

THE END OF BOOM TOWNS: THE RISE OF FLY-IN/FLY-OUT MINING CAMPS AND
IMPLICATIONS FOR COMMUNITY AND REGIONAL DEVELOPMENT IN THE CANADIAN
NORTH

by

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Executive Summary

Fly-in/fly-out is a term used to refer to the employment structure increasingly employed by firms engaged in resource extraction processes to enable development in sites geographically isolated from existing communities. In such models, work is organised on a roster system in which employees are flown in to the camp from outside communities to spend a fixed number of days working on-site followed by a fixed number of days at home (Markey et al., in press).

The model is a new variant on the traditional model of establishing permanent purpose-built communities intended to provide community services to workers engaged in resource extraction. Fly-in/fly-out camps are different from traditional single-industry towns in that settlement is temporary as opposed to permanent and daily commuting systems are replaced by extended on/off rotation periods.

The growth in demand for primary resources, especially precious metals, has pushed exploration further into the Canadian north. The remoteness of new extraction sites away from established settlement give rise to temporary camps designed to accommodate workers for the lifespan of the mine as a viable alternative to purpose-built towns.

Although fly-in/fly-out models are well-established in the oil and gas industry their use in mining has grown rapidly in Canada since the 1980s. In part, their growth coincided with intense waves of industrial restructuring within the mining sector which has since demanded new forms of industrial flexibility to enable the expansion and contraction of operations as commodity prices rise and fall or more viable discoveries are found elsewhere. As a result, no new purpose-built resource town has been built since Tumbler Ridge, British Columbia in 1981. Fly-in/fly-out has now replaced permanent settlement as the preferred option of new resource development in the Canadian north.

Compared to single-industry towns, fly-in/fly-out models offer the potential for several benefits and opportunities such as a reduction in the ecological footprint associated with the creation of new purpose-built communities for permanent settlement; a reduction in social and economic impacts in the event of mine closure by spreading the risks of closure across regional economies; a retention of economic development and growth within the immediate region; and the spread of economic opportunities across aboriginal and non-aboriginal groups in areas with traditionally high unemployment rates.

On the negative side, fly-in/fly-out camps have the ability to unevenly shape the social and political landscape in the Canadian north by impacting regional and community development. Specifically, research has demonstrated that in the absence of federal and provincial government legislation regulating their use and development, fly-in camps enable the severing of industry ties to community.

Since the waves of industrial restructuring the mining sector experienced throughout the 1980s, senior levels of government have become increasingly removed from direct regulation of resource extraction in favour of enabling greater industrial flexibility. The result has been a policy vacuum related to fly-in/fly-out operations (Costa, 2004; Markey, 2010).

The role of federal, provincial, regional, municipal, and first nation governments in resource development has grown increasingly complex over the last several decades. Under the

Canadian constitution, natural resources are identified as a provincial government function with the exception of ocean and fisheries, first nation land claims, and trade disputes such as British Columbia's softwood lumber dispute. In such instances, jurisdiction falls under the purview of the federal government.

The involvement of senior levels of government in resource development agreement negotiations has become removed as regulations governing aboriginal consultations are strengthened. The role of federal government in resource extraction peaked in the 1960s and 1970s and is now largely limited to establishing processes negotiations must follow in the event of aboriginal consultation, requiring environmental impact assessments and collecting revenue through direct and indirect taxation (Jackson and Curry, 2002).

The relative abandonment of government from direct policy oversight has meant that resource development agreements vary greatly between projects and communities. Consequently, fly-in/fly-out camps have grown and adapted to policy gaps which pose dramatic consequences for community and regional development in the Canadian north.

Without proper policy oversight, fly-in/fly-out camps have the potential to influence employee migratory patterns away from northern communities to southern centres. Research has also suggested that fly-in camps may enable fly-over of adjacent communities by drawing skilled labour from distant urban centres in the south.

The potential issues and challenges for sustainable community and regional development in the north indicate a need for senior levels of government to begin thinking about establishing regulations for the use of fly-in/fly-out resource camps. As northern Canada becomes increasingly globalised, external factors are changing the way the region participates in the global economy, particularly with respect to resource extraction. As exploration moves further into remote areas, a multi-level regionalist approach is needed to ensure coordinated sustainable community and regional development.

