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**Sustainability for Whom?
Social Indicators for
Forest Dependant
Communities in Canada**

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Tom Beckley

Sustainability for Whom?:
Social Indicators for Forest Dependent Communities in Canada

by

Dr. Tom Beckley

Canadian Forest Service – Atlantic Forestry Centre, Fredericton, NB
and
University of Alberta, Edmonton, Alberta

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ABSTRACT

Much of the literature on and analysis of forest-dependent communities has focused on a subset of those communities, namely timber-dependent communities. Little acknowledgment is given to other types of sectoral dependencies in forest communities. The intent of this research is outline differences in the nature and structure of four different types of communities that depend upon forests for their livelihoods. These four types of communities are timber-dependent communities, tourism dependent communities, subsistence dependent communities, and diversified forest communities that depend upon forests, but at least one other sector as well. The approach taken in this study is to look at quantitative indicators of community well-being, but to also examine the unique problems and issues that effect the sustainability of these places. The primary data for the second part of the analysis comes from qualitative interviews with 350 respondents in the nine case study communities. While communities are a popular and important unit of analysis, this study recognizes that sub-populations within forest-dependent communities may have very different experiences and be differentially effected by unique social processes associated with resource dependence. Therefore, this study also pays special attention to Aboriginal peoples, youth, elderly, and women. Results demonstrate that these special populations do face unique problems in resource communities. Tourism communities have very little to offer youth. Women face stratified labor markets in timber and diversified communities.

INTRODUCTION

Forest ecosystems are often studied in the absence of humans, or with the assumption that humans are exogenous "disturbers" of otherwise self-regulating, natural systems. As a result, the sustainability of human communities within forested landscapes is often overlooked. The Sustainable Forest Management Network Centre of Excellence has attempted to address this gap by explicitly identifying a theme around the issue of socio-economic sustainability.

Canada is a forest nation. The majority of Aboriginal Peoples of Canada have traditionally been forest people. Today, over 80 percent of Aboriginal communities are located within Canada's forested areas. Since its early days of European settlement, forest resources have provided critical resources for economic development. Indeed, the exploration and settlement of Canada by Europeans was first undertaken in order to exploit an important non-timber forest resource - the beaver.

Human forest-dependent communities are systems that may or may not be sustainable in the long run. There are a number of different types of forest-dependent places, and there are varying degrees of forest-dependence. In order to assess the sustainability of communities, one must establish benchmarks, determine thresholds, review past states or conditions, and monitor future trends of socio-economic indicators. This work takes preliminary steps toward determining community sustainability by defining and taking benchmark measures of some appropriate indicators for timber-dependent and forest-dependent communities in Canada.

Despite the historical importance of a non-timber forest product in Canada's early development, contemporary studies of forest dependence focus almost exclusively on places that depend primarily on the harvesting, transportation and processing timber for employment. This includes sawmill towns, pulp mill towns, more recently communities with oriented strand board mills, and fibre-based specialty products. There are academic disciplines that examine land use of Aboriginal peoples, but these are not traditionally viewed as part of the literature on forest-dependent communities. There has been very little research in Canada that focuses on the role forests play in creating amenity based or tourism dependent communities.

Single sector dependence, whether on tourism, timber or subsistence goods is not the norm. More commonly, communities rely on the forests to provide a mix of fibre, subsistence goods, recreational or scenic amenities, and other services. In addition, many rural communities have some industrial forestry activities as part of the economic base, but other employment is provided by additional economic sectors which may or may not involve forest resources. In 1991, Canada had

1,183 communities whose economic base was comprised of between 10 and 50 percent forest industry employment. These were characterized as moderately timber-dependent. In the same year, there were 335 communities whose economic base consisted of more than 50 percent forest industry employment. These were characterized as heavily timber-dependent communities.

