

The Impacts of New Resource Industry on Recipient and Adjacent Municipalities

Hugh Semple and R.G. Ironside
Department of Geography
University of Alberta
Edmonton, AL T6G 2H4

Two major problems have been encountered by both host and adjacent municipalities of the establishment of large-scale resource industry. First, the projected benefits from new jobs, business opportunities and retail sales are usually much greater than those eventually realized. These lower multiplier effects occur particularly because of leakages (Summers, Beck and Snipp 1979; Leistriz et al. 1982; Shaffer 1979; Ironside and Mellor 1974). Second, municipalities may not obtain a net increase in municipal finances. The cost of the extra services and infrastructure required, as well as any tax breaks for the company, may not be covered by increased tax revenues (Garrison 1971; Barlow 1981; Murray and Weber 1982). This problem may be especially evident in municipalities adjacent to the industry location since these municipalities do not receive direct tax revenues but they house the workers. Conversely, in those cases where the municipality which hosts the industry does not at the same time host its workers, it may gain a significant tax windfall.

The central problem, therefore, is that housing workers is often a tax burden, while hosting industry is often a tax benefit. Since the impacts are incremental over the life of the industry and are marginal additions to the existing stocks of housing and industry in municipalities, the problem can be posed as one where the marginal costs of housing exceed the revenue from

The authors would like to thank Alberta Municipal Affairs for financial and data support for this study. In particular, they are grateful to Barry Clark of Alberta Municipal Affairs for his interest and support. They would also like to thank the anonymous referees for their helpful suggestions and Geoffrey Lester and his cartographic drafting personnel of the Department of Geography, University of Alberta.

it and the marginal costs of industry are less than the returns from it. If the housing and industry occur in different municipalities, then to avoid externality costs, a cross subsidy or tax revenue sharing agreement should be made between them.

While the problem of economic benefits has received considerable attention in the literature and will only be touched upon here, the problem of municipal finances deserves greater attention in the context of regional and local development arising from industrial impacts. This paper reports the results of an *ex-post* evaluation of the effects of the Proctor and Gamble and Daishowa Canada pulp mills on municipalities in northern Alberta.¹ The evaluation focuses first on the demographic and economic effects of the mills. An analysis of changes in the finances of host and adjacent municipalities follows. Finally, a number of fiscal policy issues relating to resource development in northern Alberta are discussed.

This retrospective study was prompted by the need in the literature to address the issue of municipality finances as affected by large scale industrial development and to take advantage of the opportunity as a result of the two corporate initiatives encouraged by the top-down resource development policy of the Alberta Government. At Grande Prairie, Proctor and Gamble Cellulose Ltd. announced plans in 1988 to double the size of its pulp mill by the mid-1990s. From 1988, Daishowa Canada Co. Ltd., near the town of Peace River, built a similar type and size of pulp mill to the original Proctor and Gamble one constructed near Grande Prairie between 1971-73. While *ex-ante* studies sponsored by Daishowa forecast significant growth in population, jobs, businesses and municipal revenues (Simons Ltd. 1988), similar optimism prevailed in Grande Prairie during the early 1970s. Local and provincial government officials sought more information about the effects of the Proctor and Gamble mill at Grande Prairie to inform municipal decision-making and to provide insights into what effects might occur in the region around Peace River as a result of the Daishowa mill.

Review of Literature

Most studies on community impacts of large-scale resource projects are predictive in scope. A major reason is the legislative requirement in Canada, the U.S.A. and several other countries for Environment Impact Statements including socio-economic impacts (D'Amore and Rittenberg 1978; Rohe 1982). Consequently, there is an impressive array of *ex-ante* studies. Also the techniques for conducting them are well-developed (Weber and Howell 1982;

1. Ex-post evaluations study the effects following the establishment of plants in contrast to ex-ante studies which occur before plants are built and which forecast effects.

Leistriz et al. 1982; Burchell and Listokin 1978).

However, comparatively few *ex-post* studies exist. Most deal with the American mid-west experience and include the analysis of the impacts of resource based industry as well as non-metropolitan manufacturing industry. Regarding fiscal impacts, most studies (Garrison 1971; Summers 1979; Summers, Beck and Snipp 1979; Lonsdale and Seyler 1979) found that the net fiscal benefit of new industries, measured in terms of excess tax receipts over industry related costs were only minimal or negative. The major reason for this was the substantial public costs of providing the infrastructure and services needed by in-migrant workers and their families. The exception is where the host municipality of the industry does not host the workers. In this case, the host municipality may receive a significant tax advantage. Unless financial support from senior governments is received, many municipalities find that the public cost of installing new infrastructure and services exceeds the revenue obtained.

Research on economic impacts, undertaken via many case studies, show that positive economic benefits of income, employment and business opportunities occur (Summers, Beck and Snipp 1979). But it has been pointed out that much of the positive impact takes place during the construction phase of the project. During the operating phase, employment and income levels may decrease and stabilize at lower levels (Leistriz et al. 1982). Leistriz et al. also concluded that boomtown situations are more the exception than the rule.

Some important caveats have to be noted about local economic benefits. Often new jobs do not go to long time residents because of their lack of skills or education. Thus the jobs are taken by new or recent migrants to the communities (Ironside and Mellor 1974; Shaffer 1979; Hayter 1979). The expansion of local business activities may also not materialize because new industries tend to maintain old supply links outside local communities. Certain business services and goods may not be locally available. The same also applies to higher order retail goods and services desired by new residents. In addition, substantial unused capacity in local businesses may retard any immediate expansion.

Study Methodology

The Locational Context

This study differs from many others because it examines impacts at a broader geographical scale than the single host municipality. Even where several municipalities are recognized as being affected, the inter-municipal distribution of effects has not been widely discussed although there are

examples in the case of fiscal impacts (Barlow 1971; Lowenstein 1973). Clearly, it is important to municipalities within commuting distance (80 km) to understand how they are affected by the resource industry.

Two impact areas were established (Figure 1): the Grande Prairie impact area includes the County of Grande Prairie which hosts the Proctor and Gamble mill, the adjacent City of Grande Prairie, the towns of Sexsmith, Wembley and Beaverlodge and the village of Hythe; the Peace River impact area includes Improvement District 22 (ID22)² in which the Daishowa mill is located, the towns of Peace River, Grimshaw and Manning, the villages of Nampa and Berwyn and Municipal District (Rural) 135. The 1971 Census locates the Grande Prairie impact area in Census Division 15 while the 1986 Census locates the Peace River impact area in Census Divisions 17, 18 and 19.