Tables of Contents

1.0 Introduction	1
1.1 Context/Background	1
1.2 Purpose	2
2.0 Resource Extraction and the Built-form	3
2.1 Rural Restructuring in Canada	4
2.2 Rural Canada	7
2.3 Fly-in/Fly-out Origins and Context	9
3.0 Current Status of Mining in Canada	10
3.1 Fly-in/Fly-out in the Canadian North	11
4.0 Reasons for the Increased Use of Fly-in/Fly-out Camps	14
4.1 Limitations of Former Purpose-built Resource Towns	14
4.2 Shifts in Policy and Regulatory Environment	16
4.3 Improvements in Transportation and Communications Technology and Infrastructure	17
4.4 Restructuring within the Mining Sector	18
5.0 Issues and Challenges with Fly-in/Fly-out Camps	19
5.1 Fly-over of Employment	20
5.2 Fly-over of Business	21
5.3 Outward Migration	23
5.4 Social and Health Issues	24
5.5 Taxation	25
6.0 Regulatory Policy Environment	26
6.1 Current Policy Regulating Fly-in/Fly-out Camps	27
6.2 Impact and Benefit Agreements	28
6.3 Policy Gaps	29
7.0 Recommendations and Conclusions	31

List of Figures

Figure 3.1: Accommodations at the Raglan nickel and copper mine in northern Quebec

Figure 3.2: Spatial distribution of mines operating with a long distance commuting model, 1972-1990

List of Tables

Table 2.1: Top 20 census subdivisions (municipalities) in Canada with 5,000-plus population exhibiting greatest population declines, 2006 and 2001 censuses

Table 3.1: Characteristics of current and former Canadian mines using a long distance commuting framework, 1990

Table 5.1: Regional distribution of employees by long distance commuting mines in Canada, 1989

Table 5.2: Input purchasing profile of fly-in/fly-out mines and traditional town-based mines in Northwest Territories by product origin, 1986

Appendices

Appendix A: Quick Reference Guide: Benefits and Challenges of Fly-in/Fly-out Camps

1.0 Introduction

1.1 Context/Background

The Canadian north is undergoing dramatic changes as globalisation continues to shape the way the region participates in the global economy. Such processes have unique consequences in a northern environment given the sparse population distribution and remote nature of peripheral based resource economies. As the north becomes increasingly open for more resource extraction processes, new opportunities and challenges will arise for policymakers.

Resource extraction firms have been seeking out ways which enable greater industrial flexibility so that output levels may be adjusted in a timely response to overseas competition, fluctuations in commodity prices, and the discovery of cheaper alternatives elsewhere. One way to achieve this is through more flexible work arrangements, such as fly-in/fly-out camps, which make remote resource exploration more feasible. In such work arrangements, workers are flown into a mining facility from adjacent communities to spend a fixed number of days on-site followed by a fixed number of days at home.

As a result of the greater flexibility offered by fly-in/fly-out arrangements, the traditional purpose-built community intended for permanent settlement is comparatively less able to meet the demands of an increasingly global and competitive commodities market. The scale of an entire permanent community compared to a fly-in/fly-out camp make it much more difficult to expand and contract operations when necessary. In a smaller more controlled setting such as a resource camp, mining operations can be adjusted more quickly with comparatively less disturbance on the local community. By drawing labour from several communities, fly-in/fly-out camps are not limited to the local capacity of the municipality the facility is located in.

Primary extraction processes will continue to alter the built-form of the Canadian north with respect to community and regional development. Specifically, historical trends and research suggests that in the absence of significant restructuring, the following will continue to occur:

1. No new creation of purpose-built mining towns intended for permanent settlement
2. Ongoing closure and shrinkage of existing single-industry mining towns without alternative employment and business opportunities
3. Increasing concentration of populations and businesses within regional centres in the north

As demand for precious metals and primary resources continue exploration will be pushed further into the north along the lines of the Canadian frontier. The opportunities that new resource development offers in the way of economic and employment opportunities for

northern communities will depend on how senior levels of government respond by way of policy intervention.

Policymakers will be challenged with the decision on whether to regulate the use and operation of fly-in/fly-out camps to better coordinate community and regional development in the north. The willingness of government to regulate within this area will heavily depend on fundamental attitudes toward the north. More specifically, the form of any policy will be shaped by those deemed to be the most appropriate beneficiaries of northern development and by incentives that may help to influence desired outcomes (Shrimpton and Storey, 1992).

Research and past experience with fly-in/fly-out camps suggest that policy may be used to shape northern development if a regionalist multi-level policy is adopted to ensure coordinated growth and the participation of impacted stakeholders.