Figure 1: Rural, timber-dependent census subdivisions in Canada, 1991
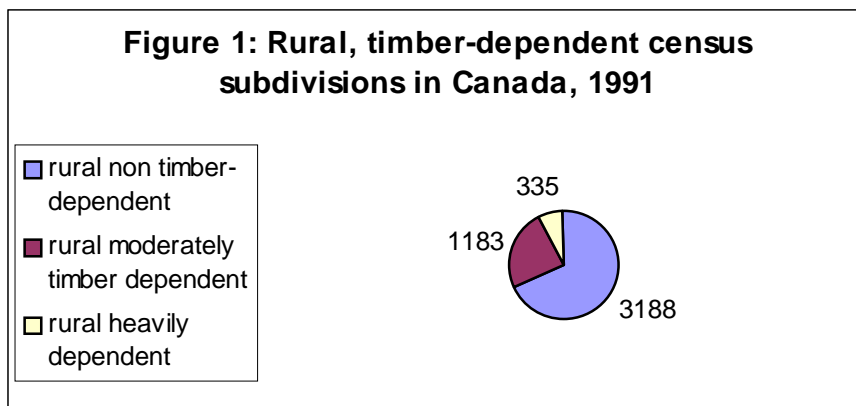
Unfortunately, Statistics Canada does not collect data that allows us to determine levels or degrees of subsistence-dependence or tourism-dependence that are related to the existence of forests. Therefore, we cannot say that an additional X percent of the non timber-dependent CSDs are heavily dependent upon their forests for subsistence goods, or another Y percent of communities rely extensively on the amenity value of their forests to provide employment. For these types of communities, a different type of approach needs to taken to assess the degree of dependence on forests, as well as the positive or negative socio-economic effects of that dependence. This study explicitly examines these different types of human forest communities and utilizes the same methodology and the same social indicators to explore issues of community sustainability across these community types.

STUDY DESIGN

A combined approach of qualitative and quantitative methods was undertaken for this project in order to utilize large, secondary databases where possible (for timber-dependent communities), and to use case studies to assess the relative sustainability of other community types (subsistence and tourism). The study therefore has progressed along two related streams. One portion of the analysis compares socio-economic indicators between timber-dependent CSDs and non timber-dependent CSDs using national census data from 1991. The second stream of research involves a comparison

of the same or similar indicators in eight case study communities. The case studies were chosen to reflect the diversity of forest-dependent places in Canada. Two of the eight communities are heavily timber-dependent, two are tourism-dependent, two are subsistence-dependent, and two are diversified with timber being one of the major contributors to local employment.

We selected a set of relatively standard indicators of community well-being (Beckley and Burkosky 1999) that we have used for both the timber-dependent census subdivision analysis, as well as the comparative case studies. We based the selection of the indicators on what data were available from Statistic Canada through the census. A number of specific measures are available for each indicator. The themes we have tried to cover with the indicators include poverty, human capital, population mobility, income and income distribution, real estate values, and employment. Specific measures for human capital, for example, include education attainment. Low income cutoffs are used to assess poverty status for individuals and for families. Movers in the last five years are a measure of population stability, and so forth.

The case studies allow for a much more in depth analysis of the consequences of forest-dependence, though one must be cautious generalizing from this data. In addition to tabulating quantitative data on our case study communities, we spent an average of two person months in residence in each community, interviewing key informants on the indicators in question. In the interviews, and in the analysis of the secondary data, we also explored the issue of age, race and gender differences in well-being indicators in the case study communities. Past research has demonstrated that the positive aspects of timber-dependence tend to accrue to Caucasian males, while some of the negative aspects of timber-dependence other sub-populations within communities, such as women, Aboriginal peoples, seniors or youth. Given the SFM-NCE focus on boreal forest systems, some analysis of boreal versus non-boreal timber-dependent CSDs was also performed.

RESULTS

The data generated from this project are quite substantial. We have over fifty tables on indicators for the comparison of timber-dependent communities. And we have a similar number of figures describing indicators for the case study communities. The results presented here are merely a brief overview. In a few cases we highlight some of the more interesting results. In many instances, the differences between rural non timber-dependent communities and timber-dependent communities are small. Furthermore, some of our hypotheses were not born out with respect to direction of trends across the three categories of timber-dependence. The case study data more frequently display greater

disparity in indicators between community types. The final report will integrate the quantitative data with the qualitative data from over three hundred face to face interviews with community residents. This report mostly summarizes secondary data available from Statistic Canada community profiles.