Table 1 presents some basic data about the mills, and employment and population of the municipalities. The City of Grande Prairie (26,470 in 1986) has become the main regional service centre for the South Peace region of Alberta, with major retail, transportation, education, health and wholesale functions. The County of Grande Prairie with farm, unincorporated hamlet and acreage sub-divisions has almost half the population of the City. In 1986, the town of Beaverlodge, the next largest community, had only 1,810 people. The town of Peace River (6,290 in 1986) with retail, transport, oil and gas servicing and government functions is much smaller in size than the City of Grande Prairie. ID22 has, however, a substantial rural population of 4,455 while the towns of Grimshaw (2,575) and Manning (1,140) are service towns with transportation functions. The differences in the size of population between the municipalities in the two impact areas held true even before the Proctor and Gamble mill was constructed in 1971. Grande Prairie City and County had much larger populations than Peace River town and ID22.

Evaluation Design

From a review of *ex-post* evaluation designs, it was determined that there are four broad categories of evaluation designs (Poister et al. 1979; Hatry et al. 1981). These frameworks are the 'Before and After' design; comparison of time series data before and after the project; comparison with a population

2. An Improvement District is a 'rural municipality' administered by the Alberta Department of Municipal Affairs because of its small population and tax base. It has an advisory council which is locally elected.

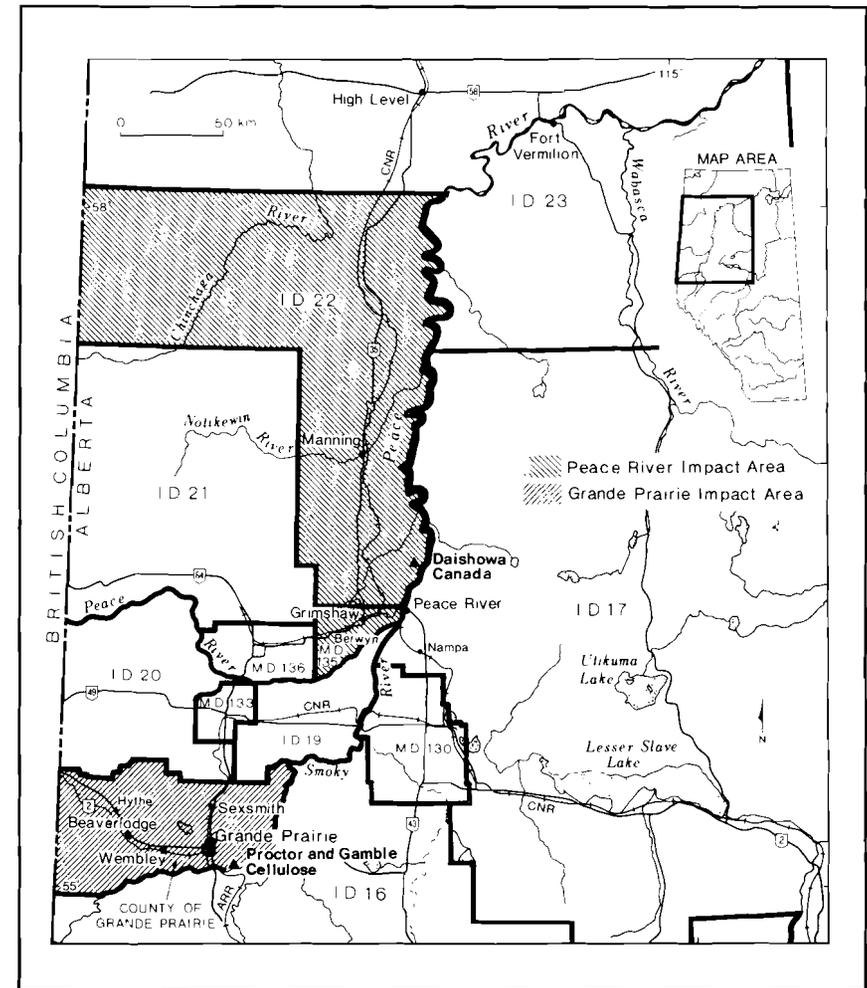


FIGURE 1 Grande Prairie and Peace River Pulp Mill Impact Areas.

not affected by a similar development; and controlled, randomized experimentation. The last cited was excluded because it requires strict control over project effects and those arising from other circumstances. Useful for laboratory type experiments, it is not suitable for evaluating open community systems. The approach based on comparisons with communities not affected by a similar development was also ruled out because of the difficulty of finding a comparable settlement system. The first two approaches were most relevant to the study because of the existing data base.

The 'Before and After' design compares conditions at a point in time before the project begins with those at another point in time after the project

TABLE 1 Overview Data for Impact Areas

	Grande Prairie Impact Area	Peace River Impact Area
Pulp mill type	Kraft chemical (Proctor and Gamble)	Kraft chemical (Daishowa)
Total Operational Employment		
Present (1989)	820 (mill & forests)	313 (mill only)
Projected	500 additional (by 1995)	630 (by 1990)
1976	529	—
Construction Employment		
1971-73	1,800 peak	
1988-90		1,568 peak

Population	County of Grande Prairie	City of Grande Prairie	Others	ID22	Town of Peace River	Others
1971	8,723	13,097	2,550	3,209	5,039	5,166
1976	9,147	17,626	3,069	3,132	4,840	5,017
1981	12,058	24,263	4,945	4,255	5,907	5,895
1986	12,040	26,470	4,950	4,455	6,290	6,368
1990	n.a.	27,588	n.a.	n.a.	6,644	n.a.

n.a.: not available.

Sources: Proctor and Gamble Cellulose Ltd., Daishowa Canada Co. Ltd. Statistics Canada, Municipal Census, Town of Peace River; Municipal Census, City of Grande Prairie.

is initiated. The differences in conditions in the community are attributed to the project, providing that no other explanation can be uncovered.³ The 'Before and After' design is widely used because of its simplicity, cost-effectiveness and economical data needs. One important shortcoming, however, is that it does not have a method to differentiate between project effects and other concurrent influences.