1.2 Purpose

The purpose of this paper is to explore existing literature on the historical development of staples extraction in Canada as extraction models transition to more flexible fly-in/fly-out structures. Specifically, extraction models will be examined with respect to impacts on the built-form and implications for community and regional development patterns in the Canadian north.

It will be necessary to highlight the limitations of former purpose-built resource towns as the Canadian north becomes increasingly globalised and transitions toward more flexible resource extraction models. Specifically, the impacts of industrial restructuring within the mining sector throughout the 1980s and consequences for planning in resource towns will be highlighted.

The role of fly-in/fly-out models of extraction as the preferred settlement for resource development since the 1980s will be demonstrated by exploring their emergence in the Canadian mining sector and increasing use among private firms engaged in resource extraction processes. In doing so, it will be necessary to highlight the advantages that the fly-in/fly-out option exhibits over purpose-built permanent settlement and to showcase the potential that more flexible structures offer in retaining benefits and employment opportunities within remote northern regions.

The past experience with various fly-in/fly-out models in the Canadian north will be used to demonstrate the policy gaps which exist concerning their development and operation. Research which documents the emergent issues and challenges in the Canadian north and abroad as a result of fly-in/fly-out operations will be used to suggest a greater opportunity for senior levels of government to intervene by way of policy regulation.

It will be suggested that with greater policy oversight and adoption of a regionalist perspective, resource development agreements may be structured to enable the greatest amount of benefit for sustainable community and regional development in the Canadian north.

Specifically, policy suggestions and recommendations will be framed so as to help retain money within the regional economies of the north, spread the risk of collapse over several communities opposed to a single municipality, and create employment opportunities for

aboriginals and economically depressed communities with traditionally high unemployment rates. Given the current lack of a coordinated and sustainable community and regional development perspective, recommendations are heavily focused on an economic growth and development perspective.

By reviewing literature on the limitations of purpose-built communities and the challenges and opportunities fly-in/fly-out models offer, recommendations will be made to suggest forms a viable resource extraction policy framework may take. The policy suggestions are intended to fill the current policy vacuum concerning fly-in/fly-out resource camps.

The policy considerations which flow from the literature review are not intended to solve the ongoing issues currently faced by single-industry communities in decline but rather suggest the need to look forward in creating a sustainable community and regional development framework for Canada's north as fly-in/fly-out development expands. Given the expansive scope of fly-in/fly-out models, policy recommendations are intended for higher levels of government with a regionalist perspective.

2.0 Resource Extraction and the Built-form

Resource extraction and its related processing and downstream manufacturing have long played significant roles in the development and economic well-being of Canada stemming from European exploration through to the establishment of purpose-built single-industry communities. During the nineteenth and twentieth century's, communities such as Elliot Lake in northern Ontario were established through top-down planning processes typically initiated by a single entity with the sole purpose of providing infrastructure to facilitate the extraction of resources. The construction of highways, homes, and community infrastructure was a master-planned attempt to provide permanent settlement for mine workers and their respective families.

Incorporated in 1955, the new town establishment of the City of Elliot Lake served as a model for the subsequent creation of other purpose-built communities such as Tumbler Ridge in British Columbia during the early 1980s which was planned by the provincial government to service the emerging coal industry. Although coal mining and an expanding oil and gas exploration industry remain central to the local economy in Tumbler Ridge, local decision makers and planners have confronted cyclical booms and busts since its inception, especially during the drop in coal prices during 1984 (McGrath, 1986).

Downturns throughout the 1980s in international markets triggered waves of industrial restructuring within the mining sector and shifted attitudes away from the need to establish permanent settlement to service resource extraction. Tumbler Ridge marks a turning point in resource extraction processes and its supportive built-form as the last purpose-built single-industry community in Canada.

Since then, rural communities have taken new forms in response to the rapid industrial restructuring of the 1980s which has been marked by a retrenchment of government and industry ties to community formation and development (Markey, 2010). With a shift toward greater industrial flexibility and rural independence necessary to respond to fluctuations in

commodity markets and overseas competition, new extraction projects have been established in remote regions away from permanent settlement. As resource exploration continues into the remoteness of the Canadian north, flexible work arrangements are required to service the mines.

During the shift toward more flexible models of extraction, many of the problems and challenges associated with traditional permanent settlement models became apparent. As former purpose-built communities continue to collapse and shrink in the absence of employment and business opportunities, local decision makers are confronted with planning for decline in northern and rural Canada.

2.1 Rural Restructuring in Canada

Resource extraction processes are still adjusting to the periods of industrial restructuring as more flexible models emerge. As this transition continues, the many problems of permanent settlement resource towns have become apparent. Although the transition is still ongoing, the legacies of former purpose-built communities are engrained in the built-form and evident in patterns of regional development.

