

# REPORT 3: IMPACTS OF CLIMATE CHANGE ON FIRST NATION ECONOMIES

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Prepared for:  
The Assembly of First Nations



Prepared By:



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The views expressed in this paper are those of the author and not necessarily shared by the Assembly of First Nations



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## 1.0 BACKGROUND

### 1.1 RATIONALE FOR PAPER

First Nations across Canada have unique economic realities, in particular, a consistently low standard of living plagues most First Nation residents. As a result of poor economic situations in many First Nations, there is often a lack of resilience to large economical, environmental, and social changes in First Nation communities. First Nation economies are based on both subsistence and income-generating systems; the latter are often natural resource-based, such as forestry or tourism (e.g., eco-tourism, guiding) and are therefore vulnerable to changes in the natural environment. First Nation subsistence economic systems, such as hunting and gathering, are dependent upon the natural environment and are therefore highly susceptible to climate change and its associated impacts.

This report will highlight the unique economic impacts facing First Nations due to climate changes. The first report, *“An Introduction to the Science of Climate Change and How It Impacts First Nations”* and the second report *“How Climate Change Uniquely Impacts the Physical, Social and Cultural Aspects of First Nations”* in this series discuss the effects of climate change on physical and biological processes, the health of ecosystems, and the well-being of First Nations. First Nations and non-First Nation peoples in Canada will be exposed to many of the same risks, although it is likely that First Nations will face unique challenges as a result of the location of their communities, reliance on the environment, and current limited adaptation capabilities.

This report will examine the unique economic impacts of climate change on First Nations subsistence and income-generating economies. It will also discuss the economic realities in First Nations and how they relate to the ability or inability of a community to respond to climate changes.

This report is by no means an exhaustive representation on this subject. Each of the issues raised in this paper requires further detailed analysis. There are many gaps in the current body of research related to the unique impacts of climate change on economies in First Nations and the adaptation strategies needed to deal with these unique challenges. As a result, First Nations need increased support while engaging in research and decision-making related to the impacts of climate change and its effects on First Nations in Canada.



## 1.2 SUBSISTENCE ECONOMIES AND INCOME-GENERATING ECONOMIES

*'Persistence of land use parallels the persistence of a land-based economy in the northern parts of Canadian provinces and in the northern territories. This land-based economy has remained a cornerstone of the mixed economies of many northern communities, and despite the predictions of economic planners to the contrary, it has not been replaced by the modern wage economy (Berkes, 1995).'*

There are many types of economic models present in First Nations across Canada. Some First Nations are conventional market-based communities where the economy is made up of firms that produce, and households that consume. However; there is evidence that a substantial level of subsistence activity still occurs in many Aboriginal communities (Usher et al., 2003, George et al, 1996; Tobias and Kay, 1994; Berkes, 1995; Berkes et al., 1994). These communities uniquely rely on mixed economies, consisting of subsistence and income-generating activities, to provide economic stability for community members. Economic activities range from subsistence hunting, fishing, and gathering to income-generating activities such as small retail operations, forestry, oil and gas refinery, and commercial airline operations. Income can also be obtained through social programs, such as social assistance and unemployment insurance, and through government transfer payments.

A recent Statistics Canada survey entitled, '*The Aboriginal Entrepreneurs Survey*' reported findings from 1126 Aboriginal entrepreneurs in Canada. The study demonstrated that since 1996, the number of self-employed Aboriginal people in Canada has increased by 31%, which is a rate nine times higher than for self-employed Canadians overall (3.3%) (Industry Canada, 2005). The study also reported the existence of over 27,000 self-employed Aboriginal individuals in Canada, which represents 2.78% of the total Aboriginal population. Of these 27,000 entrepreneurs, 46% were considered North American Indian (status and non-status Indian), 47% were considered Métis, 3% were considered Inuit, and 4% were considered multiple or other. Table 1-1 summarizes the relative involvement of Aboriginal entrepreneurs for small- to medium-size enterprises (SMEs) in each industry sector identified in the 2004 survey.



**Table 1-1. Summary of small- to medium-based enterprises by industry and relative Aboriginal involvement in Canada (source: Industry Canada, 2004).**

<b>Aboriginal SMEs by Industry</b>	<b>Total Aboriginal involvement (total = 27, 195 individuals)</b>
Primary	15%
Construction	16.6%
Manufacturing, Transportation and Warehousing	9.6%
Wholesale and Retail Trade	12.2%
Arts, Entertainment, Accommodation, Food, and Cultural	14.6%
Services	17.9%
Other	14.1%

Research has been conducted regarding several northern Aboriginal communities where subsistence economies are not separate and distinct from income-based economies, but serve to supplement wage economies at the individual, the household, and the community level (Usher, 2003). Subsistence activities often supply individuals and communities with country food in the form of meat, fish, and plant products for domestic consumption, but may also provide individuals with income through indirect or direct means. Indirect income may be obtained through the exchange of services or resources with other members of the community, whereas direct income could come from the sale of subsistence resources (see Text Box 1-1).

It is not well understood how mixed economies work at a micro-economic or household level, and little research has been done to shed light on the issue with the exception of Usher et al. (2003) who developed a new method of accurately obtaining economic information in circumpolar Arctic communities. The authors of that study show how households in mixed, subsistence-based communities operate as '*micro-enterprises*' that serve as the centre of production and consumption.



### **A New Way of Collecting Economic Information in Arctic communities**

The 2001 Statistics Canada Census for Arctic communities collected income data from wages, from self-employment and small businesses, and from transfer payments. Usher et al. (2003) suggested including the following forms of income in subsequent surveys in order to effectively capture the entire economy in Arctic mixed subsistence-based communities:

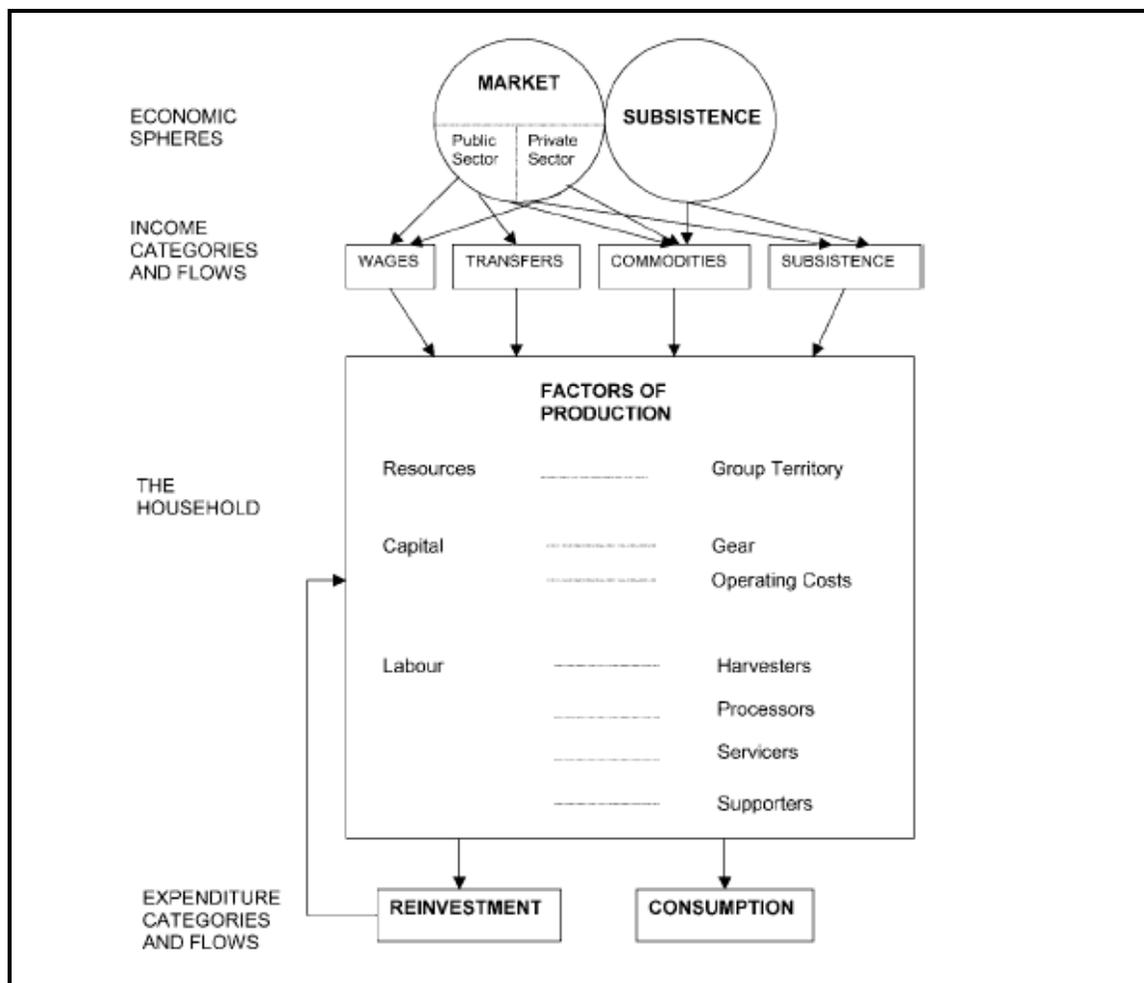
- Income from commodity sales;
- Country food (income in kind) produced by household (not quantified);
- Country food exchanged with other households for goods and services;
- Country food given freely to other households;
- Country food sold to other households;
- Country food received in exchange for other goods and services;
- Country food purchased;
- Investment in capital equipment used for harvesting; and,
- Proportion of total fish and meat consumption that are subsistence foods.

