 1990) issued a revised proposal under which its bleaching process would be modified so that the amount of adsorbable organic halogen discharged into the Athabasca river would be reduced from 1.3 to 0.35 kilograms per ton of pulp. A second Alberta Pacific Scientific Review Panel (1990) was convened by the Alberta government with a mandate to review the technical feasibility of the revised proposal. No other issues could be considered within the panel's mandate. After two months of deliberation the Scientific Review Panel recommended in favor of the revised ALPAC proposal in a report that was quickly accepted by the Alberta cabinet and made public in December 1990. ALPAC had finally received its license to proceed.

Conclusions

Analysis of the Repap and ALPAC controversies indicates that the EIA process is, at best, a highly imperfect means of resolving environmental disputes. As critics have asserted, EIA has largely been narrow in scope, reactive, and mitigative. In both provinces, the EIA dealt mainly with the relatively narrow issue of effluent discharge from the pulp mills in question. Crucial distributional concerns about the appropriate management and control of the vast boreal forest and access to its resources were excluded from initial review.

A central challenge facing EIA in Western Canada, as in most other jurisdictions, is that it is hostage to overriding political conflicts, notably the contradictory demands of economic development and environmental preservation. The expansion of the global economy leads to the commodification of resources in the world's hinterland regions and their transfer from common to private control. The Western Canadian boreal forest is to be mulched into pulp to supply global information industries. The backwash of externalities from information-led growth in Japan, the United States, and southern Canada will penetrate the boreal forest. This process is encouraged by provincial governments anxious to promote growth by selling their resources in global markets.

However, the government's role in promoting resource-based development has attracted considerable opposition. Public opposition to pulp and paper megaprojects in western Canada has reinforced the contradiction be-

tween the government's role as development promoter and as protector of northern resources and aboriginal populations from the global market economy. This contradictory commitment to economic development and environmental preservation has been played out through the evolving EIA review process.

The contradiction between the boreal forest as commodity and as social and biotic community was clearly illustrated by the different interpretations of "sustainability" put forward by government and industry, on the one hand, and environmental and aboriginal groups, on the other. For government and industry, the emphasis was on "sustainable forestry" meaning sophisticated management of forest resources, and adequate replanting of trees, so that large scale tree harvesting could be carried on indefinitely. For environmentalists and aboriginals, "sustainability" meant a regime of forest management that would allow for a diversity of social, economic and biotic activities in the boreal region as opposed to dependency on a tree harvesting monoculture. Unfortunately, the narrow focus of EIA precluded extensive discussion and resolution of this key issue.

The EIA process reinforced the commitment of both provincial governments to strategies of promoting economic development. Public concern, however, forced both to pay more attention than they might otherwise to their alternative commitment to environmental preservation. The EIA processes, in the end, were lengthier, more public and more controversial than originally intended. Both projects were delayed; the Repap mill indefinitely, while the ALPAC proposal was substantially modified so as to be less environmentally obtrusive. Thus, EIA can serve opponents of development by adding cost and delay factors which can place marginal projects at risk. This phenomenon is well known in the nuclear power industry.

Perhaps the greatest positive impact of the EIA process has been the level of political mobilization it aroused. Efforts by government and industry to use EIA in order to achieve scientific and technical legitimation in favor of development were countered by a higher than expected level of political mobilization and public debate. The "mobilization of bias" in support of development was resisted by an unexpected level of political mobilization against it. Scientific and technical arguments had to share center stage with a variety of political claims and expressions of economic interest. Many interested groups and individuals took part, demonstrated skepticism and raised concerns.

An unintended consequence of this political mobilization has been to force EIA to realize some of its potential to contribute to democratic debate by educating government, industry, and the public about environmental issues.

Procedures which were designed more for technical assessment than for public debate were put to the test. The concerns of northern and, especially, of aboriginal communities were placed before the public agenda with unexpected force. As a result, the incorporation of the boreal forest into the global economy proceeds, but at a slower pace and in a more publicly visible manner than previously intended.

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