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A STAKE IN THE NORTH: PAPERS ON MINING, FORESTRY AND REMOTE TOURISM EMPLOYMENT

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A Stake in the North: Papers on Mining, Forestry and Remote Tourism Employment

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INTRODUCTION TO ARRG AND CRRF

In 1987, few Canadians were talking "rural". "Globalization" was rapidly becoming a buzzword to explain perplexing economic problems emerging for agriculture, forestry, mining and fishing. Problems continued to plague the efforts to diversify Canada's rural economy over many years. The consolidation of rural trade centres in predominantly agricultural economies had become a question of survival for many agro-rural communities. Benefits of technological change were being questioned.

A small meeting was held in Regina in October 1987, prompted by the concern that rural people, their businesses and communities required greater consideration in public policy, research and education. The topics were restructuring, globalization and technological change. Out of the papers and debates by the dozen or so people involved, a decision was taken to form the Agricultural and Rural Restructuring Group (ARRG). This network of academics, civil servants and rural practitioners dedicated itself to building new knowledge and applying the diverse educations and experience of its members to rural problem-solving.

The process adopted by the group centred around research, joint-venture education through conferences and workshops held in rural places, and the improvement of policy awareness about rural issues. Since then, eight sets of national workshops and conferences have been held. Liaison has been established with similar interests in Europe and the United States. It has become apparent that in many countries a global change in the rural and policy mind-set is beginning to come about in the search for solutions and initiatives.

The main efforts of ARRG have been in organizing annual rural policy conferences which have provided forums for rural policy-makers and practitioners to meet and debate issues of mutual interest. Each national workshop has been preceded by a "think-tank" workshop where invited researchers have met to prepare the agenda and presentations for the conference.

In 1992, the Canadian Rural Restructuring Foundation (CRRF) was formed. Its mandate is to garner resources and to facilitate creative responses to the effects of structural shifts in rural Canada. The purpose of the Foundation is to foster education and research among private enterprise, communities, governments and universities.

INTRODUCTION

These papers on employment in the primary sectors of mining and forestry were presented to the 7th Annual Rural Policy Conference of the Canadian Rural Restructuring Foundation entitled **INTERNATIONAL SYMPOSIUM: PERSPECTIVES ON RURAL EMPLOYMENT.** The international comparative papers have been published elsewhere —see Ray D. Bollman and John M. Bryden (1997), *Rural Employment: An International Perspective* (Brandon: The Canadian Rural Restructuring Foundation, c/o The Rural Development Institute, Brandon University).

Mary Louise McAllister discusses the options used by various mining companies in recent years to minimize the 'boom-and-bust' employment stereotype often ascribed to mining communities. One development has been the adoption of the 'flyin-flyout' sourcing of workers (more formally termed long-distance commuting). For nearby communities, this might be termed the "fly-over" sourcing of workers and supplies. Mary Louise closes with a discussion on the role of community economic development in mining communities. She argues that a community with a strong, independent local government is more resilient.

Tim Williamson and René Samson show that although the production of the forestry sector has increased over time, productivity levels have increased at an equal or greater rate causing employment stagnation or employment declines. Interestingly, during the 1980s, there was considerable variability in employment change among forestry-dependent communities. A number of communities showed employment growth. Communities dependent upon wood industries tended to have greater reductions in their labour force than communities dependent upon paper and allied industries.

Jeremy Williams and Gary Bull present a method to evaluate the impacts on timber operators and the impacts on remote tourism operators of alternate scenarios of lumbering around tourism operations. A multiple accounts analysis framework is used to document impacts in four categories: the economic impact of each scenario on the remote tourism operators; the impacts on the timber operators; social impacts; and environmental impacts. Remote tourism represents employment diversification of the regional economy. Maintaining the 'remoteness' of remote tourism operations implies a constraint on lumber employment. It is possible that a mutually satisfactory solution can be negotiated on a case-by-case basis. The encroachment of roads (which removes 'remoteness') is one on-going item for potential conflict. The other issue is the negative reaction of remote tourists who have to fly over logged territory to find their 'island of remote forest'.

Ray D. Bollman, Editor

TABLE OF CONTENTS

LIST OF TABLES

PAPER #2

PAPER #3

LIST OF FIGURES

PAPER #2

A Stake in the North: Prospects for Employment in Mining Towns

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INTRODUCTION[1]

The future of resource-based towns as often depicted, conjures up a rather depressing vision for the citizen of southern urban centres who may be unacquainted with resource communities. It is a vision of hastily-built clapboard houses, muddy streets and scruffy downtowns that have yet to see better days.

This dreary image is reinforced by media coverage about the imminent closure or decline of one resource town or another as inhabitants await a fate determined by impersonal external political and economic forces. Stereotypes such as this one denies the diversity of rural and remote towns and underestimates the changing social and cultural landscape of resource communities.

This is particularly the case with the larger, more diversified northern cities with good airport facilities, which can now serve as commuting centres for many resource-based fly-in operations.[2] The bigger towns, such as Sudbury, Ontario, or Prince George, B.C. act as economic hubs for the northern region. These northern cities are located at the center of communications and transportation links by air and road, and serve as supply centers for a variety of resource-based activities.

Nevertheless, a closer look at mining towns, in particular, and the employment prospects of their citizens, reveals some serious challenges many northern communities areb facing. Those well-acquainted with mining are all too familiar with the old saw, "The day a mine opens, it begins to close." If a new ore body is not discovered that can replace a depleted one in a mining region, towns can, and do, collapse. In Canada, there are over 150 communities, that are partly or completely dependent on mining. While only 79,516[3] people are directly employed in the mining industry, many others rely on the job opportunities and economic wealth that is generated by mining activities. Today, the employment picture is not reassuring. Employment in mining in Canada has decreased about 30 percent since the early 1980s.[4]

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1 This article is based on work undertaken for a larger research project concerning the national Whitehorse Mining Initiative. It is funded by the Centre for Resource Studies, Queen's University at Kingston.

2 *Searching for Gold: The Whitehorse Mining Initiatives*, A multi-stakeholder Approach to Renew Canada's Minerals and Metals Sector, October 14, 1994, p. 150.

3 *Mining in Canada: Facts and Figures: 1993*, The Mining Association of Canada in cooperation with Natural Resources Canada, 1994.

4 Price Waterhouse, *Breaking New Ground: Human Resource Challenge and Opportunities in the Canadian Mining Industry*, Minister of Supply and Services Canada, 1993, p. 3.

For a variety of reasons including access to land, the international competitive environment, and declining ore reserves, mining (which accounts for 12 percent of Canada's total exports) is facing a difficult future.

Opportunities for growth and employment in mining towns often are dictated by external forces beyond the control of the community. The Mayor of Kirkland Lake, a mining town in Northern Ontario had this to say:

> Kirkland Lake, like many other communities in Northern Ontario, has relied on the natural-resource sector, particularly mining and forestry, for its economic base. Unfortunately, these sectors are often sensitive to the whims of large-city corporate executives, fluctuations in senior government policies, designation, categorization, resource depletion, declining prices, uncompetitiveness and other variables which have spelled doom for many northern communities.[5]

Other external threats include the possibility of a downswing of the "boom or bust" resource cycle caused by indifferent global markets; employment cut-backs with the introduction of technological advances; strategies adopted by the mining companies in order to compete in an international environment; or the relatively recent international trend toward long-distance commuting (LDC).

With the downturn in the mining industry and the economy in general in the early 1980s, it was the expertise in the mineral sector that increased productivity levels and helped the industry recover. It has been noted that,

> Canadian minerals are among the best in the world, respected for finding low-cost solutions to keeping Canadian operations open, and for overcoming some of the most severe climatic conditions. This expertise may be a key to the future of the Canadian mining industry.[6]

A productive, skilled workforce in the mineral industry, therefore, is very important to its long-term survival. Unfortunately, the 1980s restructuring included the adoption of new technologies and methods which inevitably led to a decline in employment levels. Furthermore, a trend in the late 1980s and early 1990s saw the number of mine closures outstrip openings which further reduced employment. Although the outlook has recently improved, many Canadian mines have a short life expectancy with the depletion of reserves. Several thousand employees will be affected by these changes. Employment levels for mining or mining-related employment in Canada are expected to continue to decrease overall.

The introduction of technological change also will affect the nature of employment. Computerized open-pit mining operations with intelligent supervisory control systems will not only reduce the number of employees required but will need to employ those with skills in applied science and computer operations. More stringent environmental requirements which require such things as the adoption of purification technologies will require expertise in environmental and metallurgical sciences.[7] Overall, the mineral industry will need more highly educated people with a broad set of skills who can adapt to technological change.

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5 Joe Mavrinac, "Kirkland Lake," in *At the End of the Shift*, p. 148.

6 Price Waterhouse, *Breaking New Ground: Human Resource Challenges and Opportunities in the Canadian Mining Industry*, Minister of Supply and Services Canada, 1993, p. 1.

7 Price Waterhouse, Breaking New Ground: *Human Resource Challenges and Opportunities in the Canadian Mining Industry*, Minister of Supply and Services Canada, 1993, p. 26.

These requirements will, of course, vary with the occupation. The exploration sector for example will not need the same level of literacy of math skills as those areas which are particularly high-tech. Nevertheless, the composition of the workforce will change:

> "The current workforce is a mixture of labourers, semi-skilled operators, tradespeople, technicians, technologists, professionals and managers. The ratio of operators to tradespeople and technicians, traditionally weighted in favour of the operators, is shifting as fewer traditional operators are required." [8]

The composition of the workforce is predominantly "white" male and aging. There is relatively low turnover. As a result, the employment opportunities for younger workers, women, and Aboriginal people, might be constrained.[9]

As one might expect, then, skills training, particularly, multi-skilling, has been the subject of much debate. Multi-skilling or job amalgamation has traditionally been resisted by unions based on beliefs that the adoption of such approaches by management have not been in the best interests of workers or unions. There is an overall concern that the introduction of "multi-skilling" training will result in job reductions, the erosion of union-negotiated job-evaluation systems and inadequate compensation for the acquisition of new skills. New times, however, require new responses. Thomas Reid of the USWA claims that multiskilling can work if pursued in a climate of trust and cooperation and if an appropriate culture can be created:

> Multiskilling will win acceptance from production workers, even in very traditionally structured workplaces, if it is pursued co-operatively, with full compensation for the acquired skills and new responsibilities, preferably within the context of a collective agreement and a union-negotiated job-evaluation scheme. Training costs must not be borne by the employee, except insofar as some form of jointly operated training program may already be in effect in the particular workplace.[10]

Declining employment opportunities for residents of northern communities may also come in the form of long-distance commuting ("fly-in" mining). In Canada, long-distance commuting began at Asbestos Hill in Quebec in 1972.[11] Saskatchewan developed an extensive commuting project in the early 1970s at its Rabbit Lake uranium mine in the northern part of the province. Companies seeking to develop a deposit in a remote area recognize the economic benefit of flying their workers into a mining site for days or weeks at a time from larger regional centres. From an investor point of view, there are many advantages to long-distance commuting over the building of a permanent mining community. They include a readily available pool of skilled workers that can be flown in from other areas, lower costs and minimized political risks, and significantly reduced environmental costs. Smaller resource towns are concerned that the opportunities for employment will "fly-over" them to larger urban centres.