**Text Box 1-1. Indicators selected to measure the flows of production and consumption in, 'The Survey of Living Conditions in the Circumpolar Arctic (SLiCA) and Aboriginal Peoples Survey (APS)' in 2001 (described in detail by Usher et al., 2003).**

Figure 1-1 visually represents the household in a mixed subsistence-based economy and shows resources (land), capital, and labour as factors of production (Usher and Weinstein, 1991). To elaborate, access to resources is the basis of all productive activity in a mixed economy. Labour in the form of harvesters, processors, servicers, and supporters are needed to harvest, produce, and maintain subsistence activities. Finally, capital is needed in the form of equipment (e.g., snowmobiles) and for ongoing operation and maintenance costs. Income from mixed economies is often reinvested at a household level in order to maintain the subsistence activities. The model in Figure 2-1 does not always represent the complete economy in Aboriginal communities. For example, many Aboriginal communities maintain inter-household links, through which distribution and exchange of labour, information and produce (especially food) occur (Usher et al., 2003). For example, in a study conducted in seven First Nation and Métis communities in Saskatchewan, 90% of harvest participants reported that they give moose to other members of the community, 87% reported that they share deer, and 79% of participants reported that they receive meat from other community members (Dosman et al., 2001). As a result of these complexities and unique economic systems, an accurate understanding of how households function in mixed economies is essential for the development of appropriate



economic and social policies and programs as they apply to households in First Nations located above and below the 60<sup>th</sup> parallel.



**Figure 1-1. The household in a mixed subsistence-based economy. The direction of flow indicates the path of income from major sectors of the economy (source: Usher et al., 2003).**

Although the model and prevalence of the mixed economy may be understood for northern Aboriginal communities, there is a shocking lack of research on the relative importance of subsistence-based economies to income-generating economies in First Nations located south of the 60<sup>th</sup> parallel (exceptions include Tobias and Kay, 1994; Dosman et al., 2001). Perhaps the lack of research is due to the prevailing thought among academics that subsistence activities do not make a significant contribution to the overall economy in southern First Nations, especially if they are located close to urban centres. In addition,



national and regional data collection systems (such as statistical surveys) are not designed specifically to capture a mixed economy type of system in First Nations. Further research into appropriate data collection systems is needed in order to determine how prevalent subsistence-based economies are in First Nations south of the 60° parallel and how much they contribute to the overall economy in these communities. Until this information is known, it is hard to adequately understand and predict how the economies of First Nations are affected by environmental changes imposed by a change in climate.

The following report acknowledges the use and importance of both types of economies in First Nations; however, it focuses its discussion on the effects of climate change on subsistence economies because of their uniqueness to First Nations (and other Aboriginal communities). References to the impacts of climate change on income-generating communities are also made throughout the report.



## 2.0 CLIMATE CHANGE AND THE ECONOMIC REALITIES IN FIRST NATIONS

### 2.1 PRESENT ECONOMIC DISADVANTAGES IN FIRST NATIONS

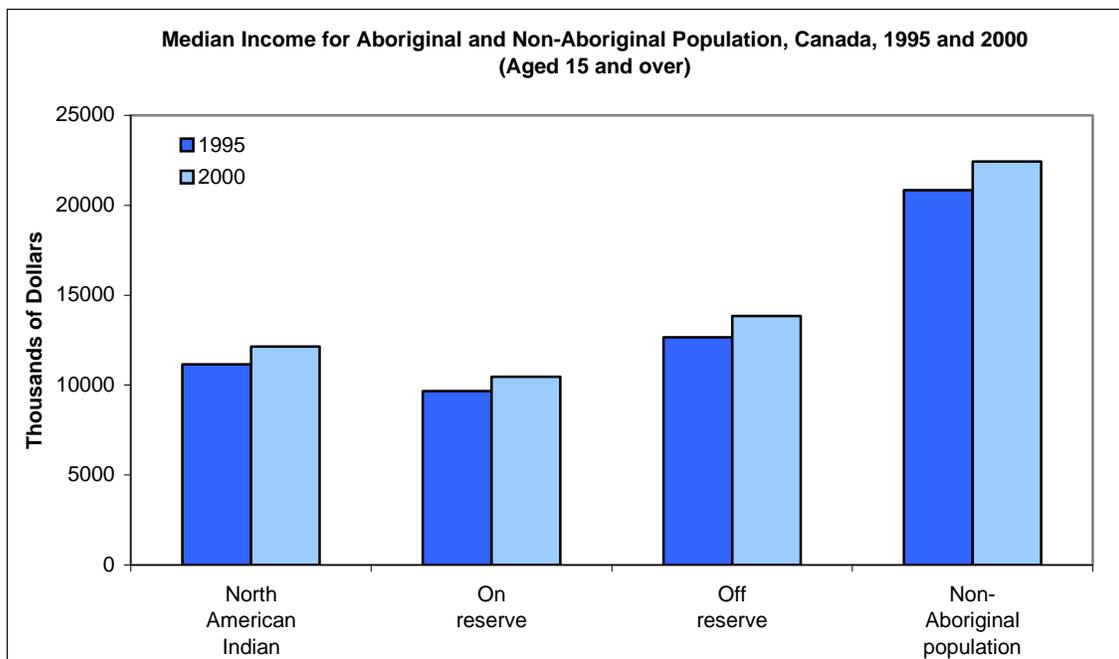
Many First Nation people experience economic disadvantages on- and off-reserve and have lower incomes than most non-Aboriginal people. In the 2004 Canadian Census, **median income**<sup>1</sup> was one indicator utilized to measure progress in the area of 'Aboriginal Economic Self-reliance' between 1996 and 2000. Figure 2-1 summarizes the data collected by Statistics Canada which compares the median income for Aboriginal and non-Aboriginal populations<sup>2</sup>. The median income for the non-Aboriginal population was nearly double the median income for on- and off-reserve North American Indians in 2000, indicating that on- and off-reserve residents are experiencing unique economic issues not faced by non-Aboriginal populations. These economic issues exist in the face of development in traditional territories by non-First Nation interests, and are usually exacerbated by the loss of subsistence economies. Note that in Figure 3-1, income from subsistence economies did not factor into the economic data collected in Aboriginal communities.