A regional perspective provides evidence of the uneven patterns of development between the north and south within provincial jurisdictions in Canada. Former purpose-built communities are now often characterised by economic decline and outward migration, which has brought up important policy discussions at all levels of government.

Between census years 2001 and 2006 there were 162 municipalities out of a total of 690 with populations over 5,000 which exhibited negative growth rates. Although this represents a small share of all municipalities in Canada, an overwhelming majority are located within northern Canada. Specifically, half of the fastest ten declining municipalities in Canada were located in northern British Columbia providing evidence that such regions can only support a few regional growth centres which expand at the expense of smaller municipalities. While during this period Prince George too exhibited moderate decline (-2.0 percent), it has been identified as a regional growth centre in the north by the British Columbia provincial government.

The five municipalities with greatest growth rate decline in British Columbia are all sites of primary resource extraction and/or related downstream processing and manufacturing in the metals, forest or fishing industries with declines above seven percent. Table 2.1 provides a list of 20 municipalities in Canada with the greatest population decline by major industry. The trends demonstrated by the chart are not unique to any one specific provincial jurisdiction although several localities are experiencing the transition towards what many researchers refer to as the post-staples state differently (Howlett and Brownsey, 2008; Hutton, 2004; Wellstead, 2008).

While the declines may represent freedom of mobility between municipalities as residents seek out greater opportunity in regional growth centres, downward trends and ongoing contractions in the commodities market reinforce fly-in/fly-out resource camps as a

viable alternative to the permanent settlement model. As new discoveries are found elsewhere, existing localities are plagued with coping with closure and planning for decline.

Table 2.1: Top 20 census subdivisions (municipalities) in Canada with 5,000-plus population exhibiting greatest population declines, 2006 and 2001 censuses

Municipality	Major industry/industries	Population, 2006	Population, 2001	Population, % change
Kitimat (B.C.)	Primary metal manufacturing (alumina and aluminum); Paper manufacturing	8987	10285	-12.6
Prince Rupert (B.C.)	Fishing; Seafood product preparation and packaging	12815	14643	-12.5
Cariboo A (B.C.)	Logging; Paper manufacturing	5859	6428	-8.9
Crowsnest Pass (Alta.)	Mining (coal); Oil and gas extraction; Logging	5749	6262	-8.2
Marystown (N.L.)	Fishing; Ship and boat building; Seafood product preparation and packaging	5436	5908	-8.0
Kapuskasing (Ont.)	Logging; Paper manufacturing; Mining (phosphate)	8509	9238	-7.9
Kenora, Unorganized (Ont.)	Logging; Wood product manufacturing; Educational services; Provincial and territorial public administration	7041	7631	-7.7
Stephenville (N.L.)	Fishing; Educational services; Hospitals	6588	7109	-7.3
Quesnel (B.C.)	Logging; Wood product manufacturing; Paper manufacturing; Farming; Truck transportation	9326	10044	-7.1
Bulkley-Nechako A (B.C.)	Logging; Wood product manufacturing	5290	5696	-7.1
Inverness, Subd. B (N.S.)	Water transportation; Support activities for water transportation	5369	5769	-6.9
Flin Flon (Man.)	Mining (copper and zinc)	5594	6000	-6.8
Melfort (Sask.)	Farming	5192	5559	-6.6
Labrador City (N.L.)	Mining (iron)	7240	7744	-6.5
Algoma, Unorganized (Ont.)	Primary metal manufacturing (steel); Water transportation	5717	6114	-6.5
Terrace (B.C.)	Logging; Construction; Primary metal manufacturing (alumina and aluminum)	11320	12109	-6.5
Bathurst (N.B.)	Mining (zinc); Primary metal manufacturing; Wood product manufacturing	5144	5494	-6.4
Alnwick (N.B.)	Paper manufacturing; Wood product manufacturing	6152	6566	-6.3
Banff (Alta.)	Accommodation services; Food service	6700	7135	-6.1
Yarmouth (N.S.)	Fishing; Seafood product preparation and packaging	7162	7561	-5.3

Source: Statistics Canada, 2006b.