Another remote operation, the Cominco-owned Snip gold mine, located in the northwestern corner of British Columbia (100 km northwest of Smithers) operates on a fly-in basis. Bulk supplies are transported by barge from Seattle, Vancouver or Prince Rupert to Wrangel, Alaska and sent by air or

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8 Price Waterhouse, *Breaking New Ground: Human Resource Challenges and Opportunities in the Canadian Mining Industry*, Minister of Supply and Services Canada, 1993, p. 44.

9 Price Waterhouse, *Breaking New Ground: Human Resource Challenges and Opportunities in the Canadian Mining Inudstry*, Minister of Supply and Services Canada, 1993, p. 45.

10 Thomas Reid, "Thoughts on Multiskilling," *Human Resource Planning*, p. 47.

11 Keith Storey, Mark Shrimpton, *Long Distance Labour Commuting in the Canadian Mining Industry*, Centre for Resource Studies, Working Paper No. 43, 1988.

hovercraft to the site. The 135 workers commute by air from Vancouver and Smithers on a four-week in and two-week out schedule.[12]

> It will become progressively harder to obtain planning permission for large, long-life mining operations, with their attendant invasive technology. The benefits of small, highly mechanized operations, which high-grade the deposit and utilize skilled workers flown in from outside, will seem especially attractive to a risk-averse mining industry.[13]

There are problems associated with fly in/fly out mining including family strains of a commuting lifestyle, high employee turnover, expensive transportation costs. However, increasingly in Canada, Australia and other places around the world, this is a trend that is preferred in many ways by mining companies for remote operations. It has been noted that while there are certainly some positive implications of LDC mining, it also has its drawbacks:

> [T]he use of non-local labour, the limited involvement of native labour, and "fly-over" effects, whereby mines purchase most of their goods and services from southern metropolitan centres, are some of the perceived disadvantages of LDC.[14]

Finally, northern communities are concerned that lack of public recognition of the importance of mining to the country is resulting in unsupportive policies which, in turn, can lead to a loss of investor confidence. The inevitable result would be a decline of employment in northern communities. Prospectors and developers, labour unions and mining communities are actively pursuing a variety of strategies to ensure the survival of mining towns. Northern communities engage in public relations initiatives and lobbying efforts to raise their national profile.

One grassroots movement, *Save our North* (formed in 1991), for example, was an attempt to alert the general public to the prospects facing Northern Ontario communities. With a lack of incentives to explore and development mineral deposits in the north, prospectors argued that investors are beginning to look elsewhere for new reserves. The Porcupine Prospectors and Developers Association (PPDA) argued that 5,000 mineral industry jobs would be lost in Timmins, Ontario over the next 15 years if new reserves were not discovered. With an initially modest media campaign that quickly heated up, the PPDA soon mustered tremendous support from 60 mining communities.[15] This initiative soon gained some attention from provincial politicians. In 1993, a "Keep Mining in Canada," campaign was inaugurated in which 110 communities participated. This initiative was prompted by concerns about the growing departure of mining investment from Canada to other parts of the world. In 1987, for example, 81 per cent of mining budgets were spent in Canada in contrast to the 61 per cent spent in 1992.[16] The "Keep Mining in Canada" campaign continued to be very active in 1985 with extensive lobbying taking place in the media. There has been a direct attempt on the part of this association to raise its public profile through public relations efforts.

In British Columbia, a similar grassroots organization formed entitled Share BC. Al Beix, Chairman of Share B.C., noted that "The world is run by those who show up.".[17] Local citizens in 24 resource-de-

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12 Scott, David, "Snip, Snip Hooray," *Canadian Mining Journal*, August 1994, pp. 17-18.

13 Christopher Hinde, "Global Economic Trends and Increases in Long Distance Community," *Long Distance Commuting in the Mining Industry: Conference Summary*, Mark Shrimpton, Keith Storey, (eds.), Energy, Mines and Petroleum Resources Canada, Centre for Resource Studies, Queen's University, November 26-28, 1990, Proceedings No. 24, p. 31.

14 Keith Storey, Mark Shrimpton, *Long Distance Labour Commuting in the Canadian Mining Industry*, Centre for Resource Studies, Working Paper No. 43, 1988, p. vii.

15 *Changing Political Agendas.*

16 Price Waterhouse, *The Mining Industry in British Columbia: 1993*, Vancouver, B.C. p. 17.

pendent communities throughout the province formed associations to protect their livelihood. Concerned about land use decisions that may threaten their ability to harvest and extract resources, the associations are attempting to influence public agendas by raising awareness and support. Tactics used by these groups are not subtle and rely heavily on media attention. Groups of this kind focus on broader public awareness rather than becoming part of the institutionalized decision-making process.

In spite of some active lobbying by the citizens, however, resource towns are limited in their ability to influence upper levels of government. As local governments, they have little institutional and fiscal independence (they fall under the jurisdiction of the province); they are often geographically remote from the seat of government; and they lack voting strength. It has always been difficult to garner and maintain long-term support from governments when transportation and regional development strategies may depend on a particular Minister's tenure in a particular portfolio or a government's tenure in office. The decisions of a provincial government about where to encourage large development, place its major transportation routes, or where to provide funds for community enhancement will play a determining role in the future existence of mining communities. In some cases, a remote location or harsh environmental conditions may simply limit the opportunities for diversification.

The Impact of Mine Closure

It is a fact of life that while some mining towns are diversifying, others indeed, do die. When a mine closes, attempts must be made to limit the impact on the employees and local communities. Workers need to be equipped with transferable skills. If a mine in a single-industry town must close down, governments, companies, unions and communities will look at ways to minimize the impact of the closure on local residents and employees.

> At one extreme, if a mine or mill is part of a diversified, growing economy, the cessation of activity simply "frees up" resources that would have otherwise been used in the mining activity and makes them available for other uses. Direct mine/mill labour may find alternative employment (or move to where other opportunities in mine/mill work are available); service sector workers and entrepreneurs meet the demands of other customers in a growing economy, and the population base is maintained so that the demand for services provided by local and regional governments is not diminished. Under these circumstances the consequences of a mine/mill closure do not give rise to concern.
>
> At the other extreme is the isolated single industry town. Mine or mill closure *eliminates* the local demand for services and supplies. Unless a replacement activity can be found (and in the absence of external demand), the value of fixed assets falls to zero—in effect the "ghost town" scenario. Labour may be forced into mobility but if the closure is unanticipated, or comes sooner than anticipated, at a significant cost in terms of lost asset value.[18]

One carefully planned closure was Placer Development's Craigmont Mine near the City of Merritt, B.C. which was gradually phased out from 1974-1982. The mining company gave a long lead time, held annual meetings with employees, established a severance fund, kept in close communications and helped with relocation and re-employment. The study concluded that the impact of the closure was "not very great." Residents of the diversified community of Merritt had other resource-based employment opportunities.[19]

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17 Share Prince George Pamphlet, 1995.
18 The Impact of Mine Closure, Western Economic Consulting Ltd., pp. 2-3.
19 Impact of Mine Closure, p. 40. . . .

In another case, however, the outcome was not as favourable. In northwestern BC, the District of Stewart, the closing of the Granduc Mine in 1978 was abrupt and caused considerable community stress, a reduction 73 percent of the tax base, a population drop to 400 from 1,400, and a significant debt load. The mine was purchased by Esso Resources Canada and reopened as Canada Wide Mines. By 1984, Esso decided to close the mine. Again the closure had a severe impact on the community. The Ministry of Industry and Small Business Development provided funding through the Community Organization for Economic Development Programme to develop alternate economic opportunities. After the closure, Stewart worked on developing a forestry employment base. Tourism, transportation and other mining opportunities helped to diversify the community.[20] A recent compensation deal (summer 1995) between the provincial NDP government and Royal Oak Mines would see mine development including the Red Mountain project near Stewart providing much needed new economic opportunities for the area.

A recent example of a successful closure is that of a copper and molybdenum mine and mill in Peachland, British Columbia, Brenda Mines Ltd. The mine closed in June 1990 due to ore exhaustion. A mine closure plan had been initiated three years earlier:

> It included the design of a detailed action plan, a request by the mining company for federal industrial adjustment assistance, and the involvement of the entire community in the closure and adjustment process through the use of videos, tours of the mine operations, and employee involvement. Peachland, which had a population of 3,000 people in 1986 experienced a growth in population by 1992. Retirement and recreation replaced mining as the main industries in the region.[21]

A major problem that many communities facing mining closure must deal with has to do with investment in assets in the areas of housing and other privately held properties and in fixed infrastructure. Local governments may have incurred a long-term debt to provide services to a mine-dependent community.

In 1992, a Natural Resource Community Fund was established in British Columbia which was designed to provide emergency assistance to resource communities as a result of resource downsizing or closures. One-half of one percent of the province's resource revenues each year will go into the fund. The fund received an initial $15 million which was to be capped at $25 million. It was also to be used to complement other federal provincial programmes directed at job training, creation, maintenance, worker relocation etc.[22] In the broader context, however, local governments are going to suffer from the reductions in overall programme funding around the country as governments engage in deficit-cutting exercises. Increasingly, senior governments will see themselves in a facilitating role, by providing information to the communities rather than funding. Community development is becoming the "buzz" word for community survival in the 1990s.

Mining and Community Development

> Community development is a process through which the community becomes involved in shaping its own environment in order to enhance the quality of life of its residents. Community development is an umbrella concept, involving the integration of social, economic, cultural, political and environmental dimensions and trying to influence the

20 Impact of Mine Closure, p. 44.
21 *Searching for Gold*, p. 149.
22 British Columbia, Ministry of Economic Development, Small Business and Trade, "Natural Resource Community Fund: Guidelines."

> processes of change in those dimensions in order to meet the community's needs and objectives more effectively. [23]

Those towns that most successfully weather these new challenges will have embarked on a number of community development initiatives in order to ensure that the city is able to take advantage of different opportunities.

Strategies include diversification through various community development initiatives building onto the existing resource base through tourism and value-added products. If they are large enough, they can serve as regional bases to support a variety of resource activities in the area. What is happening in smaller mining towns? They too are changing and are far more complex than the stereotypes would have one believe.