*"Low income" (after tax and income transfers from governments) refers to when an individual or family must use a substantially larger portion of their income than the average Canadian individual or family for food, shelter and clothing. Among Aboriginal people in metropolitan areas, 41.6 per cent had low incomes, more than double the national average for metropolitan areas" (Source: Statistics Canada, April 7, 2004a, The Daily, "Low income in census metropolitan areas").*

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<sup>1</sup> Median income is defined as the dollar amount that marks the midpoint of incomes for individuals in a specific group (Treasury Board of Canada Secretariat, 2004).

<sup>2</sup> Note that Statistics Canada uses the term 'North American Indian' to refer to First Nation people who are either status or non-status Indians under the *Indian Act*.



**Figure 2-1. Median income for the Aboriginal and non-Aboriginal population between 1995 and 2000 (source: Treasury Board of Canada Secretariat, 2004).**

In Canada, a country that is rated in the top four in the world on the United Nations Development Index, First Nation people experience employment rates of approximately 50% (on-reserve) and 61% (off-reserve) (Treasury Board of Canada, 2004). The Canadian Mortgage and Housing Corporation (CMHC) reported in a comparative analysis of 239 First Nation communities and 251 non-First Nation communities that average earnings from employment per person during 2000 in First Nations are a little more than one-half of the average for those in non-First Nation communities (CMHC, 2004). In a study conducted by INAC in 1998, which applied First Nation specific statistics to the United Nations Development Index, First Nation living conditions ranked 63<sup>rd</sup> in the world, similar to that of Third World conditions. In 2003, Canada's Aboriginal people would rank 78<sup>th</sup> on the same United Nations scale (National Anti-Poverty Organisation, 2005).

The economic disadvantages in terms of employment and wage income are often associated with increased social problems in First Nations such as inadequate housing and living conditions, poor health, and low education development amongst residents. For example, in the comparative study done by the CMHC, the number of persons per room in



First Nation households is 50% higher in First Nation communities than in their non-First Nation counterparts, indicating that inadequate housing and overcrowding are common issues in First Nations (CMHC, 2004). Problems associated with overcrowding include increased stress among residences, increased moisture build-up and higher incidences of mould growth (CMHC, 2005), and health concerns such as asthma, allergies and tuberculosis (TB) (AFN, 2005b; Clark et al., 2002). For example, there is a significant association between housing density, income levels and the rates of TB in First Nations in Canada because overcrowded housing has the potential to increase exposure of susceptible individuals to TB (Clark et al., 2002). Exacerbating the problem is the relative isolation of some First Nations that causes delays in TB diagnosis by health care providers, therefore increasing the risks of transmission amongst First Nation residents (Clark et al., 2002).

Lack of education continues to be an economic issue in First Nations. According to the 2001 Census, 58% of the First Nation population on-reserve and 41% of the First Nation population off-reserve did not complete high school. The Assembly of First Nations reported in 2005 that only 32% of on-reserve students were graduating from high school. Addressing the education problem in First Nations and providing economic opportunities for educated residents will help to prevent the perpetuation of the economic, environmental, and social problems in First Nations.

## **2.2 IMPACTS OF CLIMATE CHANGE ON SUBSISTENCE ECONOMIES**

Section 1.2<sup>3</sup> illustrates the importance of mixed subsistence-based economies for many Aboriginal communities in Canada. According to Fast and Berkes (1998), numerous studies carried out for northern Aboriginal communities in the past have established that:

- 1) The subsistence sector is worth about \$15,000 per household per year in the Arctic and about half that in the Subarctic (using 1996 market values in Berkes and Fast, 1996);
- 2) The subsistence economy often comprises one-quarter to one-half of the total local economy;
- 3) The subsistence economy is not disappearing and may even be becoming stronger; and,

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<sup>3</sup> Section 1.2 – Subsistence Economies and Income-generating Economies



- 4) There are no short-term or medium-term prospects that the subsistence sector can be replaced by the wage sector and industrial economy – the jobs do not exist nor are they likely to be created.

As stated earlier in section 1.2, while little is known about the value of the subsistence economy in First Nations south of the 60° parallel and how they will be affected by climate change, lessons can be learned from previous research conducted in the north. Research shows that climate change is presently having an impact on many northern communities and on their ability to continue subsistence activities. For example, many northern Aboriginal peoples report thinning and retreating sea ice, drying tundra, increased storms, reduced summer rainfall, warmer winters, and changes in the distribution, migration patterns, and numbers of some wildlife species on which their subsistence economies are based (Mulvaney, 1998; Anisomov et al., 2001; ACIA, 2004; Nichols et al., 2004). Fewer observations related to climate change from First Nations people south of the 60° parallel have been documented, however, some observations indicate milder winters, changes in wind and precipitation patterns, less snow in the winter and changes in ice-depth (CIER, 2003). All of these impacts will translate into demand for adaptation and mitigation measures in First Nations, which will increase the demand for economic and capacity-building resources. For example, changes in the physical and biological land base may affect the types and amount of equipment that hunters and gatherers will need to engage in subsistence activities. Equipment such as snowmobiles, all-terrain vehicles, boats, motors, camping equipment, and fishnets may need to be adjusted if the intended harvestable species changes availability or distribution, or if the amount of time it takes to get to an area of resource availability changes, as a result of climate change. Adding to pressures of a changing climate, many subsistence economies are already faced with environmental, social, and economic pressures brought on by resource development and exploitation from Aboriginal and non-Aboriginal interests (Anisomov, 2001; Mendis et al. 2003).

Subsistence activities are important for bolstering a community's economy but are also important components of the nutritional, cultural and social well-being of its members. For example, Wein et al. (1996) examined the use of and preference for traditional foods among the Inuit from Sanikiluaq, on Belcher Island, N.W.T. They found that traditional foods were consumed approximately 3.2 times daily on average and that the Inuit of



Sanikiluaq (both the adults and juveniles) rated traditional foods very high in terms of preference. Similar results were found by Berkes et al. (1984) in a study conducted with First Nations in the Hudson and James Bay Lowlands in Ontario. Residents from eight communities (these included Moose Factory, Moosonee, New Post, Fort Albany, Kashechewan, Attawapiskat, Peawanuck, and Fort Seven) were interviewed and Berkes found that country food was extremely important for nutritional well-being, especially because it was a significant source of protein for community members. Berkes et al. reports that, *'the protein value of the catch in the region was 97 g per adult-equivalent per day, which is double the Nutrition Canada minimum standard of 49 g protein per day for a 70kg adult'*.

The cultural importance of subsistence resources such as berries is described well by Thornton (1999) for the Tlingit of Southeastern Alaska. As well as being an important nutritional component of the Tlingit diet, berries also played an important symbolic role at feasts, such as winter ceremonies. Thornton observes, *"Gifts were distributed among guests as thanks for their attendance and participation in the healing and bolstering of the clan"* (Thornton, 1999). Berries were the most celebrated gift to receive, and were linked symbolically to the negotiation of status between host and guest, the raising of spirits, and to represent the landscape from which people came (Thornton, 1999). Similar results were reported by Murray et al. (2005) for the Gwich'in of NWT where many harvesters participating in the study reported that at holidays, gatherings and other special occasions, the serving of berries played an important cultural role in the community.