Several localities initially established as permanent settlements with the intent to service resource extraction processes have experienced vastly different patterns of development compared to those with more diversified economies. These particular disparities in growth and development between the north and south in Canada have long been the interest of staple theorists emphasising a strong link between export trade and national development. For Innis and, staples theory in general, resource exports are the foundation to examining Canada's institutions, internal structures, and internal development patterns (Clement and Drache, 1978). The export oriented nature of resource extraction which is heavily influenced by international commodity markets beyond local control is viewed a fundamental component responsible for some of the regional disparities that exist within contemporary Canada.

The boom and bust phases typical of the business cycle are often accelerated as a result of resource dependency in single-industry communities with little or no economic diversity to mitigate shocks. As a result of the turbulent conditions in resource communities, core-periphery models of dependency are often evident in these regions defined by relationships with larger service economies elsewhere. Often the dichotomy is evidenced by the existence of command and control offices, which direct extraction processes, located away from the site of the natural resources which are most often in remote northern regions.

While such regional development patterns still remain etched in the national landscape, Canada as a whole is no longer exclusively tied to its original staples industries. Over the last several decades, the political economy of Canada has shifted away from primary resource extraction to new creative services and businesses such as filming and software development.

A significant body of literature (Reimer, 2006; Hutton, 1994; Wellstead, 2008; Howlett & Brownsey, 2008) has been devoted to investigating the changing political economy of Canada at the national level. The centre of the debate focuses on where specifically Canada is in the transition toward a post-staples state. At the provincial level though there seems to be vast differences in the process of transition as Canada's north remains a territory rich in natural resources. Though the staples state remains strong in the north, models of extraction and community formation are taking dramatic new forms.

The transition toward the post-staples state has been influenced by many exogenous factors, such as overseas competition and cheaper extraction processes elsewhere. The consequential boom and bust phases of the business cycle have been arguably most hard felt in the localities where staples extraction is most vital to the local economy. Given that economically viable resources are most likely to be found in remote regions away from well-established centres, it is difficult for local decision makers to resist what Freudenburg (1992) refers to as "resource addiction" as it appears to be an attractive route to expedited economic development.

The reality is that few alternative development scenarios exist in such communities at the time of establishment. Past experience provides evidence that few successful resource communities, with the exception of Sudbury in northern Ontario, have been able to avoid the resource curse which rests on adopting policies and strategies to broaden the economic base.

While over the long-term such communities are often more immune to downturns in commodity markets and comparatively better to absorb shocks to the system, diversification has proven difficult for purpose-built resource towns. Many cities in northern regions lack the

critical mass of population necessary for the kind of phenomenon that took place in Sudbury and consequently fall victim to the “staples trap” (Saarinen, 1992).

In the mid-twentieth century, several remote communities in Canada emerged as settlements to service resource extraction processes with few successfully diversifying their local economies along the way so as to mitigate impacts during bust phases to ensure long-term survival. Among the most well-known examples of master-planned communities intended to provide community formation to service a growing mining industry is that of Elliot Lake in northern Ontario which served as a model for the later development of resource communities such as Tumbler Ridge in British Columbia.

The City of Elliot Lake to which owes its development to the extraction of uranium was historically dependent on only two mining firms each producing to satisfy a single contract with Ontario Hydro. As demonstrated by Dixon (1996) local council and residents eagerly welcomed the two firms and support from higher levels of government, absorbing the benefits of infrastructure investment and tax base yet ignoring the dangers associated with resource dependency. Extraction processes continued and long-term contracts promised to local residents despite previous bust phases and several warning signs demonstrated.

The Elliot Lake case study serves as a useful illustration of the turbulent planning challenges currently faced by former single-industry communities and signals the end of purpose-built extraction communities. With evidence of the move toward the post-staples state, existing localities which still derive much of their economic activity as a result of resource extraction must begin to carefully think about future decisions and start planning for gradual versus abrupt decline.

At the regional, provincial and/or national level, there is an opportunity for government to establish a policy framework for the creation of resource extraction camps to ensure harmonised regional development. Given that there has been virtually no new permanent communities established to accompany new mining operations in nearly three decades in Canada, the rapid growth in fly-in/fly-out models suggest that resource extraction camps are likely to remain the future of the Canadian north (Ritter, 2001).

2.2 Rural Canada

Since the 1980s, the economies of several resource dependent communities in northern Ontario have been specifically threatened by increasing production costs, volatile markets, low commodity prices, and even wider global economic forces. As the transition toward the post-staples state continues, such trends imply little likelihood of reversing.