Tumbler Ridge, British Columbia, is a mining community built in the early 1980s in the northeastern part of the province for the purposes of servicing a $3 billion project which sells metallurgical coal to Japan. Tumbler Ridge is one of the most recent, and some say last, mining communities to be built in Canada. The modern picturesque community, with its independently elected town council, defies traditional stereotypes and could pass for a vacation resort area with its golf course, community centre, and recreational activities. Although its economy is primarily dependent on two large mines, Tumbler Ridge is diversifying with the development of a gas processing plant and tourism. Increasingly, senior governments are recognizing that local communities are playing a bigger role in resource development. The communities themselves are diverse and many residents hold competing views about development in their immediate locale.

Mining companies are accustomed to focusing on the international trading arena as the place where most of their competitive threats exist. They must now, however, pay increasing attention to the demands of local communities. They are under growing pressure to work with local Aboriginal, and other northern communities as well as provincial governments to ensure that their development activities leave some lasting benefits to the region; one of those lasting benefits is employment.

The concept of local governance over a resource community's development is a relatively recent phenomenon. According to two analysts, Paget and Walisser:

> In British Columbia, certainly, local governance is a marked departure from the private governance or company town approach to community development which was once the norm. The 'instant towns' of the 1960s and early 1970s were supposed to bring into practice the local government approach to community development. However, the instant towns initially did not differ in critical respects from the company towns they were designed to replace. Only recently has the local governance approach emerged as something distinctly different....[24]

When mining communities must face uncertainty, unpredictability and possible decline, Paget and Walisser argue persuasively that a strong, independent local government contributes to a more resilient community which fosters social development and participation.

Many resource towns whose futures may be threatened by variables outside their control are looking at approaches to community development as a way to promote diversification and protect them from the

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23 Christopher Bryant, *Sustainable Community Development*.

24 Gary Paget and Brian Walisser, "The Development of Mining Communities in British Columbia: Resilience Through Local Governance," *Mining Communities: Hard Lessons for the Future*, p. 102.

"boom and bust" conditions caused by fickle world markets. Mining communities are no exception. Swift changes in communications, technology and transportation contribute to the uncertainty and lack of stability in such towns. More than ever it is important for communities to diversify, yet national and provincial government assistance programmes are limited as politicians pledge to cut back on government expenditures. With that in mind, policy makers increasingly look to community development and local governance as an alternative approach to problems encountered by communities in transition.

Community development is a policy approach that is gaining legitimacy in Western societies. Community development - or as some like to say, community sustainability — recognizes that a healthy community is only possible when a balance can be achieved between economic, social, political and environmental variables. It is also a concept that is coming into its own in the 1990s when governments have decided to place a priority on reducing their debts and deficits and are cutting back on their assistance programmes to communities. Some may see this as offloading responsibilities while others suggest that it is an attempt to stimulate public participation and community empowerment. This is similar to the expression of concerns when company towns made the transition to a system of local governance. As company towns were replaced with municipalities, the paternalistic governance of the company gradually led to the subsequent independence of the community. Such independence can be desirable from a liberal democratic perspective but it also means the company does not have to assume as much financial responsibility for that town's welfare.[25]

As a philosophical concept, however, like so many others rediscovered from generation to generation, community development is not new. As Lewis Mumford eloquently expressed earlier in the century:

> The more people who are thrust together in a limited area, without organic relationships, without a means of achieving an autonomous education or preserving autonomous political activities in their working and living relations, the more must they become subject to external routine and manipulation.... We must create in every region people who will be accustomed, from school onward, to humanist attitudes, cooperative methods, rational controls. These people will know in detail where they live and how they live; they will be united by a common feeling for their landscape, their literature and language, their local ways, and out of their own self-respect they will have a sympathetic understanding with other regions and different local peculiarities.[26]

Mining communities are undergoing tremendous changes which leads to instability and uncertainty. While federal and provincial governments appear to endorse greater decision-making and autonomy for local governments, the evidence is unpersuasive that any actual power has been transferred to the local level of government. We hear a great deal about "partnerships" between provincial or federal governments and local communities. Partnership implies an equal power relation between the two groups and this is not the case where local governments fall under the statutory control of the provinces.

What kind of adjustment assistance will be provided to communities that are primarily dependent on a major mine when it closes? There is a world-wide trend toward long-distance commuting to remote mining operations. Will companies use declining mining communities as residential centres for mine workers and their families or will those communities simply be "flown over" with employees living within larger regional centres? Does the increasing rhetoric around community development signal a willingness on the part of senior governments to give local communities more authority in determining the future direction of their towns? If it does, will there be an economic cost for that independence?

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25 Gary Paget and Brian Walisser, "The Development of Mining Communities in British Columbia: Resilience Through Local Governance," *Mining Communities: Hard Lessons for the Future*, p. 128.

26 Lewis Mumford, from *The Culture of Cities*, 1938, p. 386.

Forest Communities in Transition: An Empirical Assessment of the Changing Structure of the Rural Forest Economy

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INTRODUCTION

Early analysis and policy development on forestry based communities characterized them as relatively homogeneous, closed, steady-state economic systems. Maintaining community stability was largely interpreted as attempting to maintain the "status-quo" for single industry or heavily reliant forestry towns. The focus of policy initiatives was to introduce and implement sustained yield forest management policies on public forest lands in order to ensure that the resource base surrounding a particular community did not become depleted. In the mid-1970s this static view of community development began to be questioned. Byron (1977) for example concluded that "the permanence or survival of forest industry centres is neither assured by or solely dependent upon the perpetual maintenance of nearby forests at, or near, sustained-yield levels. Rather, the size and distribution of wood-processing centres seems to be determined by technological economies of scale and location with respect to means of transportation."

More contemporary analysis of economic development prospects in rural communities in general and forest based communities in particular suggest that a far more complex set of interrelationships between rural communities and the "economic milieu" within which they are situated are at play. Also, rural communities themselves are extremely diverse and the long-term outlook and relative ability of communities to continue to prosper in the face of structural change varies depending on a range of local conditions and circumstances. Thus, sweeping assertions about economic development opportunities and constraints that apply universally to broad classes of communities, such as forest based communities, may not be valid. A more disaggregated approach is required in order to reach meaningful conclusions regarding the sustainability and/or future outlook of forest based communities.

The purpose of the analysis described in this report is to identify which rural communities in Canada were strongly reliant on the forest sector in 1981 and to evaluate their performance over the 10 year period 1981-1991. The analysis identifies rural forest based communities which were in decline over the period 1981-1991 and attempts to isolate features of these communities that distinguish them from other forest based communities that prospered over the period. This information may provide insights into describing communities that have relatively greater exposure to the economic dislocation associated with structural change.

Trends in Industrial Capacity, Scale of Operations, and Labour Productivity in the Forest Product Sector

Canada's rural economy is in the process of undergoing fundamental structural change. This process of change is a response to overriding socioeconomic trends such as urbanization, globalization, agglomeration, industrial rationalization, institutional change, technological change, and changes in social values. Rural communities are not isolated from the above noted trends. They are, in fact, connected by what Apedaile (1992) refers to as "action-feedback loops". Apedaile (1992) also argues that rural economic systems are characterized by certain features that are reducing the capacity of rural communities to adapt to and cope with structural change. Thus, there exists a linkage between structural changes at the industry level and community prosperity. Moreover, given the tendency of the above trends to disempower and reduce autonomy in rural communities as well as dilute the capacity of rural economies to generate and/or retain wealth, rural economic systems are becoming more destabilized.

Industrial restructuring in the forest products sector can be expected to have implications for community economic development, particularly in rural communities where the forest products industry is the dominant economic activity. Robson (1995) suggests that there are six potential sources of industrial restructuring: 1) reduced availability of economically operable timber resources (either because of depletion or changes in land use); 2) market decline; 3) reduced competitiveness; 4) low profitability; 5) technological change; and 6) changing social values leading to regulatory and public policy shifts. These factors are not mutually exclusive.

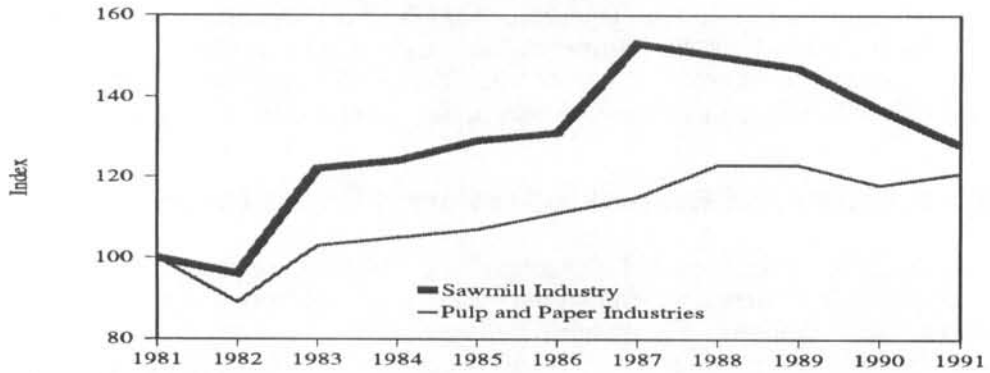
The Canadian forest sector has in fact, undergone significant structural change over the last two decades (Ernst and Young, 1992; Price Waterhouse, 1994). Canada is endowed with abundant forest resources that possess certain inherent characteristics that result in high quality forest products often preferred by consumers. Consumer preferences for Canadian forest products have provided a comparative advantage to Canadian producers in export markets (mostly in terms of market access, but not in terms of price premiums). However, Canadian forestry firms are also subject to a number of competitive disadvantages which constrain the ability of producers to access markets and attract investment capital from competing investment alternatives. The forest products market tends to be highly cyclical, which increases uncertainty and risk. Long-term real price trends have remained relatively flat. Canada's forest sector is characterized by relatively high labour costs. Despite these disadvantages, production levels from Canada's two main forest industries (the sawmilling industry and the pulp and paper industries) increased over the period 1981 to 1991 (Figure 1). Thus, at least over the period of study for this analysis, the Canadian forest sector maintained its ability to access traditional export markets and, in fact, was able to expand production.

The capability of Canadian producers to retain their comparative advantage is partly the result of technological innovation. New technologies employed by the Canadian forest sector over the last 20 years have been oriented to the construction of mills with higher annual capacity to take advantage of the inherent economies of scale embodied in new technologies. Moreover, new technologies have provided mill owners the opportunity to substitute capital for labour, and improve product recovery rates (that is, the volume of output produced per unit of fibre input). The results of technological innovation in the forest sector over the 1981-1991 period are increased output per mill (Figure 2) and increased output per worker (Figure 3).