### **2.2.1 Replacement values**

Researchers have shown that subsistence economies often bolster and reinforce income-generating economies in many northern Aboriginal communities. The **replacement value** method is used to demonstrate the value of subsistence economies in these communities (see Text Box 2-1 for a definition of replacement value). Since subsistence harvests of meat, for example, often have little or no cash or commercial value, their real economic value can only be inferred by considering the value of meat that the hunter's family would otherwise have to purchase (Berkes et al., 1994).



**Text Box 2-1. Definition of replacement value (source: Dosman et al., 2001)**

**Definition of Replacement Value**

Harvested resources are not traded in a market place and as a result, there is no market value for them. The replacement cost method values these non-market goods, by calculating the cost of replacing these goods with similar ones available in a market (Dosman et al., 2001).

In a study completed for the Environmental Assessment Office in British Columbia in 1997, the replacement value of moose was calculated to be between \$9 and \$15 per pound in 1997 for Taku River Tlingit First Nation (adjusted to \$10.40 to \$17.30 dollars in 2004) (McDowell Group, 2004). Barren-ground Caribou are the most important big game species hunted for subsistence hunters in the Sahtu Settlement Area, Northwest Territories, with a meat replacement value that has been estimated to be approximately \$2,072,250 annually, which was estimated from 2763 animals 1999-2001 from Sahtu Harvest Study (Sahtu Renewable Resource Board, 2005). In 1990, Berkes et al., indicated that the traditional economy contributed approximately \$8400 per household per year and one-third to the total cash economy (including transfer payments and wage-based income) in the Mushkegowuk region in Northern Ontario. In the same study, it was established that the replacement value of waterfowl ranged between \$8.14 per kg to \$11.40 per kg depending on how far north the community in question was located (more northerly communities would have higher replacement values) (Berkes et al., 1994). In the same study, Berkes et al. estimated the replacement value of berries to be about \$56,000 for the entire region whereas replacement values of fuelwood were estimated to be nearly \$1 million dollars (at \$60 dollar per face cord replacement value). These replacement values would be higher in today's market due to higher costs of production and transportation. More recent estimates infer a total replacement-cost value of country food harvested in Nunavut at a minimum of \$30 million dollars (Conference Board of Canada, 2001).

If climate change or other environmental factors affect the ability of Aboriginal people in northern regions to engage in subsistence activities, the amount of expensive, southern imported food will increase, which makes the replacement value very high for northern subsistence economies. It is important to note that although the replacement cost



technique is useful to show the estimated value of particular subsistence resources such as wild meat, fish, and non-timber forest products (NTFPs), it does not account for social or cultural values associated with subsistence activities or the nutritional value of traditional resources. The traditional economy also provides raw materials for handicrafts and for bush equipment such as snowshoes, building materials for bush camps, and medicinal plants that are not considered in the replacement value method (Berkes et al., 1994). Despite its drawbacks, replacement values are very useful indicators of how mixed subsistence-based economies in First Nations can be affected by physical or environmental changes due to climate change.

Replacement values for subsistence economies have not been calculated for many First Nations south of the 60° parallel, which makes it difficult to draw conclusions on the value of subsistence economies in these communities. Further research needs to focus on placing market value on subsistence economies in order to determine exactly how they will be affected by climate change. For example, Text Box 2-2 discusses the importance of non-timber forest product harvesting for First Nations. Although research is limited, several studies conducted in Saskatchewan illustrate the value of subsistence hunting and non-timber forest product harvesting to the economic well being in several Métis and First Nation communities (Tobias and Kay, 1994; Dosman et al., 2001). In 1994, Tobias and Kay (1994) conducted a harvesting survey in the Métis community of Pinehouse Lake, Saskatchewan. The bush harvest survey included mammals, birds, fish, fuelwood and berries. The bush harvest accounted for one-third of the total village income (of 676 residents). Commercial and domestic fish harvesting form the backbone of the local Pinehouse economy as it constituted 55% of the Pinehouse harvest in 1994. Although the subsistence economy is presently very healthy in Pinehouse Lake, the question remains whether the community will be able to respond and adapt to changes imposed by a changing climate, especially if these changes affect the most important subsistence activity of fish harvesting. The situation may be similar in many First Nation communities across the country although more research is needed on the value of subsistence economies in these communities. For example, given that the average yearly income in First Nations is approximately \$17,000 (Statistics Canada, 2004b), a loss of even a small amount of income as a result of the loss in subsistence activities would have a significant impact on the well-being of First Nation families who depend on subsistence economies. In contrast, non-Aboriginal average income levels are not as low as they are for First



Nations, therefore, a non-Aboriginal family may not experience the same severe effects from a similar loss in the amount of income as a First Nation family.

### **The Value of Non-timber Forest Products (NTFPs) to First Nations**

NTFPs are items gathered from the forest and used in foods, health and personal care, landscape and garden application, and decorative and aesthetic products. They include:

- **Food products** such as mushrooms, berries, and syrup;
- **Florals** and parts of trees used for arts and crafts;
- **Essential oils and extracts** which include balsam fir, birch and spruce oils; and wild plants such as sage and mint; and,
- **Medicinal plants** that are used in the production of a number of medicinal compounds as well as nutritional supplements.

NTFPs have important cultural, spiritual and sustenance values for First Nations. First Nations use these plants materials for food, medicine, ceremony, tools, clothing, and other uses. Many First Nations are geographically located to benefit financially from developments within the NTFP industry, the value of which has been placed at \$241 million dollars a year according to the Canadian Forest Service (2003). This is especially important in communities who are marginalized and who can benefit from supplemental income from the NTFP industry. Unfortunately, First Nations often participate in the industry only as entry-level harvesters. Despite growth in the NTFP industry, First Nations have benefited relatively little from this growth due to:

- The lack of local capacity (including small business skills) to create businesses in the sector;
- A shortage of local capacity to develop and implement management plans for NTFPs on traditional territories; and,
- The lack of awareness in markets.

The NTFP industry is one of the only resource sectors for which management and license/tenure arrangements have not already been established. First Nations therefore have the ability to assume leadership in a relatively 'new' industry that will provide business and employment opportunities for community members as well as providing knowledge on the protection of traditional, subsistence, spiritual and cultural plant uses.

**Text Box 2-2. The value of Non-timber Forest Products to First Nations (source: Saskatchewan Environmental Society, 2002; Duchesne et al., 2000; Friends of Clayoquot Sound, 2006).**

Dosman et al. (2001) studied non-timber harvesting patterns in 7 communities in northwestern Saskatchewan and calculated replacement values after interviewing 123 hunters in the area. Results of their study indicate that a 25% loss in meat harvest would be valued at approximately \$800 per hunter per season, based on estimated market value of beef in 2001. Although replacement values were not calculated for other non-timber



forest products, Table 2-1 indicates that the collection and use of these products is still important for the nutritional and cultural well being in the households of harvesters.

**Table 2-1. Average use of non-timber products by 123 Métis and First Nation harvesters in northwestern Saskatchewan (source: Dosman et al., 2001).**

Non-timber products	Percentage of use by harvesters
Firewood	75%
Medicinals	54%
Berries	87%
Mushroom	28%
Cones	1%
Wild rice	29%
Small game	73%
Commercial fishing	21%
Personal fishing	65%

Subsistence activities may be threatened because of the effects of climate change on forests, wildlife, and aquatic habitats. For example, decreases in fish stocks or changes in the density and distribution of wildlife will directly affect the economic and dietary well being of subsistence users. Additional impacts of climate change that can have an affect on subsistence activities include extreme weather events, changes in the distribution of lake, river, or sea ice and the accelerated thawing of permafrost. Traditional harvesting of mammals, fish, and plant species is usually based on historic and cultural uses of a particular species. Changes to resource abundance or distribution patterns can therefore negatively affect traditional harvesting activities. Harvesting is sometimes done to satisfy a cultural or economic need. In a cultural sense, the traditional species being harvested often serves a cultural or spiritual purpose. In this case, alternative species cannot be used in place of traditional species. For traditional economic purposes, harvesting supplements family food stock. In cases where traditional species become unavailable because of climate change, new species may not be palatable or even edible. Traditional communities, especially those heavily reliant upon harvesting, could suffer greatly, which may impose a need to overutilize other harvested species or rely on store bought foods. The true cost of changes to the subsistence sector on the economic situation in First Nations is hard to quantify in many regards due to the unique cultural and social systems in these communities. Research needs to focus not only on the effects of climate change



on subsistence and wage-based economies in First Nations in terms of replacement values, but will also need to focus on how climate change may affect the health and cultural identity of community members.