In Ontario and other provincial jurisdictions in Canada, there exists a strong north-south divide with regional significance and variation. The many cities in southern Ontario tend to have stronger population bases and more diversified economies and as such are less susceptible to the boom and bust cycles of commodity markets. Often though, decisions to relocate or drawback operations in remote communities have been made in command centres some distance away from in-situ extraction, signalling a loss of local control (Hutton, 2008). The commonalities that exist among resource communities as they adapt to the globalisation of

commodity markets provide evidence of the need for regional governments to prepare for community decline.

Several communities in Canada's north have formulated stabilisation strategies to mitigate devastating effects of potential shutdowns. Some past strategies have involved the collective purchase of extraction operations by former employees. For example, there was an employee purchase of Algoma Steel in Sault Ste. Marie and a municipal purchase of the Spruce Falls Power and Paper Company in Kapuskasing, both in northern Ontario. In Elliot Lake, local decision makers used the abundance of housing vacated by former uranium mine workers after collapse and depressed property values as a strategy to attract seniors to the area. Inexpensive housing meant that seniors in southern Ontario and elsewhere could liquidate more expensive housing and purchase a new home in Elliot Lake while realising a cash profit.

Over the long-term though, such strategies have proven at best to slow the decline process because they fail to address broader economic forces which drive relocation (Freudenburg, 1992). This likely occurs because the continued operation of facilities depends on ongoing contracts and a lack of resource discoveries elsewhere at cheaper prices, which are all beyond local control. Moreover, the industrial restructuring of the 1980s signalled the need of private firms to expand and contract operations on short notice which is difficult in purpose-built communities for which community livelihood depends on continued operation of extraction facilities.

Dependency exists because community infrastructure was built to support operating mines without accommodating intermittent periods of boom and bust. Permanent communities established for the purpose of extraction do not enable industrial flexibility that is required to respond to changes in commodity prices. When commodity prices are high there is a strong desire to expand operations and produce while the opposite is true of low commodity prices. The scale of permanent resource towns and their distance to markets make it difficult to adjust output levels to satisfy volatile commodity prices. In addition to the inflexibility of resource towns, the comparatively high levels of unionisation compared to camps have also been targeted as barriers to flexibility in permanent resource towns, a topic which will be discussed later in greater detail.

Very few communities once dependent on resource extraction have successfully devised long-term stabilisation strategies to expand their economic base to include tertiary based components. A shift toward diversification and the service industry is often the missing link for many that collapse though this proves to be a difficult task for remote slow growth regions.

According to Saarinin (1992) Sudbury, which has been historically dependent on precious metals, is unique among northern Ontario communities in that it has evolved through four major stages of change: from a railway village to a colonial-frontier mining town and city; into a regional central-place; to a declining metropolis; and finally towards self-sustainability.

Like other resource-dependent municipalities in northern Ontario, Sudbury too was prone to the global downturns in commodity markets throughout the 1980s. The period was marked by several labour challenges beginning with a nine month strike at Inco in 1978. In addition, the City's two largest employers Falconbridge and Inco dramatically reduced operations. The net effect was a population decline from 170,000 in 1971 to 152,500 in 1986 (ibid).

The turbulent period however did not go unchallenged by local council which embarked on economic development strategies to rebrand Sudbury as a world class mining facility. While their model was praised by the Ministry of Municipal Affairs and Housing in Ontario as an international model of successful urban-economic adjustment, Sudbury was unique in that it exhibited a metropolitan threshold unparalleled by other regional economies, a solid middle-class, and white-collar base because of regional-based government operations (ibid).

Sudbury also received much assistance from senior levels of government at the expense of other struggling northern communities because of its size and stature. Sudbury was identified as a regional growth centre in northern Ontario which enabled them to expand in the mining services industry. Evidence suggests that there is little room for more than a single regional growth centre in northern regions of their respective provincial jurisdictions similar to Prince George in British Columbia.

Given the financial assistance, Council was well-equipped to begin implementing economic development strategies from then on. In the 1990s, Sudbury again began a comprehensive consultation process for diversification although there since have been challenges as a result of cutbacks in provincial government funding and downsizing (Kuyek and Coumans, 2003). Regardless, the City of Greater Sudbury has stabilised around a population of 165,000 and is comparatively much more diverse than before. Several provincial and federal government offices have been relocated to Sudbury such as the Canada Revenue Agency and an expansive Northern Medical School.

Other communities, such as Elliot Lake have not been as fortunate. Once the downward spiral is prompted by industry closure in resource communities funding for services and public agencies from higher levels of government becomes increasingly scarce. Often funding formulas for social services such as healthcare and education are based on size with funding allocated to municipalities with greatest anticipated growth.