Figure 1

Index of Production

1981-1991

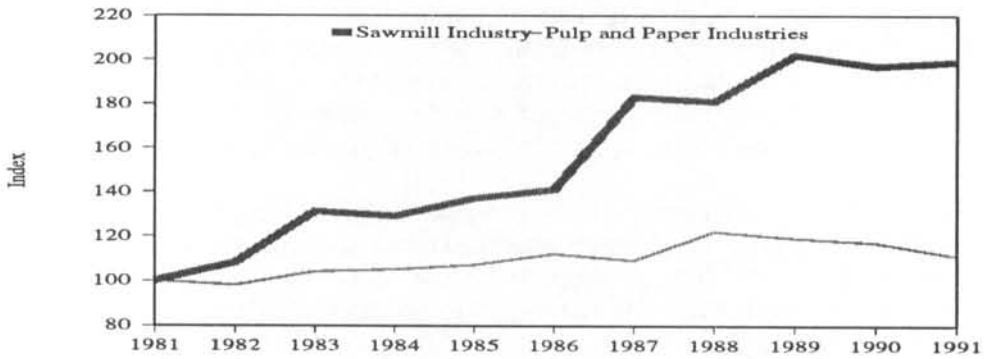


Source NRCAN-CFS

Figure 2

Output per Mill

1981-1991

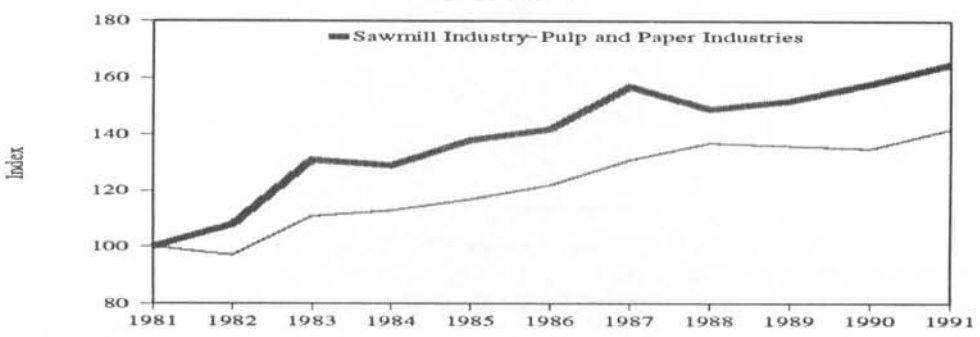


Source: NRCAN-CFS

Figure 3

Output per Worker

1981-1991



Source: NRCAN-CFS

The precise impact of the various sectoral structural adjustments on community economic development is unknown. Traditionally, the weight reducing aspects of forest products processing provided an incentive to locate mills in close proximity to the resource. However, the availability of new technologies leading to larger mill size with improved recovery factors counteract this incentive and permit the construction of new mills in more centralized localities, closer to or even within established service centers and transportation corridors. The displacement of labour in the production processes has reduced the number of jobs per unit of output. However, the marginal value product of the labour input has increased with a consequent increase in labour wage rates. The remainder of this paper evaluates economic development trends in forest based communities over the period 1981-1991.

Measuring the Economic Base of Rural Forest Based Communities

The first step in assessing the impact of structural changes in the forest products sector on community economic development is to identify communities where the forest sector is the dominant economic activity within the local economy. For the purpose of simultaneous assessment of a large number of communities, estimating the "economic base" of local economies is generally accepted as a practical approach for evaluating the contribution and importance of a sector to a local economy (Brown, Coulson, and Engle, 1992).[1] The economic base of a local economy constitutes all economic activity associated with the production of goods and/or services which result in cash being injected into the economy from external sources. Therefore, all products which are exported and sold externally or locally supplied services for which non-resident consumers pay constitute the base sector.

Shallau, Maki, and Beuter (1969) were among the first to apply an economic base model for the purpose of identifying communities where the forest sector dominated the local economy. Fletcher, White, Phillips, and Constantino (1991) were among the first to apply a comprehensive economic base modeling approach to assess the contribution of the forest sector to rural communities in Canada. The analytical framework used to determine the forest sector's contribution to the economic base of rural communities in this study is based on an approach introduced by Fletcher et al. (1991).

The unit of measurement for the purpose of measuring the economic base is employment income. The employment income from all primary resource sectors (which includes the forest sector as well as mining, fishing, agriculture, oil and gas) is fully allocated to the base sector. An adjusted location quotient[2] was then determined for all other manufacturing and service industries within each community. The location quotient formula is provided in equation (1):

$$LQ^{i}_{j} = \frac{\left(\frac{I^{i}_{j}}{I^{T}}\right)}{\left(\frac{Nadj}{I^{T}_{n}}\right)}$$

1 See Richardson (1985) for a review and discussion of economic base models and Power (1995) for a discussion of the limitations of an economic base approach.

2 The location quotient was adjusted to reflect net exports at the benchmark national level.

Where; $LQ^{i}j$ = the location quotient for industry i in community j,

I^{i}_{j} = Income for industry i in community j,

I^{T}_{j} = Total income for all industries in community j.

$I_{Nadj}{}^{i}$ = Adjusted income for industry i at the national level, and

I^{T}_{N} = Total income for all industries at the national level.

And $I_{NADJ}{}^{i}$ is further defined by equation (2):

$$I^{i}_{Nadj} = \frac{(T_i - X_i + M_i)}{T_i} * I^{i}_{N}$$

Where: T_i = Total national output for industry i,

X_i = Exports of industry i,

M_i = Imports of products produced by industry i, and

I^{i}_{N} = Unadjusted total national income for industry i[3]

Community j's base income in industry i is defined by equation (3):

$$X^{i}_{j} = \frac{(LQ^{i}_{j} - 1)}{LQ^{i}_{j}} r^{i}_{j}$$

The purpose of the location quotient, LQ, is to allocate the total income in an industry within a particular community into the base and non-base sectors for that community. The total economic base of the community is determined by summing total employment income allocated to the base sector activities for all industries within the local economy. Once the total size of the economic base is determined, the percentage contributed by the forest sector can be derived. For the purpose of this study, it is assumed that the forest sector is the dominant activity in a local community if at least 50 percent of the communities total economic base is derived from the forest products sector (FRI $\geq$ 50 percent).[4]

The economic base model was initially applied to all census sub-divisions (CSDs) with a population greater than 1,000 persons, based on the 1981 Census.[5] All communities where the forest sector

3 T_i, X_i, and M_i are available from national input-output tables for specific industries. Values for these variable were obtained from Stats Can publication number 15-201: "The input-output structure of the Canadian economy-1990".

4 FRI: Forestry Reliant Index.

accounted for 50 percent or more of the communities' economic base in 1981 were identified. The economic base model was then applied to the 1991 Census and all CSDs where the forest sector accounted for greater than 50 percent of the economic base were selected. The 1981 CSDs were then cross-matched with the 1991 CSDs and CSDs where the boundary had changed over the ten year period were identified. Matching CSDs where the labour force declined and CSDs where the labour force increased were also identified. The following section describes the results of the analysis.

Table 1. Distribution of Communities Heavily Reliant on the Forests Product Sector by Size of Community, 1981 and 1991

Province	1981			1991		
	Population range of community		Total	Population range of community		Total
	1,000-4,999	greater than 4,999		1,000-4,999	greater than 4,999	
	Number of communities			Number of communities		
Newfoundland	5	3	8	1	0	1
Nova Scotia	6	1	7	6	1	7
New Brunswick	32	1	33	31	1	32
Québec	75	10	85	43	6	49
Ontario	26	12	38	25	8	33
Manitoba	3	1	4	2	1	3
Saskatchewan	2	0	2	2	0	2
Alberta	0	1	1	1	2	3
British Columbia	35	36	71	33	30	63
Total	184	65	249	144	49	193

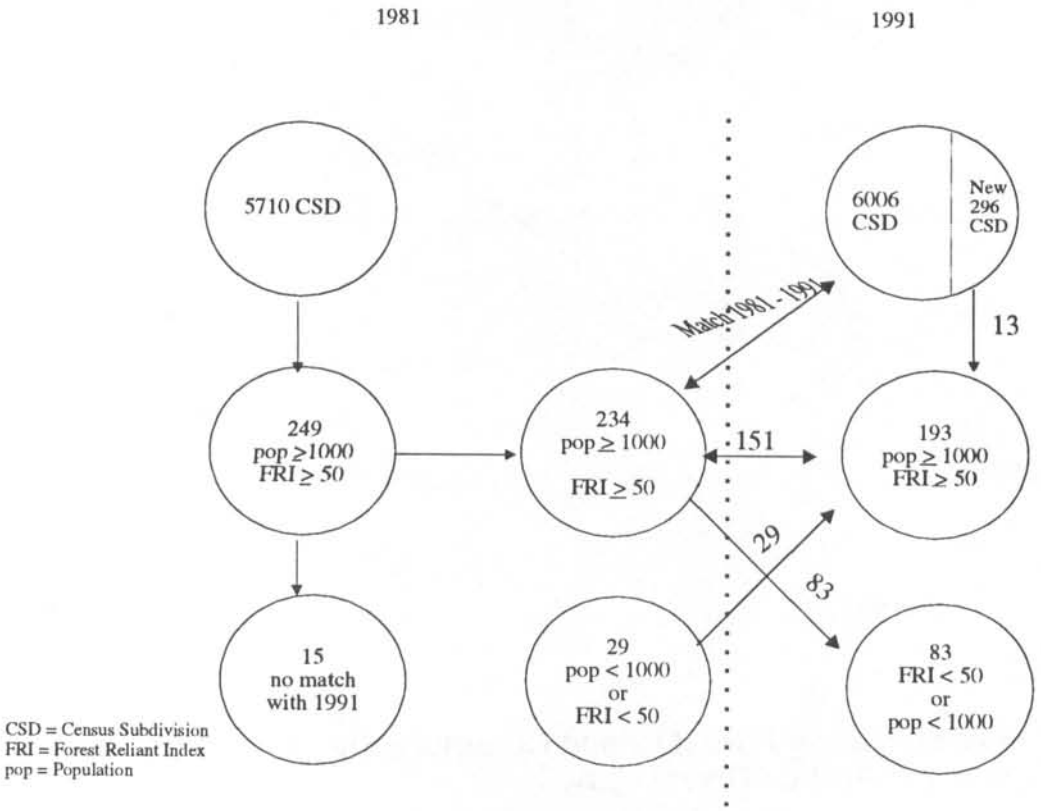
Trends in Forest Based Communities: 1981-1991

Overall, the number of communities where the forest sector dominated the economic base declined from 249 communities to 193 communities over the period 1981-1991 (Table 1). The decline is attributable to a number of factors including: a) some communities became more diversified as a result of disproportionate growth in non-forest product sectors; b) the forest sector downsized in some communities; c) the population declined in some communities to less than 1,000 persons; and d) revisions and changes to some CSDs in the Census database, resulting in failure to find a match for 15 1981 CSDs in the 1991 Census. Of the 234 communities for which a direct match was possible in the 1991 Census, 151 continued to be heavily reliant on the forest sector in 1991 (Figure 4). Thus, significant structural change occurred in 83 (or about 35 percent) of the 234 rural forest based economies for which there was a directly matching CSD in 1991 over the relatively short ten year time span from 1981-1991.