In the design based on a comparison of time trend data with actual post project time-series, the impacts of a project are considered to be the differences between present trends and those that would have been expected if the project had not taken place (Rossi and Freeman 1989). This method is statistically more reliable than the 'Before and After' because a greater number of observations are taken of pre- and post-impact conditions. Again, however, non-project influences may be difficult to separate, particularly if

the post-project evaluation period extends for several years.

In the context of this study, both of these techniques follow a common methodology. If significant demographic, economic and public finance changes occurred as a result of the pulp mills these would show up as departures from the regular trends in community indicators. The main reason for using both techniques in this study was that data were available in both time series and non-time series format. The idea of using two or more evaluative techniques in a single study was suggested by Poister et al. (1979).

The evaluation periods used are 1971-76 for the Grande Prairie impact area and 1988-90 for the Peace River impact area. In both cases the pulp mills were the single most important new economic activity. In the case of Grande Prairie, 1976 was chosen as the end of the evaluation period because after 1976 several major developments in the oil and gas industry and the public sector make it difficult to disaggregate the effects of the mill from other influences. In the case of Peace River, the evaluation period includes only the construction phase of the Daishowa mill which has only recently been completed.

Evaluation Criteria

To estimate the effects on population, changes in total population size and distribution in the impact area were used. Base-line data for two decades prior to the mills being constructed were compiled and regression analysis was used to predict population change in the absence of the mills. The actual population growth was then compared with the predicted growth. The difference was assumed to have been caused by the mills. A similar approach could not be used to estimate employment because neither base-line data prior to 1971 were available for the Grande Prairie impact area nor post 1986 Census data for the Peace River impact area. To evaluate direct and indirect jobs arising, direct job totals were obtained from the mill companies. Secondary employment was analysed through the use of a multiplier derived from multiplier studies in northern Alberta, as well as from an economic base multiplier obtained using a location-quotient method. For the income impact, new direct income was determined from tax payments made by the mill companies, goods and services purchased locally, and the total wage bill of the mill work force. Secondary income was estimated using the adopted multiplier for the study.

The impact of the pulp mills on the assessment base of the municipalities, mill rates, per capita debt, per capita costs of public services, were all estimated by time-series analysis on the assumption that deviations from the normal trend in the fiscal indicators were caused by the mills.

The study relied principally on secondary data obtained from past economic base studies of the municipalities, annual municipal financial

3. Some, such as Rossi and Freeman (1989), take conditions both before and after to mean at a fixed point in time. Others (Poister et al. 1979) argue that data can also represent a process up to that point in time.

statements, municipal and federal censuses. These data were supplemented by interviews with officials from the various municipalities, the McKenzie and South Peace Regional Planning Commissions and from the two pulp mills. The interviews provided background information and helpful insights in terms of interpreting the data collected. The unavailability of certain data including initial community forecasts of Proctor and Gamble in the early 1970s were, however, major limitations. This was expected given the lapse of time and the difficulties of doing research in small geographical areas.

Population and Employment Changes

To preface any analysis of municipal finances, it is necessary to present the employment and population effects of the mills because it is essentially the number of people and their needs which underpin any changes in municipal costs and revenues.

Population Change

Analysis of baseline population change for the Grande Prairie impact area shows that during the two decades, prior to the establishment of the mill (1951-1971), significant population growth (72%) was experienced. While this change was on a par with the provincial average it was much higher than the average growth of 53% for the whole Peace River region. In the Peace River impact area, population also increased significantly though at the slower rate of 33% between 1966 and 1986. This is clear evidence that these areas had acquired some growth momentum even before the mills were built. In particular, while the County of Grande Prairie, which hosted the mill, lost population from 1965 to 1971, the City of Grande Prairie experienced strong growth since 1951. The Grande Prairie impact area benefited significantly from the arrival of the mill (Table 2). Most of the increase in population was in the City of Grande Prairie and to a much lesser extent in the rural host municipality which was the County of Grande Prairie (Table 3). The surrounding small towns had only a minimal population increase. In contrast, the Peace River impact area had much smaller population increases and lower percentage increases in the periods preceding the Daishowa mill being built. In the decade 1976-86, ID22 the host municipality and Peace River town experienced overall about the same population increase (Table 3).

When mill construction began, both impact areas were experiencing economic difficulties reflected in lower population growth rates. During the construction phase of the Proctor and Gamble mill, 1,862 persons, or 604 above the predicted increase without the mill, were added to the population of the Grande Prairie impact area. This total does include the 1,800 largely

TABLE 2 Impact Areas: Population Change

	Grande Prairie		Peace River	
	Change	% Annual	Change	% Annual
1951-56	4,960	6.00	1,093	1.06
1956-61	248	0.25	1,630	1.08
1961-66	3,097	2.96	2,437	1.10
1966-71	1,916	1.63	590	0.89
1971-76	5,494	4.00	(425)	(0.64)
1976-81	11,424	6.47	3,408	4.65
1981-86	2,189	1.03	723	0.86

Source: Statistics Canada: Census of Canada for 1951, 1956, 1961, 1966, 1971, 1976, 1981, 1986.

TABLE 3 Total and % Population Change

	County of Grande Prairie		City of Grande Prairie		ID22		Town of Peace River	
		%		%		%		%
1971-76	424	4.8	4,547	34.7	(77)	(2.3)	(199)	3.9
1976-81	2,911	31.8	6,637	37.6	1,123	35.8	1,067	22
1981-86	18	0.1	2,207	9.1	196	4.6	381	6.4

Source: Statistics Canada: Census of Canada for 1951, 1956, 1961, 1966, 1971, 1976, 1981, 1986.

migrant construction workers who lived in work camps and who are not included in annual municipal censuses. During the early operational phase (1973-76), 3,627 were added to the total population. This addition was 1,740 persons above the expected population increase without the influence of the mill. For the entire evaluation period, the actual population increase exceeded that predicted without the mill by 3,490 persons.