Employment

Unemployment rates varied dramatically across the case study sites. Unemployment rates were highest in the subsistence-dependent communities (Fort Providence and Fort Liard), and within those communities unemployment was considerably higher for men than for women. This may be due to the fact that subsistence lifestyles are not technically counted as "employment", therefore, high unemployment may be a partial indicator that subsistence activities are high in these communities. Jasper had the lowest unemployment rate. This is likely due to the fact that this community is located within a national park and there is a "need to reside" policy. One can only technically live in the town if one has employment there. Anecdotal data suggest that there is tremendous seasonal fluctuation in unemployment rates in Jasper. Fewer employment opportunities exist in the winter, but many workers simply leave during those months rather than apply for employment insurance. The communities with the next lowest unemployment rates were those with diversified economies (Hinton and Peace River). Given the broader range of employment opportunities in these places, we expected unemployment levels here to be lower than average. The timber communities of LaTuque and Pine Falls had fairly different results. Unemployment was consistently nearly twice as high in LaTuque than Pine Falls over the last decade.

Within timber-dependent communities, at the national level, heavily timber-dependent communities had the highest unemployment rates (19.28%) followed by moderately timber-dependent communities (18.9%). Rural, non-timber dependent places averaged 14.33% unemployment. These data are from the 1991 census. Unemployment rates were higher in boreal timber-dependent CSDs (19.73%) than non-boreal timber-dependent CSDs (15.99%).

Human Capital

Human capital is often measured through the proxy indicator of education attainment. We have followed that practice in this analysis due to data availability. Education attainment statistics in the case study communities were quite close to what we expected. Jasper had the highest percentages with some university and the lowest percentages with less than grade nine. The diversified communities of Hinton and Peace River and the timber-dependent communities had similar education attainment profiles. These places are characterized by slightly higher than national averages in some

university and higher than average non-university post-secondary education (trades certificates or training from technical colleges). The timber-dependent communities had nearly double the national average with less than grade nine, reflecting the low levels of education historically required to attain employment in the industrial forestry sector. The subsistence-dependent communities had the highest percentages of their population with less than grade nine (nearly 50%), and the lowest percentages with some university. Once again, these indicators may give a misleading picture of community sustainability for subsistence communities. Communities that rely on subsistence use of the forest require high levels of traditional ecological knowledge, not formal school or university training. As well, winter is the season most often spent in the bush. Low levels of even rudimentary education attainment (grade 9) may indicate that people were in the bush gaining appropriate knowledge for their circumstances and cultural norms rather than attending school.

In the national database, there were no significant differences in education attainment between non timber-dependent, moderately timber-dependent, and heavily timber-dependent CSDs with one exception. Over 15 percent of the population in non timber-dependent communities had some university, compared to less than 12 percent in moderately and heavily timber-dependent CSDs.

Income and income distribution

The income indicators performed mostly as hypothesized, with high incomes in communites with industrial sectors, and very low incomes in the subsistence-dependent communities. Over forty percent of residents of the subsistence-dependent CSDs earned less than $30,000. Again, this does not account for income "in-kind" derived from the subsistence economy, and so may be less useful as an indicator in this type of community. Timber-dependent communities had over 30% of their populations' earning less than $30,000 per year. In contrast, the diversified communities had less than 25% of their population earning less than $30,000, and over 25% of their population earning over $70,000 per year.

Some communities exhibit rather extreme variations of income distribution when the data are broken down by gender. Hinton, a diversified community with substantial high-wage employment in forestry and mining, has very few women in high income categories and very few men in low income categories. A similar trend, though less pronounced, exists in the timber-dependent case study communities. Men dominate the high-wage industrial sectors, and therefore earn, on average, substantially better incomes. In assessing community well-being, data such as this must be examined in association with other indicators, such as the degree of households that are married or common-law. If most adults in a community are married, the gender income gap may matter less than in a

community with more unattached individuals or single-parent households. The gender wage gap may still be a concern in married households given the unequal power relations that differential earnings may engender within households.

Income distribution figures for the nationwide comparison of rural CSDs produced some unanticipated results. We thought that income would likely be highest in moderately timber-dependent communities. Just the opposite is the case. Non-timber-dependent and heavily timber-dependent CSDs have higher percentages of their households in higher income categories. Incomes in boreal timber-dependent CSDs are higher than in non-boreal CSDs.