5 A detailed description of the methodology and description of the model employed is available from the authors on request.

Figure 4

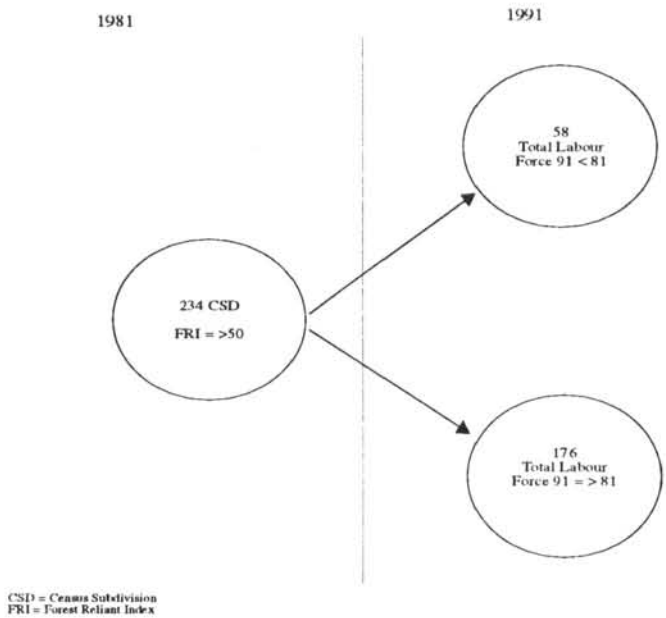
Degree of Reliance on the Forest Products Sector in Rural Communities



Declining economic opportunity in rural economies where alternative employment prospects are limited can lead to social pathology (that is, high crime rates, family breakdown, health problems, etc.). Labour force adjustments are an important consequence of industrial restructuring in forest based communities. As described in the previous section, one reason for a change in the status of a forest based community is the ability of some communities to attract new industries into the community and diversify the economic base thereby reducing its dependence on forestry. Industrial restructuring in the form of agglomeration leads to a redistribution of industrial capacity. Agglomeration in the forest products sector will result in a more concentrated forest sector in some communities and downsizing in others. The adoption of new technologies that displace labour in the production process can also result in a restructuring of labour markets. What is the consequence of these various competing forces and structural changes with respect to forest based communities? The labour force declined in 58 out of 234 (or 25 percent) of the communities where the forest industry was a dominant activity in 1981 and for which there was a matching CSD in 1991 (Figure 5).

Figure 5

Trends in the Distribution of Declining and Expanding Communities



Characteristics of Declining Forest Based Communities vs Communities Which Are Expanding And/Or Diversifying

Community decline is a natural, expected and probably irreversible response to overriding socioeconomic trends such as urbanization and technological change. Public policy now seems to be oriented to "encouraging orderly transitions" and attempting to avoid sudden and drastic shocks to communities at risk. Robson (1995) refers to the current era of forest community development as the "decline management" era. The main phenomena characterizing the current pattern of forest community economic development are: a) discouraging the establishment of new communities; b) encouraging the centralization of industrial production into growth centres; and c) where necessary, creating temporary, non-permanent residences in remote areas.

The development and implementation of rural community development policy requires some understanding of which communities are at risk to economic dislocations and which communities are not. Which communities have the greatest exposure to drastic downsizing? What are the potential economic and social costs of a change in land use in a region where the economic base of population centers is dominated by the forest products sector? Which communities are most likely to succeed as candidate growth centers for new investment and relocation of existing capacity? It cannot be concluded that all forest based communities are the same or that all communities have the same exposure to economic downsizing. A more selective approach is required. A review of the characteristics of communities which experienced declines over the period 1981-1991 provides useful information regarding communities at risk and about risk factors.

Table 2. Geographic distribution of communities with a declining labour force vs communities with an increasing labour force compared to the distribution of communities in 1981

Geographic region	Distribution of communities in 1981		Distribution of communities which declined		Distribution of communities where the labour force increased	
	No.	Percent	No.	Percent	No.	Percent
Atlantic Canada	46	20	3	5	43	24
Quebec	72	31	18	31	54	31
Ontario	38	16	12	21	26	15
Prairie provinces	7	3	3	5	4	2
B.C.	71	30	22	38	49	28
Total	234	100	58	100	176	100

Proportionately more communities were in decline in Ontario and western Canada (particularly B.C.) than in Quebec and Atlantic Canada (Table 2). A higher proportion of declining communities in Ontario and the west does not necessarily mean that the forest industry at a regional level is downsizing in these regions. It does, however, suggest that restructuring of the rural economy is relatively more pronounced there.

Table 3. Distribution of declining and developing forest based communities by population class

Population class	Distribution of communities in 1981		Distribution of communities with a decline in the labour force		Distribution of communities with an increase in the labour force	
	No.	Percent	No.	Percent	No.	Percent
1,000 to 2,500	122	52	26	45	96	24
2,501 to 5,000	49	21	14	24	35	31
5,001 to 7,500	20	8	5	9	15	15
7,501 to 10,000	17	7	5	9	12	2
Over 10,000	26	11	8	14	18	28
Total	234	100	58	100	176	100

Intuitively, it might be expected that industrial restructuring, urbanization, and technological change would encourage expansion within larger communities and proportionately greater decline in small communities. Interestingly, this does not seem to be the situation with respect to forest based communities. In fact, over the period 1981-1991 the opposite occurred. The percentage of declining communities in 1991 in the smallest community size class is less than the original distribution in 1981 (Table 3). Thus, a relatively higher proportion of small communities are expanding, and a relatively higher proportion of the largest communities are declining, compared to the 1981 distribution.

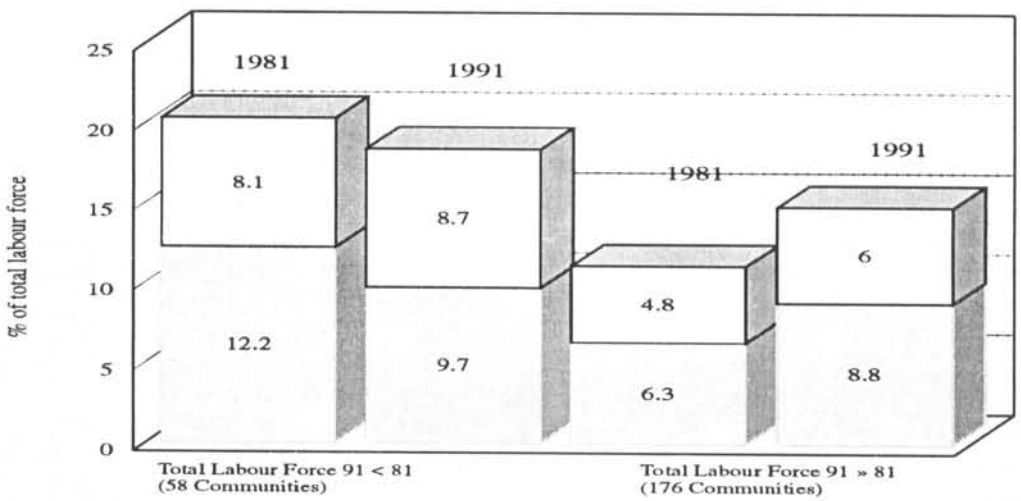
Up to this point in the analysis, the forest sector has been discussed as if it were a single entity. In fact the sector is made up of distinct industries that produce distinct commodities for distinct markets, using distinct technologies. Wood industries include sawmill and planing mills as well as a number of other solid wood processors such as plywood and veneer plants, wood preservation plants, and other

secondary manufacturers. The paper and allied industries include all pulp and paper mills, plus processors of paper box and bag industries and all other converted papers.

Three interesting results arise from looking at the initial and final distribution of the forest sector labour force between wood industries and paper and allied industries in communities that eventually declined vs communities where the total labour force eventually expanded. First, communities that eventually declined had a higher overall percentage of their total labour force in the forest sector in 1981 in comparison to communities where the labour force increased (Figure 6). Second, the proportion of the forest sector labour force in communities that eventually declined in 1991 was weighted toward the wood industries. And third, the reductions in the labour force in communities in decline appears to be the result of reduced employment in the wood industries.

Figure 6

Trends in the Distribution of Declining and Expanding Communities Distribution of the Forestry Labour Force



Source: NRCAN-CFS

DISCUSSION

This analysis has shown that significant structural change did occur in the rural forest economy over the period 1981-1991. These structural changes do not appear to be the result of downsizing at an industry level. In fact, industrial output in the forest sector increased over the period of analysis. The source of the structural adjustments appear to be technology driven.[6] Technological innovation has resulted in larger mills and higher labour productivity (Figures 2 and 3). The magnitude of the increase, however, was higher in the sawmilling industry than in the paper and allied sector industry. Over the same period of time, forest based communities that were more heavily dependent on the wood industry were more

6 This analysis is strictly comparative in nature. No attempt has been made to directly establish a cause-effect or action-feedback relationship between technological change and community economic development in this study.

likely to have declined than communities with a smaller percentage of the total labour force in the wood industry.

The inference that communities with a high proportion of their labour force in the wood industry are at higher risk of labour force decline is also consistent with the results showing the geographic distribution of communities in decline. In 1981, B.C. accounted for 30 percent of the CSDs over 1,000 people and where the forest industry accounted for over 50 percent of the economic base. However, B.C. accounted for 38 percent of the total number of communities where the labour force declined between 1981 and 1991. The B.C. forest economy was significantly more reliant on the solid wood industry than both Ontario and Quebec (Table 4).

Table 4. Distribution of forest industry employment in B.C., Ontario and Quebec - 1981

Province	Percent
B.C.	
Wood industry	54
Paper and allied	24
Other	22
Total	100
Ontario	
Wood industry	27
Paper and allied	61
Other	12
Total	100
Québec	
Wood industry	33
Paper and allied	53
Other	13
Total	100

Source: Canadian Forest Service, 1994

CONCLUSIONS

The purpose of this analysis was to identify and characterize rural forest based communities where the labour force declined over the period 1981-1991. The analysis is a generalized approach and is based on comparisons between broad groupings of communities. It is necessary to note that although useful for developing some appreciation of community risk factors at a general level, the inferences provided in this analysis do not necessarily apply at a community level. For example, the analysis suggests that communities strongly dependent on wood industries tended to have greater reductions in their labour force than communities dependent on the paper and allied industries. This is a generalized conclusion and clearly does not apply to all wood based industry dependent communities. Also, the paper characterizes communities in decline as communities where total labour force declined over the 1981-1991 period. However, a declining labour force does not necessarily mean that the community's

economic base is declining. For example, if low paying, low-skilled jobs are replaced by a fewer number of higher paying jobs then the net income effect may be zero. Also, no attempt was made to differentiate communities that experienced drastic declines in their labour force from communities which experienced marginal declines in their labour force. Another consideration relative to this analysis pertains to sources of decline in the labour force. In some communities, declines in the labour force may to totally unrelated to the forest sector, even in cases where the community is heavily reliant on the forest industry.