The crucial question, however, is whether or not this additional 3,490 persons could be attributed solely to the presence of the pulp mill. Using the 1976 work force of 529 as the typical annual employment level, along with various assumptions about the percentage of in-migrant workers employed by the mill, the proportion married and family size, it is estimated that between 1,258 and 1,350 or about 36% of the normal population increase for the impact area between 1973 and 1976 was the result of the mill.⁴ Of these,

4. The assumptions were: (a) 38% of the operational workforce was recruited from beyond the Grande Prairie area. This proportion is based on the average of many large-scale projects in western American states (Leistriz et al. 1982: 30). It reflects corporate policy to hire locally as much as possible to build a stable workforce, a policy followed by Proctor and Gamble. Simon's (1988) Impact Assessment for Daishowa Canada estimated between 70 and 75% of the operational workforce would be in-migrant workers. Statistics obtained from Daishowa in September 1990 indicated that of the first 289 workers

643 were in-migrants (workers and family members) or 17% of the normal predicted population increase over the period. If indirect employment is considered (and the same assumptions applied) then another 128 persons may have been in-migrants.

These findings suggest that, although the Proctor and Gamble mill was a major stimulus to population growth in the Grande Prairie impact area between 1971 and 1976, the mill alone cannot account for the very large increase in population. Most of this increase can be attributed to the growing role of the city as a transportation, agricultural, resource service and retail centre during these years.

In the case of the Peace River impact area only the construction period 1988 to 1990 was considered. According to population forecasts by H.A. Simon, consultant to Daishowa Canada Ltd., without the mill the impact area would have increased its population by 503 persons during the period. With the mill, the population was estimated to increase by 2,358. The town of Peace River itself was forecasted to increase its population by 163 without the mill and 1,220 with the mill.

According to municipal census data for 1988 and 1990, the town of Peace River experienced an increase of only 89 persons, or 14% of the expected increase. This change is startling compared to the 1,660 persons added to the City of Grande Prairie during the construction phase of the Proctor and Gamble mill. It suggests that some out-migration occurred during the period. Again, the construction camp labour was not included. While rural municipal censuses are not conducted for the smaller municipalities, it is the impression of local officials that they experienced only very small population changes. High unemployment levels during the period 1988 to 1990, because of the closure of several long resident companies in Peace River town, were a probable cause of the slight population impact. In terms of the host municipalities, Table 3 indicates that they did not increase their populations substantially. Grande Prairie County experienced an increase of 424 between 1971 and 1976 or 9% of what the City of Grande Prairie incurred. ID22's population rose 196 between 1981 and 1986. The lack of housing and commuting costs compared with the main centres provide an explanation for this small increase.

At the level of the impact areas, the conventional wisdom that large-scale industrial development in non-metropolitan areas is accompanied by substantial population increase is found to be untrue for the rural municipalities and small towns. It was the result in the City of Grande Prairie but not as yet

employed, 55% were migrants. This is much closer to the American findings and also to observations by local municipal officials that migrants were probably about 40% of the workforce. (b) 80% of migrant workers were married, based on the average for large-scale projects in northern Alberta (Simon 1988); (c) that the average family size was 2.4, the provincial average from the 1976 Census.

for Peace River town. It is clear that smaller communities, even within commuting distance of a mill and larger centres, should not be too optimistic about experiencing population increase. They should, therefore, exercise caution in investing in public infrastructure in anticipation of such increases.

A much disputed issue in the literature is what level of growth is substantial. Murdock et al. (1982) have suggested an annual growth rate of 10% and beyond represents a boomtown experience. In a review of 83 communities in the U.S.A., Murdock *et al.* note that over half had growth rates of less than 5%, 21% between 5 and 10% and the rest above 10%. The Grande Prairie impact area with an average annual growth rate of 4% over the period 1971-76, was therefore, quite typical. While the Peace River town experience so far is disappointing, Murdock et al. found that of the communities with less than a 5% growth rate following a major industrial project, just under half had less than a 2% per annum population growth.

Employment Change

To trace the employment effects of the pulp mills, direct, indirect and induced permanent job creation for the operating phases of the mills were examined. The Grande Prairie impact area received 795 direct new jobs in 1976. This effect compares with an estimate of 630 in 1990 for the Daishowa mill near Peace River town when it becomes fully operational. Today, the mill employs 386 workers directly and indirectly under contract. Again, assuming that 38% of the workforce represents new in-migrant workers and their families, then a significant local impact has occurred because 62% of the labour is local in origin.

To estimate secondary employment, it was decided to adopt a low multiplier of 1.2 based on previous research in northern Alberta on forest products industry (Praxis 1990, Ironside and Mellor 1974, Ironside and Fieguth 1990). This multiplier produced an additional 160 jobs in the Grande Prairie area and 126 expected jobs in the Peace River impact area. In total, the Proctor and Gamble job stimulation amounts to about 36% of the increase in employment according to the Census in the Grande Prairie area between 1971 and 1976. While substantial, the point can also be made that other factors (particularly from the transportation, wholesale and retail sectors) were responsible for employment generation in the City of Grande Prairie. For example, there were 126 and 31 retail and service outlets respectively in 1971 and in 1977 this increased to 182 and 87. The respective totals for the County were 23 and 7 in 1971 and 20 and 11 in 1977 (Alberta Treasury Statistics 1971, 1977). A similar comparison cannot be made for Peace River town and the effects of the Daishowa mill until the 1991 Census data are available.

In the Grande Prairie impact area most (72%) of the change in em-

ployment between 1971 and 1976 was in the City.⁵ The County received 21%. Little occurred in the four small towns. In the Peace River impact area recent information indicates that the Daishowa work force is distributed as shown in Table 4. The data indicate the overwhelming majority of the labour force resides in the town of Peace River, with nearby Grimshaw and ID22 being the two other municipalities where a considerable number of employees of the mill live.

Further evidence to supplement that of the employment created, was provided by the mill companies. Direct income was derived from wages and salaries paid to workers, goods and services bought locally and from taxes paid to municipalities. Information on these income flows were obtained for the peak construction year and a typical operational year (although in the case of Daishowa, 1990 was its first year of operation). Table 5 shows the substantial payments made to the local economy by Proctor and Gamble for payroll and the value of goods and services purchased locally. Data for such purchases were unavailable from Daishowa Canada so the impact is underestimated for the Peace River town area. Capital equipment costs were not included because most equipment is from elsewhere in Canada and abroad.