### 2.3 INADEQUATE CAPITAL AND INVESTMENT IN FIRST NATIONS

Among the many economic challenges that First Nations currently face, inadequate access to capital and low on-reserve investment is among them (Auditor General, 2003). Without adequate access to capital and investment, many First Nations face difficulties in providing jobs to residents, providing financial independence, and providing quality community services and infrastructure (Indian Taxation Advisory Board, 2005). Without comparable revenue from property taxes to pay for local services and infrastructure such as roads, water, and sewage systems, First Nations will not be able to entice investors to build residential, commercial, and industrial developments on their land which leads to the loss of jobs and wealth (Indian Taxation Advisory Board, 2005). In addition, under the provisions of the *Indian Act* and other agreements, First Nations cannot use reserve land, often their most valuable resource, as collateral for loans (Auditor General, 2003).

The First Nations Tax Commission (2006) reports that it is currently '*ten times harder to create wealth and jobs on First Nations lands than anywhere else in the country*', for two main reasons:

- 1) A typical First Nation must commit **three times as much revenue** to finance new infrastructure from the same amount of property tax revenues as a typical Canadian community; and,
- 2) A typical First Nation will only entice **a quarter of the amount** of business investment from the same amount of infrastructure investment as a typical Canadian community.

As a result, First Nations tend to find it difficult to engage in economic development; fewer types and amounts of businesses are able to be supported on reserves. The lack of capital and investment leaves First Nations more impoverished than non-Aboriginal communities as a result of fewer jobs, less revenue and poorer services. Barriers to accessing natural resources, investing in own-source revenue activities, accessing federal business support programs, and benefiting from federal institutional development, all serve to increase the cost of doing business in First Nations, impeding economic development.



It also puts First Nations in a position where they cannot adequately address community needs that may arise due to the environmental variability associated with climate change.

For example, the economic situations in First Nations will be affected by changes to the energy industry due to increased transport of fuel in remote communities and by the increased need to import energy from other areas. An increase in energy costs can put a greater stress on already difficult economic and financial circumstances present in these communities. As awareness for renewable energy increases and as technologies become more feasible, there may be an opportunity for First Nation communities to become more involved in alternative energy production, thereby mitigating some of the impacts of climate change on the availability of energy sources such as large-scale hydroelectric energy production. This may also have a positive economic impact for First Nations.

Alternative energy can be used in areas where electricity production is limited, such as in northern or isolated communities, or in communities where there is a high dependence on non-local energy sources. Having alternative energy sources can reduce the overall cost of the community's expenditures on energy production. Local production also has benefits, through the creation of local employment. Local production also allows First Nations to benefit from revenue gained through the use of energy in these regions. In some cases local energy production can be a source of revenue, through the sale of energy surpluses. First Nations who do not have access to capital will not be able to invest in these types of alternative energy technologies, which will force them to forfeit any possible economic advantages in their use.

As part of a strategy to improve the current capital and investment issue in First Nations, the Indian Taxation and Advisory Board has worked with First Nations to develop the *First Nations Fiscal and Statistical Management Act*<sup>4</sup>. The four institutions that will be created as a result of this legislation are intended to assist First Nations to develop improved infrastructure and increased investor confidence (Indian Taxation Advisory Board, 2005).

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<sup>4</sup> First Nations Fiscal and Statistical Management Act <http://www.fnfi.ca/documents/RoyalAssentC-20.pdf>



## 2.4 INADEQUATE FEDERAL FUNDING FOR FIRST NATIONS

As previously discussed, that First Nations face significant economic and social disadvantages that many non-Aboriginal communities do not face. The Assembly of First Nations have recently released a report entitled, *'Federal Government Funding to First Nations: the Facts, the Myths, and the Way Forward'* that describes in detail how inadequate federal government funding to First Nations is partly to blame for many of the economic and social challenges present in First Nations. Pre-existing economic and social problems, threats to subsistence and supplemental incomes, and inadequate federal funding make it very difficult for First Nations to adequately plan and respond to the issues surrounding climate change. This section will outline the issue of inadequate federal government funding and how this inadequacy limits the ability of First Nations to respond, mitigate, and adapt to climate change.

In the 2003-2004 fiscal year, the federal government spent over \$8 billion a year on programming directly related to Aboriginal people (Treasury Board of Canada, 2004). Only 67% of this total was transferred to First Nations in grants and contribution payments, which equals just over \$7,200 per person (AFN, 2004). In non-Aboriginal communities, the amount of federal government spending per person is lower (\$6000 per person), however, additional funding provided by provincial and municipal governments over the span of a year would well exceed the \$1200 difference (AFN, 2004).

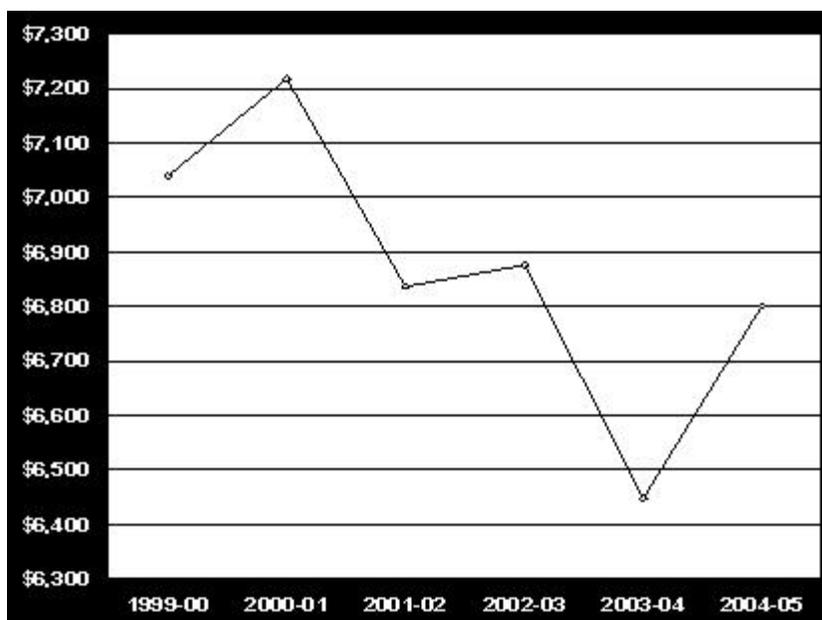
Two main issues addressed by the AFN report mentioned above that make it difficult for First Nations to adequately address economic, environmental and social priorities include:

- 1) Government spending is decreasing in First Nations; and,
- 2) Government spending does not currently meet the needs in First Nations.