Finally, a cautionary note regarding interpolation of the results of this analysis to assess future prospects of rural communities is necessary. Interpolation of historical trends as a means of explaining or predicting future events requires an assumption that all other extraneous factors remain unchanged. In fact, it has been suggested that the rural forest economy is being destabilized at an increasing rate. Therefore, historical trends in the economic development of rural communities may provide a somewhat biased view of the future outlook of communities. However, despite all these qualifications, in the absence of comprehensive community level predictive modeling frameworks, a generalized approach provides a useful first approximation of potential risk factors associated with rural communities and the relative importance of these factors.

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Combining Timber and Remote Tourism Operations: Employment and Diversity Impacts

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INTRODUCTION

As timber companies expand the scope of their operations, they are beginning to access the furthest reaches of their license areas and enter new areas that were previously considered to be uneconomic. This is threatening the significant number of remote tourist operators who have lodges and camps located within unroaded areas licensed to timber companies. These operations usually are accessible only by air or by train. Their commercial viability is a function of their remoteness and the high quality of fishing and hunting, which is due to their remoteness.

When timber management plans call for the construction of logging roads and timber harvesting operations near these remote operations, the owners fear for the viability of their businesses. Thus, there has been a recent escalation in the number of conflicts between remote tourist operators and timber companies, with the prospect of even more to come in the future. There are at least three other significant stakeholders in these disputes, even when First Nations are not involved. Since these disputes usually occur on provincially owned land, one key stakeholder is the government department or ministry that is responsible for administering the management of natural resources on public land. These disputes can be said to stem from the poor definition of various rights to use public resources, which means that the natural resources ministries often get caught in the middle trying to mediate the issue.

The second key group consists of local hunters and anglers. These people feel that they have a right to the resources available on public land. Indeed, they are not prevented from going into inaccessible areas but many seem to feel that the government has the duty to provide road access to them, especially when the alternative is restricting access so that non-local sports enthusiasts can use the resources. Thus, for many local recreationists, the issue is one of fairness.

The final group of stakeholders are the environmental groups, which may or may not get involved depending on the significance of the area. Environmental groups are beginning to recognize that there are many smaller scale issues where they feel they need to become involved, even if the situation makes for some uncomfortable alliances.

Thus, to the extent that alliances are formed, the forest company and local recreationists tend to be aligned against the remote tourism outfitters and the environmental groups, with the government agency caught in the middle.

Solutions to problems are usually easier to find if they are based on an assessment of available information. Since these issues are complex and there are many hard-to-assess values involved, the Ontario Ministry of Culture, Tourism, and Recreation asked the authors to develop a framework that could be used to assess the values involved and the trade-offs associated with various potential solutions to disputes between remote tourism operators and commercial timber companies. We then applied this analytical framework to the Megisan Lake area, which has been the subject of a "bump-up" environmental assessment since 1991. This paper summarized the analysis framework and the case study results.

OVERVIEW OF ANALYSIS FRAMEWORK

One characteristic of many of the values that are at stake is that they are not exchanged in a market. As a result, it is difficult to attach a dollar value to them. Furthermore, a significant number of the values, such as those related to environmental quality, are difficult to quantify.

As a result, the authors chose to adopt a multiple accounts approach, which recognizes that it is not reasonable to attempt to convert every impact into dollar terms. Instead, a series of accounts are set up in which the impacts are identified, indicators of their magnitude are developed, and the indicator values are assessed in the most appropriate units. Some economists may argue that this approach has the drawback of not providing the decision-maker with a single index measure such as a dollar value or a benefit-cost index number. However, this objection is not convincing for two reasons. The first reason is the difficulty of valuing impacts, as has been mentioned above. The second reason is that many conflicts have a frankly political nature because the values at stake are linked to broad social goals. These often include:

- impacts on regions and communities
- environmental protection
- equity in distribution of costs and benefits
- economic and social stability (Davis and Johnson 1987)

as well as economic efficiency. The four classes of values do not lend themselves to assessment by traditional economic measures, hence we argue that the presentation of impacts in mixed units is the most reasonable approach.

If the framework does not lead to the production of a single index value, what then are the advantages of using it? Our view is that its chief advantages are that it forces analysts and stakeholders to explicitly identify the values involved and it provides a concise means of displaying the range of impacts, which facilitates the examination and comparison of the relative impacts of each option. The framework also lends itself to the identification of the interest groups or stakeholders who are affected by impacts of changes; "fairness" is often the factor that will make or break a land use decision. These are not trivial advantages.

The framework that was developed for the analysis of trade-offs between commercial timber and remote tourism is shown in Table 1. The left-hand data column displays the current value of the indicator and the two columns on its right display indicator values for each option under consideration. (In this case, two options are assumed to be under consideration, although the number can readily be expanded). Each data column is subdivided to allow the analyst to express an impact in terms of both a physical measurement and a monetized value [e.g. the volume and value of remote tourism]. Some indicators can only be assessed by means of an index; therefore only this value is reported [e.g. community stability]. Once complete, the table provides an impact matrix for the decisionmakers' consideration. Because the units of various impacts are incommensurable, the table does not show a total value associated with each option; rather it presents a spectrum of impacts.

Table 1. Multiple accounts analysis framework for timber and remote tourism

Item	Current		Option A		Option B	
	amount	$ or index	amount	$ or index	amount	$ or index
Economic - Remote Tourism						
• Gross sales						
• Asset value						
• Gross tourist expenditures						
Economic - Timber						
• Gross sales						
• Asset value						
• Gross expenditures						
Social						
• Employment						
• Income flow						
• Community stability						
• Social and health indicators						
Environment						
• Use-access roads						
• Use - aesthetics						
• Use - noise						
• Use - option						
• Existence						

We grouped the impacts associated with timber-remote tourism disputes into four categories:

- Economic Impacts on Remote Tourism Operations
- Economic Impacts on Commercial Timber Operations
- Social Impacts
- Environmental Impacts

For each class of impact, we proposed specific indicators[1] which have been generally accepted as the measurable features of the economy, environment and society. In brief, the economic impact on remote

1 A criterion is defined as a distinguishing characteristic that provide a policy framework. An indicator is a measurable variable. For each criterion there will be one or more indicators that can be used to report the status or trend of that criterion.

tourism is assessed in terms of changes in the value of direct sales and asset values and in levels of local [regional, provincial] remote tourism expenditures. Impacts on the timber firms are assessed on the same basis: direct sales measure the value of output produced, asset value refers to the current value of the mill and capital owned by logging contractors, and the final indicator assesses the value of expenditures on plant, supplies and equipment by mills and logging contractors. The social impacts apply primarily to the local and regional communities. It is in this account that the impacts on local recreationists are considered. Some of the indicators, such as employment, are readily measured while others such as community stability are difficult to assess and an index value or simply a +/-may be used to show the direction of change. Finally, the environmental account lists not only impacts on the physical environment and the resource, but also such factors as aesthetic (visual) values, noise, and level of congestion as measured by road use. The indicators are fully discussed in Williams and Bull (1995).

CASE STUDY: THE TWO OPTIONS

The Megisan Lake area is located in the transition zone between the Great Lakes-St. Lawrence and boreal forest types. If it were accessible by road, it would be roughly two hours north of Sault Ste. Marie, Ontario. Sault Ste. Marie is a regional centre on the Ontario-Michigan border with a 1988 population of 78,500 (Government of Ontario, 1991); Sault Ste Marie, Michigan is located just across the border with a population of approximately the same size.

As was mentioned above, the controversy between local commercial timber operations and remote tourist operators led the Ontario Ministry of Environment to authorize a "bump-up" environmental assessment (EA) of alternate land use options. The EA panel identified an "area of the undertaking" (AOU), which consisted of two zones with a total land area of 49,844 ha and another 4,133 ha covered by water. In the EA process, a series of alternative land use scenarios were developed spanning a range of potential use combinations. The potential effects of the alternatives were estimated, the importance of the effects and appropriate mitigation practices were assessed, and a preferred alternative was selected. The Megisan Lake EA process ran from mid-1992 to 1995 and a decision has not yet been released.

The area has a network of rivers and lakes that make it very attractive for recreation. Parts of three major watersheds - the Goulais, Montreal, and Mississagi Rivers - occupy the AOU. In addition, there are 393 lakes in the AOU. Ten of these lakes exceed 100 ha in size, with Megisan Lake, at 616 ha, being the largest. The area is largely covered by timber characteristic of the transition zone between the boreal and Great Lakes-St. Lawrence forest types. Common coniferous species of commercial importance include black and white spruce, white, red and jack pine, and balsam fir. Deciduous species include poplar and white birch as well as red and hard maple and yellow birch. Since this area is at the northern limit of the Great Lakes-St. Lawrence forest zone, the hardwood species characteristic of that zone are relatively poor in quality. The coniferous species and poplar resources of the area are of greatest commercial interest.

Remote Tourism

There are 11 remote tourist lodges and outpost camps in the AOU, all of which are inaccessible by road. This number represents 10 percent of the remote lodges and camps within a 120 km radius of Sault Ste. Marie, Ontario. However, three of the five main base lodges within this radius are located within the AOU and two operators conduct all of their business within the AOU. In addition, three air service companies service the remote tourist outfitters in the area.

Between 60 and 75 percent of the clients come from the U.S., notably Michigan, with another 20 to 30 percent originating in Ontario and the remainder coming from Quebec and Europe. Most participate

in fishing and/or hunting, although one outfitter has promoted eco-tourism with some success. Secondary activities include canoeing, hiking, and passive enjoyment of the natural surroundings. Over each of the last few years, the operators have handled from 600 to 650 clients within the AOU. Customers stay an average of 5 days; therefore there are 3,000 to 3,250 remote tourism user days provided each year within the AOU.

Remote tourists pay premium prices for the experience; the fee for an equivalent amount of time in a road accessible lodge is only 25 percent of that charged by remote outfitters. Fees range from approximately $350 for a four day fishing trip to $3,000+ for a 10 day hunting trip. Air travel to the lodge costs an additional $450/hour or $2-$3 per mile. Total value of sales is estimated at $500,000 per year, of which $380,000 is remote tourist operator sales revenue and $120,000 is revenue to the air service companies.