Municipal Finances: Revenues and Costs

The assumption that industrial development always produces considerable tax yields and thus permits the lowering of municipal costs and property taxes is a primary reason why municipal governments support the location of industry within their boundaries. Past experience has shown that such fiscal gains do not appear automatically. Instead, they depend upon the interplay of a number of critical variables: the choice of residence location of in-migrant workers, the costs of new infrastructure and public services, the level of revenue resulting from corporate taxes and related residential, commercial and industrial taxes and possible tax base or revenue sharing agreements.

In the case of the impact of the pulp mills on municipal finances, some important differences can be identified between the host municipalities and the adjacent major urban centres of the City of Grande Prairie and the town of Peace River. The analysis focuses specifically on the key indicators of the municipal tax assessment base, the overall tax and debt burdens and the revenue and expenditure patterns following the construction of the mills.

Table 6 presents municipal financial data for the host municipalities and the two main adjacent centres, the City of Grande Prairie and the town of Peace River. Equalized assessment was reviewed for 6 years prior to the con-

5. Proctor and Gamble records showing the location of the work force in the early 1970s by residence were unavailable.

TABLE 4 Tax-Sharing Allocations based on Daishowa Mill's Employment

	Man-Years of Employment	%	Tax Allocation (\$)
Berwyn	5.60	1.50	6,915
Grimshaw	52.30	13.50	64,583
Manning	3.10	0.08	3,828
Nampa	2.80	0.07	3,458
Peace River	269.20	69.70	332,421
ID 21	0.80	0.00	988
ID 22	39.40	10.00	48,653
MD Peace	13.30	3.40	16,423
	386.00	100.00	477,269

Source: Improvement District 22 Office.

Note: One Man-Year = 2,085 hours of work.

TABLE 5 Approximate Direct Income Flowing to Impact Areas

Income Source	Proctor and Gamble		Daishowa	
	1972	1976	1989	1990
(million dollars)				
Tax Payments	0.4	1.5	—	0.9
Value of Goods and Services Purchased Locally	12.5	27.0	N/A	N/A
Average Yearly Payroll	12.0	18.0	21.5	22.0
Total	24.9	46.5	21.5	22.9

Source: Proctor and Gamble, Daishowa-Canada.

struction of the Proctor and Gamble mill.⁶ Moderate increases in the tax base were observed until 1974 when the County and the City showed large increases in assessment. In fact, the City experienced a larger absolute increase in assessment from residential, business and other development

6. Property assessment levels vary from municipality to municipality due to differences in the date of the latest general assessment, and because different assessment manuals may be used in the various municipalities. It is necessary, therefore, to use equalized assessments. This is done by taking a sample of properties in each municipality. The average relationship between the assessed value and market value is determined. This is the assessment to sales ratio. The procedure is carried out at the provincial scale to establish an average provincial ratio. Municipal ratios are then compared with that of the province and adjustments are made to the provincial average.

TABLE 6 Municipal Finances

	County of Grande Prairie		City of Grande Prairie	
	1971	1976	1971	1976
Equalized Assessment ^a	\$13,783,790	\$31,040,450	\$19,507,180	\$42,724,380
Per Capita Equalized Assessment	1,580	3,394	1,491	2,424
Average Equalized Mill Rates ^b	73.6	82.5	106.38	109.98
Debenture Debt Per Capita	219	215	350	458
Total Operating Revenue	4,313,488	8,619,390	3,099,329	7,988,308
Total Operating Expenditure	4,510,358	8,544,073	3,090,373	7,844,215

	ID22		Town of Peace River	
	1986	1990	1986	1990
Equalized Assessment ^a	\$120,899,480	\$147,593,141	\$129,933,570	\$153,097,315
Per Capita Equalized Assessment	27,138	33,160	20,657	23,043
Average Equalized Mill Rates ^b	20.05	23.18	27.50	28.82
Debenture Debt Per Capita	60	54	1,715	1,733
Total Operating Revenue	2,551,645	2,160,539	8,385,425	9,310,481
Total Operating Expenditure	2,263,935	2,415,905	8,445,792	9,292,976

Sources: Alberta Assessment Equalization Board; Municipal Statistics, Alberta Municipal Affairs.

- a. The equalized assessment figures for 1984 to 1989 are calculated at 20% Fair Assessment Value (new replacement cost of the property less depreciation and less freight on board). Those for 1990 are based on 65% Fair Assessment Value due to an amendment to the Assessment Equalization Regulation. For purposes of comparison the 1986 Equalized Assessment and Per Capita Equalized Assessment for ID22 and the Town of Peace River are expressed at 65% Fair Assessment value.
- b. The average Equalized Mill rate was calculated by the formula: Total Equalized Mill Rate = Total Taxation x 1,000/Equalized Assessment.

induced by the mill and other growth sectors.

The benefits to the host municipality are, however, clearly seen in the per capita equalized assessment data for 1976 when the County of Grande Prairie had \$3,394 per capita compared with the City's \$2,424. The City's expanded tax base improved its overall financial position but, since its population had also increased, the per capita increase was not as great as that of the County. Until 1974, the City had always led the County on a per capita assessment basis. In 1974, the County's per capita assessment was only \$1,633. As can be

seen clearly from Figure 2, this more than doubled in 1975 to \$3,558. The actual tax amount involved was \$1.5 million received by the County from Proctor and Gamble in 1976. In 1986, the amount was \$2.1 million. Generally, the higher the per capita indicator, the better off are the taxpayers in terms of lower taxes or better services. Overall, the tax generating capacity of the County became much better than the City following the construction of the mill.

The situation for the host municipality of ID22 and the Town of Peace River is depicted by the differences between the data in Table 6 for 1986 and the last year available, 1990. While equalized assessment increased for both municipalities, the advantage of the Daishowa mill to ID22 becomes apparent in the per capita equalized assessment data where ID22 experienced an increase of 22% compared with Peace River Town's increase of half that, 11%. Debenture debt per capita actually declined slightly for ID22 over the five years. In the case of Peace River town, the debt per capita hardly changed. The record for average equalized mill rates shows a small increase for both municipalities. It is probable that this represents a beneficial impact of the pulp mill by 1990 on both municipalities.