The first issue relates to government spending in First Nations. It is the responsibility of the Federal Government to provide basic services to First Nations because the Crown has created laws that allow and require the federal government to do so. The laws also prevent First Nations from providing these services unless the authority is delegated from the Crown (AFN, 2004). First Nations receive the majority of government funding through grants, or contribution agreements related to the provision of basic services such as health, education, and drinking water to name a few (AFN, 2004). The majority of these



funds are allocated to core budgets that are considered 'discretionary' funds, which means that they do not have to take population growth or inflation rates into consideration from year to year. Although critics of government spending in First Nations voice the concern that current spending is too extravagant, an accurate reflection is not available without taking inflation and population growth into consideration. To illustrate, Figure 2-2 shows that since the 1999-2000 fiscal year, the total budget for Indian and Northern Affairs decreased by 3.5% after inflation and population growth are taken into consideration.



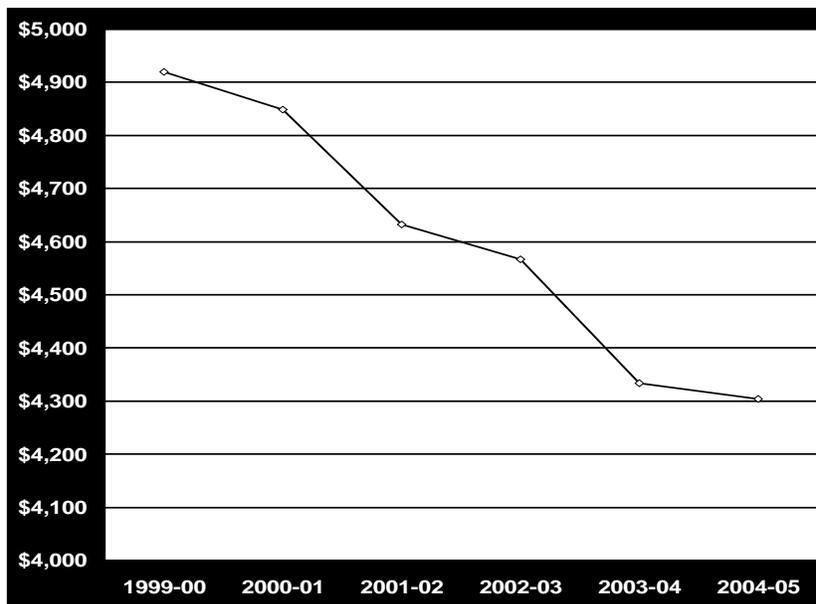
Sources: Financial data are from DIAND Departmental Performance Reports and Treasury Board Secretariat's Main Estimates. Population data are from DIAND published research reports. Inflation data are from Statistics Canada's Consumer Price Index.

**Figure 2-2. Total Spending by Indian and Northern Affairs Canada - per capita and adjusted for inflation (source: AFN, 2004).**

Similarly, Figure 2-3 shows that funding for core services such as education, economic and social development, capital facilities, and maintenance has decreased by almost 13% since 1999-2000 when adjusted for inflation and population growth over the same period (AFN, 2004). To compare the treatment of funds destined for First Nations with those destined for non-Aboriginal communities, the Canada Health and Social Transfer is a fund that provides provinces with funds for core services such as health, education, and social assistance. Although many non-Aboriginal people may also consider this fund inadequate



to meet the needs in non-Aboriginal communities, the main difference is that the fund is considered to be 'non-discretionary' funding and is actually designed to take population growth and inflation into consideration. If First Nation funds are considered discretionary, while non-First Nation funds are not, there is a fundamental difference in the concept of comparable services that needs addressing by policy and decision-makers in First Nation federal governments.



Sources: Financial data are from DIAND Departmental Performance Reports and Treasury Board Secretariat's Main Estimates. Population data are from DIAND published research reports. Inflation data are from Statistics Canada's Consumer Price Index.

\* Note: Per capita refers to the "registered Indian" population only, inclusion of Inuit population statistics would show even smaller per capita spending.

**Figure 2-3. Indian and Northern Affairs Canada spending on core programs –per capita and adjusted for inflation (source: AFN, 2004).**

The second issue outlines the fact that current federal government spending does not meet the economic, social, and environmental needs in First Nations (AFN, 2004). Shown in Table 2-2, the relative cost of providing comparable services to Aboriginal people is higher than it is for non-Aboriginals. Reasons for higher relative costs in Aboriginal communities compared to non-Aboriginal communities include:

- Many First Nations are located in remote or northern communities where the cost of providing materials is higher (varying from 25-100% more than the Canadian average);



- First Nations have a different population distribution than non-Aboriginal communities (for example, with a higher proportion of youth, education costs will be higher);
- First Nations have a historical legacy of poverty and marginalization stemming from centuries of abuse, neglect and deliberate government policy of assimilation, leading to higher social costs and higher demands on government services; and,
- First Nations' subsistence economies are being threatened by development and environmental damage, which creates demands for economic development and new employment opportunities (AFN, 2004).

Current government policies and financial resources are lacking in First Nations to enable these underlying issues to be addressed.

**Table 2-2. Relative cost of providing comparable services for Aboriginal and non-Aboriginal people in Canada (source: Royal Commission on Aboriginal Peoples, 1996, Volume 5, Chapter 2 as in AFN, 2004).**

Area of Expenditure	Ratio of Expenditure per Aboriginal person compared to per Non-Aboriginal person
Elementary and secondary education	\$2.1 to \$1
Post-secondary education	\$1.8 to \$1
Income transfers	\$1.0 to \$1
Housing	\$5.6 to \$1
Health care	\$1.6 to \$1
Social services	\$2.9 to \$1
Protection of persons and property	\$1.5 to \$1
Other expenditures	\$1.4 to \$1
<b>Average</b>	<b>\$1.6 to \$1</b>

If First Nations are not able to effectively address present economic, social, and environmental challenges due to factors such as inadequate federal funding, lack of capacity, and loss of subsistence economies, how will they meet the increased needs and concerns regarding climate change and its associated impacts on the community? For example, some subsistence economies rely on technology such as snowmobiles to help with hunting activities in winter months. If snow and ice conditions change as a result of climate change, First Nation hunters may be affected by increased fuel costs and the need



for better equipment. Similarly, milder winters may affect the development of safe winter roads that remote communities rely on to bring materials into the community. If winter roads are not able to establish due to milder winter conditions, First Nations will need to rely on more expensive methods of transporting goods such as air travel. As a result of increased precipitation as a result of climate change<sup>5</sup>, First Nation housing, which is widely considered inadequate, may be exposed to higher moisture conditions resulting in increased mould growth and associated health problems. This will place more financial pressure on First Nation housing and health budgets in First Nations. If federal government funding is currently inadequate to meet the present priorities in First Nations, it is predictable that First Nations will not be able to address additional resource pressures placed on the community as a result of climate change. This is because most First Nations lack the resources to develop and implement mitigation and adaptation activities that are deemed necessary to deal with the impacts of this type of environmental change. The federal government must provide funding at levels that meet current needs and that will grow to meet future needs associated with climate change in a sustainable manner (AFN, 2004).

Another issue that arises because of inadequate federal funding is the inability of First Nations to engage in decision-making on a local or national level regarding climate change and its impact on entire First Nations. There is a lack of research being conducted in First Nations (especially those located south of 60°) on the effects of climate change in these communities as well as a lack of information focused on educating people about the issues and what is needed to mitigate or adapt to them. Most First Nations do not have the financial resources or the capacity to present their concerns at an international or national level and from the evidence presented in this series of reports and in others, First Nations have concerns related to climate change that are unique because of their geographical, economical, social, and cultural situations that require thoughtful consideration. Future policies, programs and funding designed to respond and adapt to the impacts of climate change need to address these concerns in an integrative manner in order to effectively satisfy First Nation needs in this regard.