It was estimated that individual remote tourists spent an average of $640 per trip in Sault Ste. Marie, and to a lesser extent, in Chapleau. These expenditures consist largely of accommodation, food and beverages, entertainment, and equipment; air travel is excluded. This translates to an annual total expenditure of $400,000, with an additional $68,475 spent on fishing and hunting licenses (Table 2).

Table 2. Gross sales revenue, capital value, and employment from remote tourism

Category of economic contribution	Value/employment remote tourism	Value/employment air services for remote tourism
Gross sales value ($/year)	380,000	120,000
Asset value ($)	1,100,000	530,000
Expenditures on supplies & services ($/year)	200,000	68,000
Expenditures on labour ($/year)	80,000	37,000
Direct employment (No. PYs)	6.5	
Indirect expenditures by tourists ($)	400,000	
Expenditures on licenses and permits ($)	68,475	

Commercial Timber Operations

Six timber companies owning ten mills used the majority of the timber in the area of the undertaking: Chapleau Forest Products and A & E Lafreniere, Lajambe Forest Products, Midway Lumber, Pineal Lake Lumber, and St. Mary's Pulp and Paper (Table 3).

Table 3. Forest products mills and degree of dependence on EA area

Company Name	Mill Locations	Degree of Dependence (percent of wood supply)
A & L Lafreniere	Chapleau	Negligible
Chapleau Forest Products	Chapleau	Negligible
Lajambe Forest Products	Sault Ste. Marie, Thessalon, Hayden, Sundridge	3-5 percent
Midway Lumber	Thessalon (2 mills)	1-2 percent
Pineal Lake Lumber	Near Chapleau	25-35 percent
St. Mary's Pulp and Paper	Sault Ste. Marie	1-2 percent

Using the degree of dependence data, values attributed to the AOU were a value of production of $3.7 million, 28 mill jobs and 15 woodland jobs (Table 4.)

Table 4. Annual production, employment, and indirect expenditures attributable to the AOU

Category	Total (all mills)	Attributable to AOU
Timber Utilization (m3)	957,000	20,350
Value of production ($ million)	210	3.735
Direct expenditures ($ million)	32.075	0.674
Indirect expenditures ($ million)	154	3.234
Mill employment	1,350	28.35
Woodlands employment	700	14.7

Social Account

Data were primarily available for trapping and local recreation. Local recreation is by far the most important measured impact. Hunting and fishing are an important part of the lifestyle in the Sault Ste. Marie-Chapleau area. Related activities include snowmobiling, boating and off-road driving. Other recreational pursuits that could be practiced within the AOU include canoeing, hiking, camping, bird-watching and photography.

Despite the lack of road access, it was estimated that in 1993 the AOU supported 3,025 user-days for fishing, 725 user-days for hunting, and perhaps 100 user-days for other activities, for a total of 3,850 user-days per year. Between 75 and 90 percent of this usage was estimated to be of local origin. Local recreationists were estimated to spend $110 per person per day primarily on food and beverages, fuel, and equipment. Based on a total of 3,842 user days, the variable cost expenditures were estimated at $423,000 per year.

Nine trappers operate within the AOU. None of these trappers rely fully on trapping for their livelihood; most do it as a hobby or as a sideline business. The total value of all pelts originating from the AOU was estimated at $13,200 in 1993. Input costs are estimated at $6,732 per year for AOU related activities; these costs are for fuel, food, insurance, traps, and other miscellaneous items. This indicates that the net revenue from trapping, which could be considered as income, is $6,468 per year. Due to the part-time nature of the work, it is difficult to estimate the number of employment days generated. One could argue that since much of the trapping is recreational, no employment days should be considered. However, a total of 3.25 person years of employment was attributed to trapping in the AOU by the Ontario Ministry of Natural Resources (OMNR), which seems rather high based on the income obtained and the number of days worked.

Environmental

The quality of the air, water, and soil within the AOU is excellent. There is currently no appreciable level of extraneous noise or congestion and the visual characteristics are good. No rare or provincially significant flora are known to exist within the AOU. There is little information on insects except for butterflies. One of the 64 species of butterflies that may live in the AOU is considered to be rare or uncommon; no field surveys have been undertaken.

A total of 135 breeding bird species have been censused in the Megisan Lake area. This represents 53 percent of the species that the Atlas of Breeding Birds of Ontario suggest should be present. There are 48 species of birds considered to be regionally significant breeders and nine of these have been reported within the AOU. There is also evidence that one provincially significant species has been in the area. There are two confirmed osprey nesting sites with a third possible site also located; a cluster of four great blue heron colonies has been reported but not confirmed.

No detailed fish species surveys have been undertaken in the area. Brook and lake trout are thought to be the only native game species in the area, with walleye and northern pike having been introduced (it is thought). Within the AOU, there are 11 lake trout only lakes, 34 brook trout only lakes, 7 lake/brook trout lakes, and 6 northern pike/walleye lakes (3 of these also had lake trout).

The maximum sustainable fish harvest from lakes such as those found within the AOU range from 0.25-0.75 kg/ha. These lakes are not especially productive and produce rather small fish on average, although large individuals do exist. Data for Megisan Lake (628 ha) suggest that the sustainable annual harvest level is 0.66/kg/ha or roughly 400 lake trout. Recent harvest levels have ranged from 0.64-0.85 kg/ha/year. The recent annual harvests from Goulais Lake have been reported to be between 0.3 and 1.2 kg/ha, as compared to a sustainable level of 0.85 kg/ha. Thus, fishing in both lakes is at or above the sustainable harvest level.

The most significant (economically) mammal species found in the Megisan Lake area are moose and black bear. In addition, twelve furbearer species have also been recorded in the AOU. The most common of these are beaver, marten and mink.

Based on assessments of habitat quality and aerial survey results, the average 1987-1990 mid-winter moose population was estimated at 495 animals in the AOU and surrounding area. This represents a high to medium density when compared with provincial averages. Moose can be hunted by licensed hunters and without license by First Nations people. Neither hunter group is compelled to report kills. Based on estimates from voluntary reports, an average of 35 moose were killed per year, most by licensed hunters. Therefore, the hunting rate is estimated at 6.6 percent of the population, which is below the provincially recommended rate of 10 percent. If hunting proceeded at the provincially recommended rate, another 20 moose could be taken annually from the area.

Black bear population densities are harder to assess and their habitat requirements less well understood, in part because these animals are generalists. Expert opinion estimated a bear density ranging from 0.2-0.4 animals per km2, or a population ranging form 280 to 560. Black bear hunting levels were estimated from export permits and harvest cards. An average of 13 bears were shot each year between 1990 and 1992, which translates into harvest rates ranging from 2.3 to 4.6 percent, depending on the estimate of population level used. These rates fall below the provincially recommended 8 percent, which indicates that from 10 to 23 additional bears could be taken per year without violating the recommendation.

Density estimates of furbearers can only be based on trapping success rates; an estimated 262 beaver live within the AOU although this number is probably an underestimate. Marten habitat suitability studies on six townships in the AOU indicate that the proportions of area judged to be marginal, suitable, and optimal habitat were 41 percent, 33 percent, and 11 percent respectively. The remaining 15 percent area was judged to be unsuitable.

Land Use Alternatives

The EA considered two alternate forest management approaches and seven land use patterns for a total of fourteen options. Some of these options were discarded in the initial stages of the assessment

and the remainder were assessed using a technique known as the concordance method (see OMNR, 1994). We focused our assessment on only two of the options that were considered throughout the EA analysis: EA options #3 and #5 with special forest management practices. These are defined in terms of modifications to harvesting, silviculture, and access practices. Option #3 represents the maximum amount of protection offered to remote tourism under the then-current timber management planning process and option #5 went substantially beyond that.

The EA identified three classes of potential impacts that were of concern to the remote tourism operators and which formed the basis for the conflict:

- degradation of the visual quality of the area;
- introduction of machine and traffic noise; and
- the creation of access that would remove the "remote" quality of the area and lead to the degradation of hunting and fishing quality.

Different degrees of protection were assigned to various lakes and rivers, depending on the current and potential levels of tourism use. For this purpose, the lakes in the AOU were grouped into five categories (OMNR, 1994):

1. Tourism Lake with Lodge: A lake designated in one of the local District Land Use Guidelines (DLUGs) as a tourism lake with a licensed tourist outfitting establishment able to accommodate overnight guests in more than one structure. In other words, these were lakes with main outfitter lodges on them and are usually the main base of an outfitters business.

2. Tourism Lake with Outpost: A lake designated in one of the local DLUGs as a tourism lake with a licensed tourist outfitting establishment able to accommodate overnight guests in one structure. In other words, these were lakes with single cabins on them that are usually used during fishing or hunting trips or extended hikes.

3. Tourism Lake: A lake designated in one of the local DLUGs as a tourism lake without a licensed tourist outfitting establishment. In other words, these lakes are attractive to tourists and may have the potential to support development.

4. Tourism Use with Outpost: A lake or river not designated in one of the local DLUGs as a tourism lake with a tourist outfitting establishment able to accommodate overnight guests in one structure.

5. Tourism Use: A lake, river, stream, trail, portage, etc. used by a tourist operator and clients during the tourist season. These tourism values were not designated in one of the local DLUGs.

The visual, sound and access protection measures that were listed under EA options #3 and #5 are presented in Tables 5, 6 and 7. Visual protection measures were primarily geared to maintaining visual quality from the main lakes and lodges, with no explicit consideration given to the view that arriving and departing tourists have from the airplane. The main approach taken to limit noise is to restrict the operating periods to low tourism seasons and/or night-time operations during the tourism season. Restricted noise zones were also included in some of the options to further reduce noise impacts. Access protection measures often specify one of three road classes. A primary road is a main infrastructure road which is expected to be permanent. Secondary roads are built to somewhat lower standards than primary roads and are expected to be used for 10-20 years during forestry operations. Tertiary roads are relatively temporary roads built to provide access to relatively small areas. These roads are maintained during harvesting and subsequent regeneration activities, which last for roughly 3 - 5 years. Winter roads only exist during that season and are generally impassable at other times.