The actual property tax burden of each municipality is reflected in the size of the mill rates. The equalized local mill rates represent the tax burden for school and hospital levies and other purposes. The County of Grande Prairie levied a lower mill rate compared with the City of Grande Prairie. While the City had a smaller increase than the County between 1971 and 1976, the added financial burden on its taxpayers is found in the large increase from \$350 to \$458 per capita in its debenture debt. This change was a much larger increase than for County residents. The explanation for the additional financial needs can be found in the extra capital and operating costs of the County for such items as school requisitions and the high costs of road maintenance because of trucking to and from the mill. For the City, expenditures increased by nearly 100% for all municipal services - transportation, public health and welfare, protective services, recreation and cultural activities and education.

In the case of the Peace River impact area, Figure 3 indicates that for per capita equalized assessment, ID22 since 1984 has been in a better position than all the other municipalities. From 1989 Peace River town shows, however, a sharp rise, an increase which began in 1988. Total equalized assessment for Peace River town increased from \$33 million in 1988 to \$54.8 million in 1991, an increase of \$21.8 million. This was due largely to increases in residential assessment. It compares with an increase of \$5.4 million in the assessment base of ID22. This total did not include the equalized assessment for the pulp mill. It is likely that when this is done, the increase will surpass that of the town because there has not been growth in

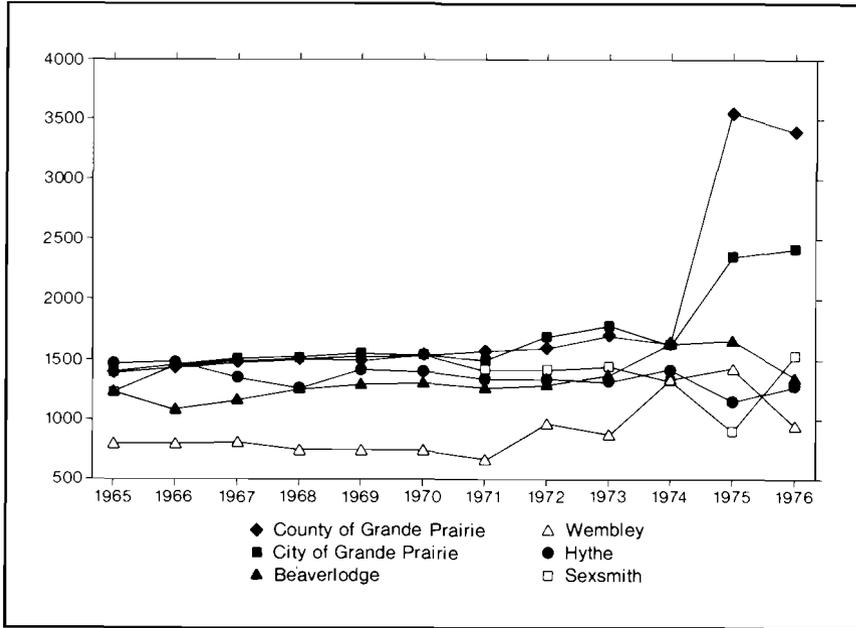


FIGURE 2 Per Capita Equalized Assessment: Grande Prairie Impact Area.

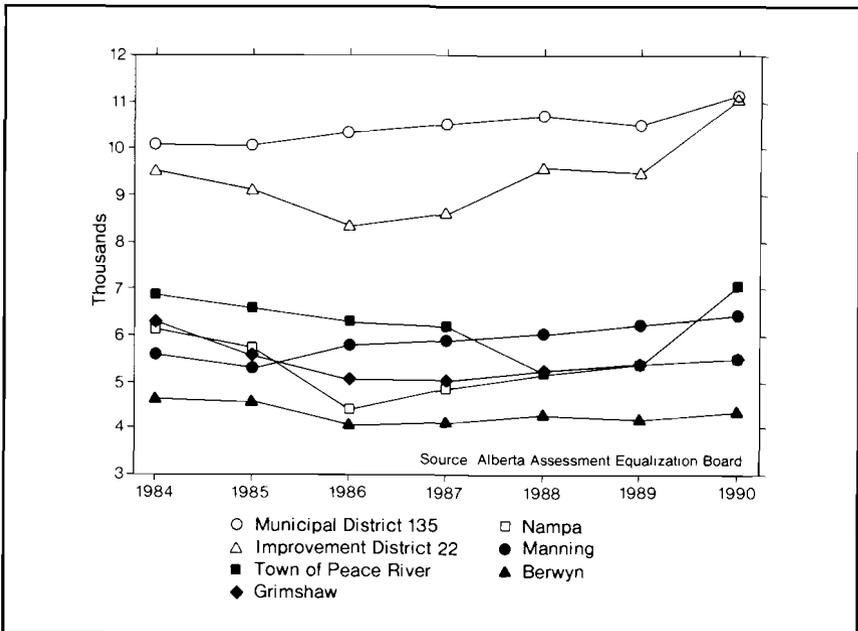


FIGURE 3 Per Capita Equalized Assessment: Peace River Impact Area.

commercial and industrial assessment in Peace River town normally associated with large industrial development. No further financial data were available for the 1988-90 period.

The per capita equalized assessment shows that ID22 had increased from \$9,616 in 1988 to \$11,064 in 1990 and Peace River town from \$5,193 to \$7,090. Apart from the town and MD135, ID22 has had in fact a larger increase in per capita assessment than all the municipalities in the impact area. With the pulp mill, the financially privileged position of ID22 will become even stronger because it will not have to bear the housing and other related urban costs associated with the work force.

There have not been any significant departures from baseline trends in terms of changes in mill rates. The mill rate in ID22 which began to decline in 1986 continued to do so during the construction phase of the mill (1988 to 1990). Elsewhere moderate increases have occurred. What is clear is that the tax burden is much higher in Peace River town with a 1988 mill rate of 88.2 compared with 23.4 in ID22. The advantage is found also in the per capita debenture debt picture with only \$56 for ID22 and \$1,609 for the town. Furthermore operating revenue exceeded operating costs in ID22 unlike the town. Much of this good fortune is the result of tax assessment of oil and gas and other industrial infrastructure such as pipelines. The new mill will bring additional revenue to ID22. Some 70% of the new property tax from the mill will go to school taxes which benefits school divisions elsewhere. ID22's share, for example, of the Peace River School Division 10 budget requisition will increase. A report prepared by Masson Management Services (1989) for the ID suggests most of the new costs induced by the mill will be operational costs. They will include road maintenance, recreation transfers to urban municipalities which provide facilities for residents of the ID, garbage collection and disposal and administration. Only for the replacement of fire fighting equipment and for water sewer expansion might there be a need for a small debenture.