The historical development of Elliot Lake provides a good summary of the limitations of former purpose-built resource towns which has led to the emergence of more viable resource development options. There is however an opportunity for former resource towns to use the growth of fly-in/fly-out models in the Canadian north to their advantage by marketing their skilled labour force as ideal sites to draw labour from.

2.3 Fly-in/Fly-out Origins and Context

Fly-in/fly-out camps are used to refer to long distance commuting structures used in new remote mines to service extraction. In such models, work is organised on a roster system in which employees are flown in to the camp from outside communities designated as pick-up points. Employees spend a fixed number of days working on-site followed by a fixed number of days at home.

The model differs from purpose-built communities in that daily commuting patterns are replaced by extended on/off rotation periods with accommodation, food and vital services provided on-site by the private firm. As well, camps are established with the intention of being temporary sites of extraction rather than permanent.

The experience of resource towns in planning during cyclical ups and downs denote a strong need for industrial flexibility which allows for the expansion and contraction of operations as global prices change, resource sites become exhausted, and/or more economically viable resources are located elsewhere. Given the temporary nature of commodities exploration and extraction, several researchers (Costa, 2004; Markey, 2010; Shrimpton and Storey, 2002) have questioned whether such communities should have ever been intended as sites for permanent settlement.

The industrial restructuring within the mining sector exposed the limitations of former purpose-built resource towns. Since then, resource firms have been seeking out new opportunities which enable greater industrial flexibility such as fly-in/fly-out resource camps.

While fly-in/fly-out models have long been employed in the oil and gas industry, the first Canadian fly-in/fly-out operation in the mining sector was employed at Asbestos Hill, Quebec in 1972. Since then, fly-in/fly-out operations have emerged as the preferred settlement model for new resource development. For the ten year period between 1982 and 1992, there were no new purpose-built resource communities incorporated compared to the creation of 16 fly-in/fly-out operations (Shrimpton and Storey, 1992).

Since resource development agreements are negotiated individually and there is little policy oversight in the area governing extraction models, there are issues in obtaining data on the current share of mines employing fly-in/fly-out models in Canada. However, past research demonstrates that from the two year period between 1985 and 1987, the share of fly-in/fly-out models in new gold, uranium, and lead/zinc mines was 36 percent compared to nine percent for the period 1975 to 1979 (ibid).

As exploration continues, fly-in mining will likely be the preferred model since it enables more expansive exploration and extraction opportunities into the north given the flexibility of the system which no longer requires workers to live within close proximity of the mine.

3.0 Current Status of Mining in Canada

The viability of purpose-built resource towns in Canada is certainly questionable. The rapid growth of long distance commuting models to service new mines is a testament to their new found significance to the Canadian mining industry.

A recent surge in diamond mining in the western Arctic likely means that mining will continue to expand further into the northern areas of most provinces and territories, especially in Yukon, Labrador, Nunavut, and the Northwest Territories. The latter jurisdiction witnessed the recent opening of the Ekati and Diavik diamond mines during the 1990s (Kuyek and Coumans, 2003).

Data indicate that the value of mineral production in the Yukon Territory alone has increased by 183 percent between 2007 and 2008 (Natural Resources Canada, 2009). Although the increase is partly due to the opening the Minto copper-gold mine in late 2007, Natural Resources Canada predicts that growth will continue. On a national level, the increase in northern exploration and development helped to push the total value of mineral production to

\$45.3 billion. The jump represents a nearly twelve percent (11.7) increase over the \$40.5 billion valued in 2007 (ibid).

3.1 Fly-in/Fly-out in the Canadian North

Provincial and federal governments have welcomed the new developments as a solution to the modern problems of resource towns, specifically in their ability to spread employment benefits to various communities and aboriginal groups, retain economic development in the north and extend the risk of collapse over several localities. Also, resource camps provide a cost savings to higher levels of government since they do not require high degrees of physical infrastructure investment. Figure 3.0 below demonstrates the typical structure of facilities and accommodations provided on-site at such operations.