Table 5. Visual protection options

Option	Tourism Lake with Lodge	Tourism Lake with Outpost	Tourism Lake	Tourism Use with Outpost	Tourism Use
3	120 m no-cut reserve on lake and skyline reserves	120 m no-cut reserve on lake	120 m no-cut reserve on lake	120 m no-cut reserve around camp	No restrictions
5	180 m no-cut reserve around lake and camp; modified operations in visual zone and within 1-3.5 km of lake + skyline reserve, no visible operations within 1 km of lake	180 m no-cut reserve around lake and camp; modified operations in visual zone and within 1-3.5 km of lake + skyline reserve, no visible operations within 1 km of lake	180 m no-cut reserve around lake and camp; modified operations in visual zone and within 1-3.5 km of lake + skyline reserve, no visible operations within 1 km of lake	180 m no-cut reserve around camp, 120 m no-cut reserve around lake; modified operations in visual zone and within 2.4 km of camp; no operations within view of 1 km of camp	120 m no-cut reserve on lake

Table 6. Sound protection options

Option	Tourism Lake with Lodge	Tourism Lake with Outpost	Tourism Lake	Tourism Use with Outpost	Tourism Use
3	No harvest or site prep within 1000 m of lake from May 1 to 2nd week of moose hunting season between 6 a.m. and 6 p.m.	No harvest or site prep within 1000 m of lake from May 1 to 2nd week of moose hunting season between 6 a.m. and 6 p.m.	No restriction	No restriction	No restriction
5	No operations from May 15 to June 30 within 3.5 km of lake; 2.4 km sound zone from July 1 to third Saturday of moose season	No operations from May 15 to June 30 within 3.5 km of lake; 2.4 km sound zone from July 1 to third Saturday of moose season	No operations from May 15 to June 30 within 2.4 km of lake	No operations from May 15 to June 30 within 2.4 km of outpost; operations from July 1 to August 31 from 6 p.m. to 6 a.m.	No restriction

Table 7. Access protection options

Option	Tourism Lake with Lodge	Tourism Lake with Outpost	Tourism Lake	Tourism Use with Outpost	Tourism Use
3	No primary roads within 2 km of lake; no secondary road within 1 km of lake; no roads within 500 m of lake	No primary roads within 2 km of lake; no secondary road within 1 km of lake; no roads within 500 m of lake	No primary roads within 2 km of lake; no secondary road within 1 km of lake; no roads within 500 m of lake	180 m no-road reserve	180 m no-road reserve
5	No primary roads within AOU or skyline; no roads in visible areas within 1 km; no roads within 500 m of lake; winter roads only in visible areas from 1-3.5 km and within 500-1000 m which are closed to motor vehicles	No primary roads within AOU or skyline; no roads in visible areas within 1 km; no roads within 500 m of lake; winter roads only in visible areas from 1-3.5 km and within 500-1000 m which are closed to motor vehicles	No primary roads within AOU or skyline; no roads in visible areas within 1 km; no roads within 500 m of lake; winter roads only in visible areas from 1-3.5 km and within 500-1000 m which are closed to motor vehicles	No roads within 500 m or visible areas within 1 km; winter roads only in visible areas from 1-2.4 km; roads within 500 and 1000 m of lake closed to motor vehicles	180 m no-road reserve

Analysis

The analysis of the two options primarily examined short-term impacts under the assumption that the impacts would take effect in a rather regular, linear manner. However, both the timber companies and the remote tourism operators would likely respond to the changes and the manner of response was not examined here. For example, if the remote tourism operators set up marketing in reaction to a loss in quality, they may be able to maintain their current level of business, although profitability will decline due to increased advertising costs. It may also be possible that the timber companies and tourist operators might be compelled to strike a deal, although the adversarial approach fostered by the EA process will likely prevent this.

The completed multiple accounts are presented in Table 8. As was indicated above, the present situation is not sustainable since timber companies have licenses to harvest wood in the AOU without making special provision for remote tourism operators while remote tourism operators have not planned for the introduction of timber operations in the vicinity of their operations. Thus, we assumed that Option #3 would not have a negative impact on timber companies but it would adversely affect the tourism operators. Conversely, we assumed that Option #5 would shield the remote tourism operators from negative changes but would reduce the scope of timber operations. Thus, Option #3 is the status quo from the timber companies' perspective while Option #5 represents the remote tourism operators' version of the status quo.

The right hand column of Table 8 shows the different impacts between Options #3 and #5 on the remote tourism operators and the timber companies. For example, Option #5 would result in a loss of 3 person years of employment in the woodlands and mills whereas Option #3 would cause 1.3 person years of work to be lost in the remote tourism industry. If one of the two options is to be undertaken, some jobs will be lost. The difference between the two loss estimates (i.e. 1.7 person years) represents the net loss associated with option #5 (or conversely the employment maintained by undertaking Option #3).

The impacts on the timber harvest volumes were relatively straightforward to estimate, using timber supply modeling and price and cost data gathered by Deloitte and Touche (1993) and GIS analysis results undertaken by the OMNR (1994). It was assumed that the sound and access restrictions would not remove timber from the available supply but rather limit the rate and manner in which it could be harvested. Also, the modified harvest options to maintain aesthetic quality under Option #5 will not remove those timber areas from harvesting. Thus, the GIS analysis revealed that Option #5 would lead to the withdrawal of 7 percent more of the landbase than under Option #3 and roughly 40 percent of the area would become available on a restricted basis. Since the AOU accounts for less than 5 percent of the wood supply area for all of the affected mills except for Pineal Lake Lumber, the wood supply impacts are generally negligible. This forms the basis of the estimate of losses experienced by the timber companies if Option #5 is undertaken (see Table 8). For example, Table 4 shows that mill and woodland employment attributable to AOU is 43 person years. A 7 percent reduction amounts to a loss of 3 jobs. These figures appear in the row of Table 8 titled "Employment".

Unfortunately, terms of reference for the project did not permit the consultants to estimate any changes in access, harvest and silvicultural costs. Road costs might fall if primary roads are replaced by winter roads, harvest costs will likely rise due to the expanded level of partial harvesting, and silvicultural costs will likely fall as expensive planting regimes are replaced by natural regeneration. The net cost impact is therefore unknown.

The impacts on the remote tourism operations could not be calculated with a great degree of confidence. The primary missing data are the means to translate various configurations of forest management activities into impacts on remote tourism. Since these data did not exist, the consultants

were forced to make some strong assumptions. The first of these is that Option #5 will have no impact on remote tourism businesses. The remote tourism operators would not make this assumption, since they proposed an alternative to the EA Board with buffers of 4-5 km in width.

The second main assumption related to the impact of adopting Option #3. For guidance, we referred to a recent study of remote tourist responses to logging evidence and greater access conducted near the Megisan Lake area (Haider and Carlucci, 1994). These researchers found that less than 10 percent of remote tourists experienced a strong negative reaction to noise from harvesting or traffic on logging roads and less than 5 percent had a strong negative reaction to visible signs of logging or roads seen from either the camp or the lake or river. However, over 40 percent of remote tourists had a strong negative reaction to visual evidence viewed from the air. Responses to the sight of other parties were generally neutral. On the basis of these responses, the consultants chose to assume that Option #3 would lead to a decline in remote tourism business of 20 percent. This could be viewed as an assumption that none of the people with strong negative reactions to the sign of logging operations and roads (from the air) would not return but that roughly 50 percent of this loss could be made up through new clients. However, the actual set of responses and counter-responses is too complex to attempt to predict on the basis of current understanding.

The social account did not contain any community level indicators, since it was assumed that the potential impacts discussed here would not have a significant effect on the local communities of Sault Ste. Marie or Chapleau. The consultants did not attempt to quantify any impacts on activity undertaken by local recreationists. This is also a complex undertaking. Deloitte and Touche (1993) estimated that the AOU currently provided an average of 3,850 recreation user days, mainly to local sports enthusiasts. It is assumed that these are very high quality recreation days. Building roads into the AOU is assumed simply to redistribute existing hunter and angler effort but not add any new effort. Furthermore, it is likely that the influx of sports people will cause the experience quality to decline until it is on par with that of the surrounding, accessed area. Viewed in this manner, the introduction of access may lead to a higher output of recreation value from the AOU for a few years but then, as quality falls, so too will the value decline to a point below the current level. How might the value of the current recreation days compare to those in the surrounding area? A reasonable starting point might be that a user day in the AOU is presently worth four times as much as an average user day elsewhere in the region, since this is the multiple by which remote tourist fees exceed those charged by non-remote lodges.

Finally, the environmental account shows that Option #3 will produce a more negative impact on the area than Option #5. One exception may be some increase in moose habitat quality associated with increased browse but the extent of this and the impact on moose populations is unknown.

Table 8. Summary of accounts

Category	Option #3		Option #5		Difference (Option #5 -#3)	
	Tourism	Timber	Tourism	Timber	Tourism	Timber
Economic ($)						
Asset value	1,304,000	n/a[1]	1,630,000	n/a	+326,000	n/a
Sales revenue	400,000	3,735,000	500,000	3,474,000	+100,000	-261,000
Gross expenditures	308,000	3,908,000	385,000	3,635,000	+77,000	-273,000
Provincial government revenue[2]	54,780	203,500	68,745	189,250	+13,965	-14,250
Social						
Employment (PY)	5.2	43.0	6.5	40.0	+1.3	-3.0
First Nations	n/a	4.3	n/a	4.0	n/a	-0.3
Recreation	see text					
Environmental						
Access	more access		reduced access		less access	
Aesthetics	lower visual quality		higher visual quality		higher visual quality	
Noise	more noise		less noise		less noise	

[1] not available.

[2] We have assumed that the government revenue for each m3 of wood harvested is approximately $10.

Conclusions

This study has assessed the impacts of various options available to resolve a land use controversy in north central Ontario. The assessment method yielded a variety of impact measures in several units and sometimes in terms of simply a gain or loss in the indicator value.

The major result is that there appears to be no method of adequately assessing the impact of changes in land use on the behaviour of remote tourists. Anecdotal reports describe cases where logging roads were built close by existing lodges, destroying their business. However, it is unclear how to develop a plausible set of impacts with our present level of knowledge. Thus, the remote tourism operators have good reasons to resist the encroachment of roads and timber harvesting operations, which is the basis for the conflict.

The uncertainty surrounding estimated impacts on remote tourist operations does not affect the estimates of impacts on timber companies - the impacts of adopting Option #5 are relatively minor in relation to the total values involved and thus it would appear that the timber companies would not be unduly harmed if Option #5 were selected. The dispute does not have to be resolved on an all or nothing basis since creative use of restrictions and forest management techniques can mitigate many of the negative impacts of logging. Furthermore, if Option #5 is chosen, it does not rule out the later use of operations such as are described in Option #3. However, once Option #3 is adopted, reverting to Option #5 at a later date would not reverse the negative impacts of Option #3.

In the same vein, it is not unreasonable to expect that roadless areas will become much more valuable in the future as they become scarcer. Introducing road access into an area is an irreversible choice, whereas leaving an area unroaded is not. This quality of irreversibility should be considered as one considers the longer term impact of access decision.

A similar strategic factor is that the presence of remote tourism represents a diversification of the regional economy. While the value of this is difficult to assess, it should be noted that the relative importance of industries shifts over time. This will likely be the case with these two industries and it can be expected that remote tourism will increase in relative importance compared to the timber industry (even if it never surpasses it).

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