In the town of Peace River the lower than expected population increase will place less immediate demands on its capital infrastructure requirements. For example, the need for a new sewage treatment facility now seems less urgent. While the town believes that as its population grows, an expanding property tax base will cover operating costs, the Council is concerned that other needed capital improvements, particularly for recreational facilities, may not be fully funded.

Through the positive changes of their financial indicators, the host municipalities have derived net benefits from industrial development. Their expenditures have also risen considerably. The City of Grande Prairie adjacent to the County also benefitted from large increases in total assessment induced by the mill but this has not been enough to offset increased expenditures, thus per capita debt and mill rates rose accordingly. It is too early to grasp the fiscal impacts of the Daishowa mill on Peace River town

because so far the population increase has been very small. The remaining municipalities in the impact areas have scarcely been affected by the mills with no departures from the baseline trends of their financial indicators.

Fiscal Policies

Resource industry development or even manufacturing will continue to be characterized by a separation of where workers live and where they work. It is also clear that most indirect and induced activity will occur in the larger urban centres where producer services, wholesale and retail trade, transportation and personal service businesses exist. At the most basic level, it is desirable that those municipalities which incur public financial costs to support the housing and other social needs of workers be compensated. In Alberta, an Industrial Tax Transfer Program has been in place since 1976. This mechanism seeks to compensate municipalities for increased expenditure by using the number of workers and their dependents associated with an industrial development who live in the municipality as the basis for compensation. This program is limited, however, as it restricts itself to Improvement Districts which host the industry and to towns and villages located in the Improvement Districts. Thus, in the context of the two mills, only Manning would have been eligible for compensation because it is the only town located in ID22, a situation which Ebel (1985) would characterize as a violation of the basic public financial principle of horizontal equity.

Fortunately, to avert controversy between municipalities arising from tax revenues received and costs undergone, which occurred, for example, between the County and City of Grande Prairie, a tax sharing proposal was made by the Advisory Council of ID22 which led to agreements with adjacent municipalities in 1990. Underlying the proposal was the wish that 'the whole region should benefit from a mega project' and that 'economically sound, striving municipalities would provide better services and thus enhance lifestyles for the entire region' (Masson Management Services Ltd. 1989). Three year agreements have been made with adjacent municipalities through the auspices of the Minister of Municipal Affairs. The percentage of ID22's taxes to be shared declines from 50% in 1991 to 40% in 1992 and 30% in 1993. The formula to calculate the shared amounts is based on the number of employees of the mill residing in a municipality as a proportion of total employees residing in participating municipalities in this agreement and ID22 (Table 4).

This agreement contains most of the elements of current thinking on tax revenue sharing agreements. There is explicit recognition that significant costs are incurred by the host municipality which entitles it not to share all of its revenues. The agreement also recognizes the new cost structure of other affected municipalities regardless of whether they are in ID22 or not. It also

makes allowance that costs experienced by adjacent municipalities may decline with time as residential and commercial development associated with increased population appears on the assessment rolls. This justifies the host municipality sharing less of its annual revenue through time.

While an advance on the previous tax-sharing program in Alberta, there are problems which remain and should be addressed. First, it is the percentage of the mill's labour force and their dependents living in each municipality that is used as the basis for sharing revenue. This means that those municipalities which may have already been operating at full capacity in terms of infrastructure, will find it more costly to add an additional 100 persons than those which have been operating well below their capacity. This is the familiar marginal cost/average cost problem and implies that revenue sharing should be based on fiscal need, rather than the proportion of workers. One way of resolving this problem is that workers who are new residents to a municipality should be given a weight in the formula that is twice the size of a worker who is a long-time resident. Alternatively, where costly new infrastructure is required, the weight attached to a worker living in that municipality should be greater than the weight for a worker in a municipality which does not need new infrastructure.

Secondly, there is a need for the taxes paid by the resource industry to be related to the costs incurred for servicing the industry within the entire impact area. Under the present system, the Improvement District levies a mill rate based on the total taxes to be raised to cover costs only in the ID. The mill rate for the ID is the lowest for all municipalities in the impact area. This results in a small property tax paid by Daishowa Canada. Instead of the \$3 million forecast in the official impact assessment by Simon (1988), in 1991, the pulp mill will pay only \$974,000 in taxes. The amounts received through the tax sharing formula will be quite small as a consequence. This is indicated above for all communities except Peace River town which is to receive \$332,421 under the first shared tax allocation (Table 4).

A third problem is that the present approach addresses only the financial costs of municipalities which accommodate the mill's labour force. Other municipalities may experience environmental, social and other costs associated with the new industry. They should be included in the construction of a revenue sharing formula. In this way, more equitable regional fiscal sharing policies to deal with the geographical disparities of revenues and costs would ensue to the benefit of the region's municipalities.

Conclusion

An important conclusion from the experiences of municipalities in the two impact areas is that although large-scale resource projects do result in increased population, employment, income and tax receipts, these positive

effects do not appear in all instances. The wider economic context of the area has to be considered such as the unemployment of the Peace River town area. Further, it is observed that while the host communities benefit on a per capita tax and debt basis, most of the direct and indirect economic and fiscal effects are concentrated in the nearest large urban centre. Also, for the City of Grande Prairie, while no other major source could be identified, the overall positive growth influences of the City contributed substantially to its economic development after 1973 when the mill became operational.

However, as witnessed in the City of Grande Prairie such growth is costly because the municipality must finance additional public infrastructure and services to meet the needs of new residents. Although its assessment base is likely to increase more than that of the host municipality, without direct access to potential property taxes from the industry, the costs of municipal services are expected to increase considerably. These are reflected in increased mill rates and debenture debts per capita. The main urban centre may unquestionably look towards the host municipality for a share in its property taxes. But recourse to this solution may be problematic because the host municipality itself may be experiencing high costs to maintain infrastructure to support the new industry.