Population and Migration

Timber-dependent communities have a reputation for having high population turnover (Marchak 1983, Lucas 1971) so in-migration and out-migration are important variables to consider in assessing community sustainability. Furthermore, the demographic composition of communities is also important. Sustainable communities have "normal" age distributions. That is, age distributions that reflect national or regional trends. One would have to question the sustainability of communities with very few young adults, or communities where only retired people with considerable assets can afford property.

Consistent with demographic trends for Aboriginal communities across Canada, the subsistence dependent communities in our sample were highly skewed toward the young end of the age distribution. Over half the population of Fort Liard and Fort Providence were under the age of 30. The diversified communities of Hinton and Peace River, Alberta were also much younger that the national average, and contained many fewer individuals in the 75+ category. These figures may reflect the age of these communities or regional trends more than the type of resource dependence, however. The other diversified community, Queens, Nova Scotia had the highest elderly population of any community, and the lowest percentage of residents under the age of 30. The two timber dependent communities, LaTuque and Pine Falls have very similar age distributions, and communities most closely mirrored national averages. Jasper is also a very young community with far and away the highest number of residents in the 15-29 year old age group.

In the national database on age distribution in timber and non-timber dependent rural CSDs there were no significant differences in the age structure of non-dependent, moderately dependent and heavily timber dependent communities.

The case study communities varied tremendously with regard to population stability. In 1996, over a third of Jasper's population, and nearly a third of Peace River and Hinton's had migrated in the previous five year period. This is in stark contrast to the diversified community of Queens, and the timber community of LaTuque, where less than ten percent of the population migrated in the previous five years. The national average for the period was around 20 percent of the population migrating. The two subsistence communities also experienced migration rates lower than the national average. Pine Falls, the other timber community, was very close to the national average of 20 percent.

In the national database on timber dependent communities there was a slightly higher percentage of movers (in the last five years) in heavily dependent timber communities. Thirty one percent of residents in heavy timber dependent communities moved in the last five years compared to 29.5% in moderately timber dependent communities and 29% in rural non-timber dependent communities.

Poverty

Poverty rates for families and for individuals compared favorably across all case study sites with national averages. As expected, the diversified census subdivisions of Hinton and Peace River performed the best with respect to low poverty for unattached individuals. Queens, the other diversified community had a slightly higher rates of poverty than the Alberta diversified communities, but it was still lower than the timber dependent communities and Jasper. Poverty rates for unattached individuals were often two to three times that of families. This is generally the case at national and regional levels as well. Unattached individual poverty rates in our case study communities (excluding the subsistence communities) ranged from a low of 21% in Peace River to a high of 40% in LaTuque. Rates for unattached individuals at the national level is 42%.

Family poverty rates look quite different. Pine Falls and Jasper had the lowest rates of family poverty, while Queens had one of the higher rates of poverty. Again, The national average for Canada was around 15%, and all the case study communities were below this level. Poverty data for the subsistence dependent communities were not available. Poverty for families ranged from a low of 5% (Jasper) to a high of 15% (LaTuque) in 1996. This squares with theoretical literature and previous case studies that characterize rural resource dependent places as having high transient populations (see migration data) that are not able to secure employment in the high wage resource sectors. As a result, you have a mixed population in these places consisting of stable, fairly affluent families, and another unstable population of unattached individuals who come looking for work, and not finding it, leave.

Real Estate

The rationale for including real estate values as an indicator of community sustainability is that often real estate values reflect the health of the local economy. If the theories regarding the vulnerability of timber-dependent communities hold, one would expect to see highly fluctuating real estate values in those places when faced with downturns or upturns in the timber based commodity economy. Unfortunately, there were no major shocks in our study period. Pine Falls did face a bit of a crisis with the sale of their pulp mill. But while that stagnated the local real estate market (people didn't buy or sell much during that period), it did not have an overall downward effect on prices. Interestingly, Jasper had the highest value of homes (and some of the lowest paid workers). This combination leads to some concern over stratification in tourism based communities. Such communities attract well-to-do clientele as visitors or summer residents, yet in many cases, the workers in these industries cannot afford to pay rents in these places, given their low wages.

The stability of a place may also be measured, in part, by the percent of residents that own their own dwellings. Again, the stable, traditional Maritime community of Queens laid claim to the highest percent of residents owning their own homes at 89%. Peace River and Pine Falls were the next closest and these were also well above the national average of 63%. LaTuque, Fort Providence and Jasper all had rental rates higher than the national average. Interestingly, these latter three communities all represent different forest community types so there a few generalizations to be made regarding home ownership and community type from the secondary data.