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<sup>5</sup> See section 4.3.2.2 in '*An Introduction to the Science of Climate Change and How it Affects First Nations*'



## 2.5 INABILITY TO REBOUND TO ECONOMIC PRESSURES IN FIRST NATIONS

Many non-Aboriginal communities are able to rely on diversified economies, which help them in their efforts to respond and adapt to the effects of climate change. In resource-dependent First Nations, only a few small-scale operations in natural resource sectors such as forestry and logging, mining and gas extraction, fisheries, and the utilities sector are relied upon (Treasury Board of Canada, 2004). For example, Indian and Northern Affairs Canada (INAC) conducted a statistical analysis of on-reserve First Nation involvement in the forestry industry in 2001. Table 2-2 shows the results of this analysis (INAC, 2003). According to the analysis, 1493 on-reserve businesses employ 16,927 people nationwide in forestry related positions. According to INAC, the majority of these businesses were very small (706 businesses employed 1-4 people and only 12 businesses had more than 100 employees). Although the economic benefits of First Nation involvement in the nationwide renewable energy sector remain unknown, Appendix 1 lists renewable energy and energy efficiency projects currently being implemented or developed in First Nations. These projects, although usually small-scale, help to reduce the reliance of First Nations on expensive energy sources such as diesel fuel. Recent statistics related to nationwide First Nation involvement in the agricultural, minerals, or fisheries sector are very limited although it is generally thought that First Nation small-scale involvement is growing in these sectors across the Canada (First National Panel on Fisheries, 2004; First Nations Agricultural Lending Association, 2006). Additional research needs to be conducted on First Nation involvement and economic benefits in natural resource-based industries in order to provide indicators to fully understand how climate change will impact these operations.



**Table 2-3. Forest-related businesses and employment on-reserve nationwide (source: INAC, 2003).**

<b>Forest-related businesses and employment on-reserve, Canada wide, June 2002</b>				
NB: Survey results cover 60.3% of First Nations, comprising 70.4% of the total on-reserve population				
	<b># of businesses</b>	<b>% of businesses</b>	<b>'minimum' employment</b>	<b>% of employment</b>
<b>Logging and contract logging</b>	804	55.2%	5185	30.6%
<b>Support activities for forestry</b>	221	14.8	1073	6.3
<b>Forest products trucking</b>	233	15.6	925	5.5
<b>Mills (sawmills, pulp and paper, other forest products)</b>	159	10.0	9007	48.0
<b>Value-added activities (wood and paper, manufacturing, etc.)</b>	40	2.7	384	2.3
<b>Total</b>	<b>1493</b>	<b>100%</b>	<b>16.927</b>	<b>100%</b>

Small-scale natural-resource operations are often relied on to provide employment, income, and capacity-building opportunities for the entire community. Communities that depend on these operations are often more susceptible because they have less capacity to adapt to changes than larger centres (Mendis et al., 2001). Climate change threatens entire communities as a result of potential changes to natural resources that these small-scale operations rely on. The situation is made worse for First Nations who presently face economic disadvantages (see previous Section 2.1), have less access to education and capacity-building opportunities (see previous Section 2.1), rely on subsistence economies in natural resource-based sectors (see previous Sections 1.2 and 2.2), and have inadequate access to federal funds and capital investments (see previous Sections 2.3 and 2.4).

For example, approximately 80% of the over 600 First Nations in Canada (over 480 First Nations) are located in the Boreal forest region. The Boreal forest supports subsistence and income-based activities including hunting, trapping, fishing, gathering of non-timber forest products, and guiding. First Nations also heavily on the forest for small-scale



commercial forest development such as sawmills and small logging companies (Manitoba Model Forest, 2006). According to Mendis et al. (2003:

*'Forest-based communities are considered to be among the most susceptible changes in climate for two main reasons: the biological processes that determine ecological distribution, composition and production are climate-controlled; and the time scale required for both biological and socio-economic systems to adjust to changes in climate is in the order of decades(IPCC, 2001).'*

The potential effects of climate change on the Boreal region have been alluded to in previous reports of this series.<sup>6</sup> Some of these impacts include northward migration of vegetation, increased or decreased productivity due to more or less favourable temperatures and precipitation patterns, increased forest fires, and increased incidence of insect infestations. These changes can have serious economic, social, and cultural implications for many First Nations in Canada. For example, Pikangikum First Nation in northwestern Ontario relies on the Boreal for social and cultural uses and for the provision of economic opportunities for community members (see Text Box 2-3). If climate change threatens the distribution of forest species or the health of the forest that Pikangikum First Nation relies on for harvesting or tourism, the community will suffer through loss of economic, and other opportunities.

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<sup>6</sup> Section 4.3.3.4 in 'An Introduction to the Science of Climate Change and How It Impacts First Nations' and Section 2.5 in 'How Climate Change Uniquely Impacts the Physical, Social, and Cultural Aspects of First Nations'



### **Pikangikum First Nation's involvement in the Canadian Forestry Industry**

In 1996, Pikangikum First Nation began working on the Whitefeather Forest Initiative, a large-scale economic renewal and resource stewardship project. The vision of the Whitefeather Forest Initiative encompasses two primary goals. One goal is to undertake resource management within a 1.3 million hectare land base referred to as the Whitefeather Forest Planning Area, an area in which First Nation members maintain various traditional livelihoods. The other goal is to create long-term, sustainable economic and employment opportunities, particularly for the growing population of youth living on reserve, through resource-based tribal enterprises. This is extremely important to Pikangikum First Nation as they face poverty, unemployment and the associated social problems that arise out of marginalized situations.

At the core of the Whitefeather Forest Initiative is the intent to acquire commercial forest license management planning responsibilities and related opportunities for the Whitefeather Forest Planning Area. The goal of the initiative is to secure commercial forest management tenure and forestry and protected areas opportunities within the traditional territories of our First Nation. The Initiative brings together:

- Community-led economic renewal for Pikangikum First Nation, providing urgently needed employment for Pikangikum people through tribal enterprise;
- Conservation of the biodiversity and resource abundance of the boreal forest, protected and enhanced by the people of Pikangikum First Nation since time immemorial;
- Win-win partnerships led by Pikangikum First Nation, building consensus and harmonizing interests around key resource development issues; and,
- The best of local Indigenous Knowledge and western science to develop innovative, "state of the art" planning and management tools.

For more Information on the Whitefeather Forest Initiative, visit: [www.whitefeatherforest.com](http://www.whitefeatherforest.com)

#### **Text Box 2-3. The involvement of Pikangikum First Nation in the Canadian Forestry Industry (source: [www.whitefeatherforest.com](http://www.whitefeatherforest.com))**

Similarly, many First Nations living in coastal regions rely heavily on fisheries development in order to provide economic opportunities such as the commercial sale of resources or tourism-based industries. One coastal community that may be affected by climate change as a result of its effects on fisheries is Lennox Island First Nation in Prince Edward Island<sup>7</sup>. Lennox Island currently employs over 100 people in the local fish harvesting industry and in 1995, received federal assistance to engage in the purchasing, packaging and shipping of local seafood (INAC, 2005). Biological and physical impacts of climate change that result in changes to marine species distribution or in the ability of First Nations to harvest these species will affect the small-scale economy in this community and in others that are similar to Lennox Island.

<sup>7</sup> Lennox Island First Nation website: [http://www.lennoxisland.com/portal/fisheries\\_information.htm](http://www.lennoxisland.com/portal/fisheries_information.htm)



Some First Nations rely on small-scale tourism operations in order to generate income in their communities, such as Buffalo Point First Nation in Manitoba (See Text Box 2-4). The Aboriginal tourism industry in 1999 generated an estimated \$270 million and (0.5% of the entire Canadian tourism industry) and employed 14, 000 people (Aboriginal Tourism Canada, 2003). Aboriginal tourism can meet the needs of many tourists looking for nature-based activities or historic and cultural experiences because of the geographical location of many First Nations. Climate change threatens to seriously impact the First Nation tourism industry as a result of milder winters, increased or decreased precipitation, increased water quality issues, increased incidences of forest fires and extreme weather events, and the migration of plant or animal species.<sup>8</sup> It also has the possibility to positively impact the industry through longer summer seasons, which would allow businesses to extend their seasonal operations.