From a regional development perspective, it is unlikely that the political wish for the entire region to benefit financially from mega projects could occur without some direct intervention to redistribute the revenue benefits from the new industry. The mechanism in Alberta to share industry tax revenue between municipalities explicitly recognizes the role played by both host and adjacent municipalities in resource development and its potential to help all municipalities in the region where workers reside. While the new system is laudable, it still remains to be seen how it will work in reality. Large scale industry does not mean that economic miracles for municipalities, particularly small ones, will be forthcoming immediately. There is a high probability that the economic growth forecast in *ex-ante* impact statements may never appear. For many small town and rural communities, their future may lie in smaller indigenously owned and operated economic activities.

It is recognized that such a statement opens a Pandora's box of research surrounding the comparative advantages and disadvantages of foreign owned and domestically owned resource processing plants for municipalities. In general the question of foreign investment has been a long-standing one in Canada and is endemic, it seems, to peripheral regions or provinces whose capital supply is often insufficient to provide the large investments required for large scale resource processing plants which have to be competitive on an international scale. Unless there are substantive returns to their governments through resource royalties as well as agreements to spend a major proportion of the total investment on regional or local labour, and other goods and services, the bulk of the profits and dividends leave the country. In most cases, governments in their enthusiasm to attract foreign investment to create

jobs, have failed to drive hard bargains with corporations which would increase benefits locally and to the province.

References

- Alberta Treasury, Bureau of Statistics, *Retail and Service Trade Statistics, 1969-71 and 1977*. Government of Alberta, Edmonton.
- Barlow, I.M. 1981. *Spatial Dimensions of Urban Government*. Chichester: Research Studies Press.
- Burchell, R.W., and D. Listokin. 1978. *The Fiscal Impact Handbook*. Rutgers University, Centre for Urban Policy Research.
- D'Amore, L.J., and S. Rittenberg. 1978. "Social Impact Assessment: A State of the Art Review", *Urban Forum*, 3:6:8-15.
- Ebel, B.J. 1985. "The Municipal Financial Impact of Large Scale Natural Resource Projects". Edmonton: Alberta Municipal Affairs.
- Garrison, C.B. 1971. "New Industry in Small Towns: The Impact on Local Government", *National Tax Journal*, 24:493-500.
- Hayter, R. 1979. "Labour Supply and Resource-based Manufacturing in Isolated Communities: The Experience of Pulp and Paper Mills in North-Central British Columbia", *Geoforum*, 10:163-177.
- Hatry, H., R. Winnie and D. Fisk. 1981. "Practical Program Evaluation for State and Local Governments". Washington: The Urban Institute Press.
- Ironside, R.G. and W.Fieguth. 1990. "The Alberta Forest Products Industry: Top-Down Initiatives - Bottom-Up Problems". Research Report #25, Lakehead University Centre for Northern Studies, Thunder Bay.
- Ironside, R.G., and I. Mellor. 1974. "Deficiencies in the Growth Centre Approach to Regional Development". Proceedings of the International Geographic Union Regional Conference and Eighth New Zealand Geography Conference, Palmerston North.
- Isserman, A. 1977. "The Location Quotient Approach to Estimating Regional Economic Impacts", *Journal of the American Institute of Planners*, 43:33-41.
- Leistritz, F.L., S.H. Murdock and A.G. Leholm. 1982. "Local Economic Changes Associated with Rapid Growth". In Bruce A. Weber and Robert E. Howell (eds.). *Coping with Rapid Growth in Rural Communities*. Boulder, Colorado: Westview Press.
- Lonsdale, R.E., and H.L. Seyler. 1979. *Nonmetropolitan Industrialization*. Washington: Winston & Sons.
- Lowenstein, L.K. 1963. "The Impact of New Industry on the Fiscal Revenues and Expenditures of Sub-urban Communities", *National Tax Journal*, 16:113-136.
- Masson Management Services Ltd. 1989. "A Revenue Sharing Proposal for Improvement District No. 22", A Report to the Advisory Council,

- Improvement District No. 22.
- Murdock, S.H., L.L. Jones, F.L. Leistriz and D.R. Andrews. 1980. "A Case Study in Model Adaptation in Computer Models and Forecasting Socio-Economic Impacts of Growth and Development", Proceedings of a Conference held in Jasper Park Lodge, Alberta, April 20-23. Faculty of Extension, University of Alberta.
- Murray, J.A., and B.A. Weber. 1982. "The Impacts of Rapid Growth on the Provision and Financing of Local Public Services". In Bruce A. Weber and Robert E. Howell (eds.). *Coping with Rapid Growth in Rural Communities*. Boulder, Colorado: Westview Press.
- Poister, T.H., J.C. McDavid and A. H. Magoun. 1979. "Applied Program Evaluation in Local Governments". Lexington, Mass., D.C. Health and Company.
- Praxis, A Social Planning Company. 1990. Alberta-Pacific Forest Industries Inc. Bleached Kraft Pulp Mill: A Review of the Economic and Social Implications. Filed Document 0-4 with the Public Hearing of the Alberta-Pacific Environment Impact Assessment Review Board, Edmonton.
- Reschovsky, A. and E. Knaff. 1977. "Tax Base Sharing: An Assessment of the Minnesota Experience", *Journal of the American Institute of Planners*, 43: 361-370.
- Rohe, W.M. 1982. "Social Impact Analysis and the Planning Process in the United States", *Town Planning Review*, 53:367-382.
- Rossi, P.H. and H.E. Freeman. 1989. *Evaluation, A Systematic Approach*. Beverly Hills: Sage Publications.
- Shaffer, R.E. 1979. "The General Economic Impact of Industrial Growth on the Private Sector of Non-Metropolitan Communities". In R. Lonsdale and H. Seyler (eds.). *Non-Metropolitan Industrialization*. New York: Wiley.
- Simons, H.A. Ltd. 1988. Environmental Impact Assessment Report Daishowa Canada Co. Ltd. January. Consultant's Report.
- Summers, G. 1979. "The Effects of Locating Industry in Small Towns: The American Experience in Small Town Alberta: Some Points of View on Growth and Development". Proceedings of a Conference, Banff Park Lodge, March 11-14, Faculty of Extension, University of Alberta.
- Summers, G.F., E.M. Beck and C. Snipp. 1979. "Coping with Industrialization". In R. Lonsdale and H. Seyler (eds.). *Non-Metropolitan Industrialization*. New York: Wiley.
- Weber, A.B. and R.E. Howell (eds.). 1982. *Coping with Rapid Growth in Rural Communities*. Boulder, Colorado: Westview Press.