MANAGEMENT APPLICATIONS

Management applications vary depending upon the type of community one is dealing with. Much of the NCE-SFM's work deals with industrial models of forestry and many of the NCE partners represent industrial interests. Those readers will be interested in a forthcoming article by Beckley and Reimer [in press]. This article outlines some very specific actions and measures that can be taken by industrial forestry firms to improve their relations with the local communities where they operate. The recommendations contained in the article come suggest that a new model of company community relations is required for timber dependent communities. The paternalistic policies of the "company town" model do not facilitate sustainable communities, nor do the more *laissez-faire*, or "hands off" policies of more recent years. The article outlines several areas where companies can take an active role in developing communities' capacity to help themselves and to adapt to exogenous changing social and economic conditions. The paper outlines how companies can participate in the

development of local human capital, local entrepreneurship, how they can nurture healthy communities, as well as how they can equitably distribute the costs and benefits of timber dependence across the geographical region where they operate.

Management applications have not yet been developed for subsistence or tourism dependent communities, but there will certainly be recommendations to come from this research regarding these types of communities. On the subsistence side, the quantitative indicator approach often fails to truly measure the well-being of these places. Some additional work should be done, and may be underway to develop appropriate indicators of community health, well-being and sustainability of subsistence communities. The tourism dependent communities in this study are both either adjacent to or within the boundaries of national parks. In some respects, the paternalism of early timber dependent communities is mirrored in Park/community relations in these places. Recommendations for these types of communities are also forthcoming. In short, the single most important recommendation to any single sector dependent community is to diversify. In our sample, the diversified communities were often the top performers within given categories of indicators. The exception to this was Queens, an older and more traditional community where diversification into tourism is only just beginning.

CONCLUSIONS

Socio-economic indicators of community well-being may offer some insights into the sustainability of forest-dependent communities. One would expect that a community with high incomes, low unemployment, high education attainment, low poverty, stable population trends and stable real estate values would be well situated for continued prosperity. The statistics available through secondary sources tell part of the story. To get the rest of the story, one must travel to communities to hear the stories from residents themselves. Over three hundred face to face surveys have been conducted with a cross section of community residents in the eight case study sites. These data have not been fully collated, however, preliminary analysis of this qualitative data reveal that some communities with strong secondary indicators are plagued with social pathologies that do not show up in the secondary statistics. In other cases, people's perceptions of a given indicator are out of line with the story told by census data. For an example of how the quantitative and qualitative interviews have been integrated in two of our NCE-SFM case study communities see Parkins and Beckley (unpubl. man).

Furthermore, there are additional variables, which often do not lend themselves to quantitative analysis of secondary data, that may be more critical to community sustainability than socio-economic

well-being indicators. Things like the depth and breadth of the community leadership base, or residents' attachment to place, or levels of volunteerism and charitable giving may be better predictors of community sustainability or well-being than income, employment and poverty. Future work on assessing these more intangible variables related to community sustainability needs to be done.

For now, certain trends are clear. Diversified communities appear to perform well against secondary socio-economic well-being indicators. Timber-dependent communities also tend to rate higher in what we consider to be the positive direction of most indicators. It is important to track trends over time to ensure that high levels of positive indicators and low levels of negative indicators are maintained. Subsistence communities tend to lag behind what we generally consider to be positive trends in these indicators, but that may have to do with the fact that these communities are only partially engaged in the market economy. It would be premature to pronounce these communities "unsustainable" due to their poor performance against the indicators measured here. Indeed, given the ability of these residents to feed, clothe, and shelter themselves, without the support of government, or the marketplace, these communities may be the most sustainable of all. One of the case study sites has a record of permanent habitation dating back 9000 years, compared to timber-dependent communities that have a track record of less than a century.

The analysis here provides a start for assessing community sustainability. We did not establish thresholds for sustainability on particular indicators, but we have demonstrated some useful indicators, and discussed some of their shortcomings in particular situations. Some trend data are reported, but significantly longer timelines need to be used to more accurately assess community sustainability. When the complementary qualitative analysis is complete, some lessons regarding risk factors for community types should be realized, and ideas for additional indicators will be brought forward for future analysis.

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