#### **Tourism Industry in Buffalo Point First Nation**

The Buffalo Point Development Corporation is owned and operated by Manitoba's Buffalo Point First Nation. The corporation's primary function is to develop an international tourist facility on land owned by the Buffalo Point First Nation, which is located on Lake of the Woods in the Canadian Shield, near the U.S. border. The area's tourism potential was recognized years ago by the community; development has been ongoing for more than two decades.

Buffalo Point International Resort features a world-class marina with 320 docking slips; an RV campground; luxury rental cabins featuring jacuzzis and satellite television; a bar and grill with a Video Lottery Terminal lounge; and trails for hiking, biking, crossskiing, and snowmobiling. Future plans include an 18-hole golf course; a hotel/casino; an Aboriginal village theme park with teepee accommodations; horse riding stables; a cruise ship for Lake of the Woods; a trading post and Aboriginal art gallery; a game farm; and a museum showcasing the history and culture of the Buffalo Point First Nation.

John Thunder estimates that the Buffalo Point Development Corporation grosses about \$1.5 million per year, this figure includes not only the resort, but also real estate sales and contracted work. This resort shows that with a solid development plan and careful management, First Nations can play a leading role in Canada's tourism industry. The success enjoyed thus far is an indication that further development will bring even greater rewards to the community.

For more information on the Buffalo Point International Resort, visit: [www.buffalopoint.mb.ca](http://www.buffalopoint.mb.ca)

**Text Box 2-4. The tourism industry in Buffalo Point First Nation, Manitoba (source: [www.buffalopoint.mb.ca](http://www.buffalopoint.mb.ca)).**

<sup>8</sup> These impacts are described in the first report of this series, 'An Introduction to the Science of Climate Change'.



When small-scale industries are threatened in non-Aboriginal communities because of environmental, social, or physical changes, members of the community are likely to relocate to other communities or into other sectors within the same community that will provide employment and economic stability. In First Nations, the situation is much different. When small-scale operations are threatened by outside pressures such as climate change or by inside pressures such as the lack of community capacity, community members are often faced with limited opportunities for finding employment in other sectors within their own First Nations as a result of the community's reliance on only a few economies. In addition, relocation to other communities is usually not a viable option for community members. Complex social and cultural ties to the land, and in some cases, land claims and Treaties between the First Nation and the federal government make it unfeasible for entire communities to relocate to other areas. Relocation of First Nations has occurred in the past and has not had positive impacts on communities and residents. Some of the effects of relocation include a loss of cultural-based knowledge about the environment and a reduction in the economic base of the community because of a reduction in subsistence or income-generating resources (RRCAP, 1996).

Small-scale operations in First Nations that depend on natural resources may be threatened by the impacts of climate change. Small-scale industries such as forestry, fishery, and tourism operations may be threatened as a result. First Nations' economies may not be able to rebound to the pressures placed on these industries because of the small size of these industries. The additional social, cultural, and economic issues that have been previously discussed exacerbate the economic stability of First Nations and often puts them in a vulnerable position when having to deal with the issues associated with climate change.



### 3.0 CONCLUSION



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## 5.0 APPENDIX 1 – FIRST NATION RENEWABLE ENERGY PROJECTS

Community	Region	Project(s)	Technology
Piikani Nation	AB	Oldman River Hydroelectric Dam	Small Hydro
Piikani Nation	AB	“Weather Dancer 1” Wind Turbine	Wind Energy
Boston Bar First Nation	BC	Scuzzy Creek Project, Hydroelectric Dam	Hydro
Hupacasath First Nation	BC	China Creek Micro-Hydro	Micro Hydro
Hupacasath First Nation	BC	Hydroelectric	Micro-hydro
Island Lake Tribal Council (Ten First Nations)	MB	Retrofit Training EE wood stoves EE housing units	Energy Efficiency (EE)
Rolling River First Nation	MB	Under development	Wind Energy
Opaskwayak Cree First Nation	MB	School in community	Energy Efficiency
Fort Folly First Nation	NB	Under development	Wind Energy
Eskasoni First Nation	NS	Wind Turbine	Wind Energy
Eskasoni Power and Energy	NS	Under development	Wind Energy
Alaittuq High School, Rankin Inlet	NU	Solarwall (Solar Air Heating System)	Solar Energy
Nunavut Arctic College	NU	Photovoltaic (PV) System	Solar Energy
Recreation Center, Fort Smith	NWT	Solarwall combined with heat recovery ventilation	Solar Energy
Fort McPherson, Inuvik	NWT	Waste Heat Recovery	Energy Efficiency (EE)
Wha'ti First Nation	NWT	Hydroelectric Station Waste Heat Recovery (Diesel)	Mini Hydro Energy Efficiency (EE)
Gameti First Nation	NWT	Hydroelectric Station	Mini Hydro
M'behcho'ko First Nation	NWT	Hydroelectric Dam	Mini Hydro
Tebacha First Nation	NWT	Hydroelectric Dam	Mini Hydro
Radeli'ko First Nation	NWT	Space heating, biomass furnace and R2000 Housing Program	Energy Efficiency (EE)/Biomass
Ojibways of the Pic River First Nation	ON	(2) Hydroelectric Stations	Small Hydro
Deer Lake First Nation	ON	Hydroelectric Station	Mini Hydro
Contance Lake First Nation	ON	Shekada River Project	Hydro
Moose Deer Point First Nation	ON	40 kW PV System + EE features	Solar Energy + EE



Community	Region	Project(s)	Technology
Grassy Narrows First Nation	ON	Kizhaagimitay Nipi Community Utility- District Heating (DH) System	Biomass(Wood Waste)
Mohawks of the Bay of Quinte, Tyendinaga	ON	New and Retrofit Housing	Energy Efficiency (EE)
Fort Severn First Nation	ON	Waste Heat Recovery	Energy Efficiency (EE)
Lac Seul First Nation	ON	Space Heating (In-floor-hydronic systems)	Energy Efficiency(EE)
Longdog First Nation	ON	Photovoltaic (PV) System	Solar Energy
Muskrat Dam First Nation	ON	Space-heating through a diesel waste-heat recovery system	Energy Efficiency(EE)
Big Grassy First Nation	ON	Under development	Wind Energy
Wasuaksing First Nation	ON	Wasauksing WindPower Project	Wind Energy
Wikwemikong Unceded Indian Reserve	ON	Under development	Wind Energy
Wemendji First Nation	QC	Maquata Hydroelectric Project	Mini Hydro
Ouje-Bougoumou Cree Nation	QC	District Heating (DH) System	Biomass(Wood Waste)
Kahnawake Mohawk Territory	QC	Kanata Healthy Housing Project	Sustainable Housing (EE)
Grand Council of the Cree of Quebec (Eastmain, Wemindji, Waskaganish First Nations)	QC	Space-heating Wood-heating potentials Retrofit (120 housing units)	Energy Efficiency(EE)
Red Earth Cree Nation	SK	Nipawin Biomass Ethanol Generation + Feedstock Procurement Company	Biomass
Shoal Lake Cree Nation	SK	Nipawin Biomass Ethanol Generation + Feedstock Procurement Company	Biomass
Cumberland House Cree Nation	SK	Nipawin Biomass Ethanol Generation + Feedstock Procurement Company	Biomass
Nekaneet First Nation	SK	Under development	Wind Energy
Kluane First Nation	YK	District Heating (DH) System	Biomass(Wood Waste)