Figure 3.1: Accommodations at the Raglan nickel and copper mine in northern Quebec



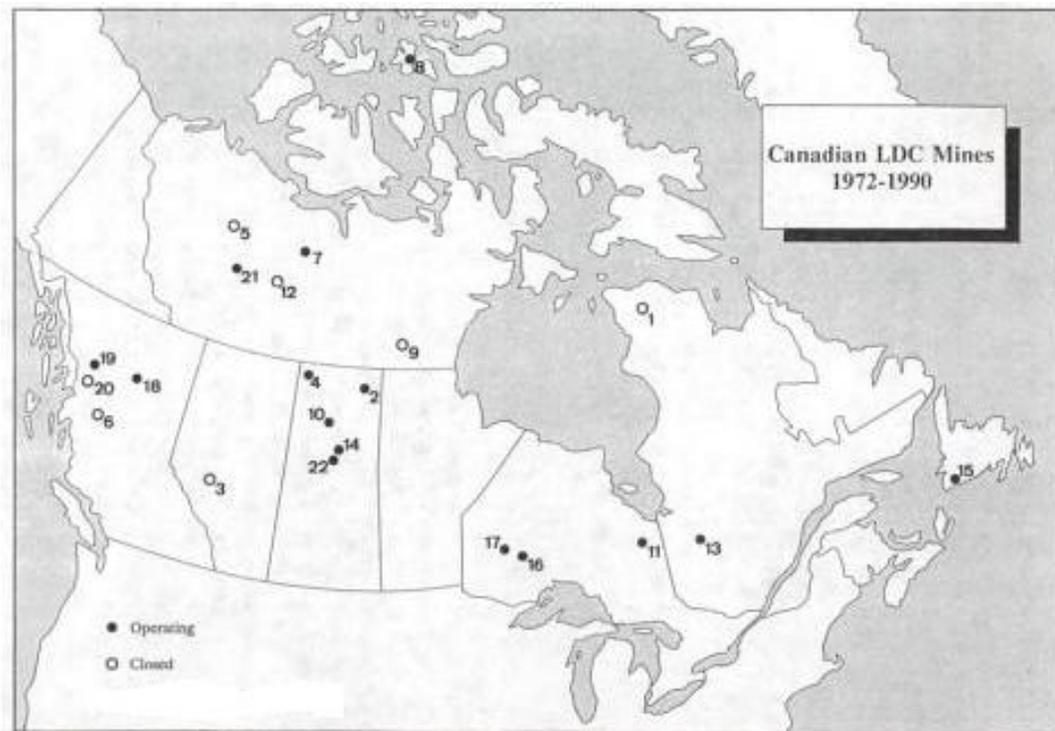
Source: Net Resources International, 2010.

Given that resource development agreements are conducted by way of one-off negotiations and there is little federal and/or provincial policy oversight regulating the use and

operation of fly-in camps, there is a knowledge gap concerning the number of mines currently operating by way of long distance commuting models in Canada. However, Figure 3.1 provides a map illustrating the distribution of fly-in/fly-out camps for the period 1972 to 1990.

Despite the knowledge gap, a recent report from Natural Resources Canada recognised fly-in mining as a system able to contribute to regional development in the north. Specifically, the report stresses that adjacent towns from which labour and supplies are drawn may develop their mining services industry to meet the growing needs of mines operating by way of long distance commuting models (Natural Resources Canada, 2003).

Figure 3.2: Spatial distribution of mines operating with a long distance commuting model, 1972-1990



Source: Shrimpton and Storey, 1992.

The map above demonstrates the wide-ranging distribution of mines using fly-in/fly-out models during a period when the mining industry was hampered by waves of industrial restructuring (Shrimpton and Storey, 1992). As a result, it is likely that fly-in/fly-out mines today contribute to a greater share of overall resource extraction though research in this area is quite limited.

Of the 22 mines profiled in the map, 18 have been in operation since 1980. In regions such as the Northwest Territories and northern Saskatchewan, long distance commuting has become the dominant form of mine development (ibid). The specific characteristics of each of the fly-in camps profiled in the map are highlighted in Table 3.1. Note that despite a common

employment pattern of long distance commuting, many utilise different rotation patterns based on remoteness and size of workforce.

Table 3.1: Characteristics of current and former Canadian mines using a long distance commuting framework, 1990

Mine	Deposit	Province	Opened/Closed	Number of LDC Employees	Rotation Days (On/Off)
1. Asbestos Hill	Asbestos	Que.	1972-1983	400	70/14
2. Rabbit Lake	Uranium	Sask.	1975	350	7/7
3. Coal Valley	Coal	Alta.	1978	335	4/4
4. Cluff Lake	Uranium	Sask.	1980	260	7/7
5. Camsell River	Silver	N.W.T.	1980-1985	200	28/28
6. Baker River	Gold	B.C.	1981-1983	47	14/7
7. Lupin	Gold	N.W.T.	1982	448	28/14 14/14
8. Polaris	Zinc/Lead	N.W.T.	1982	275	63/21 42/28 42/21
9. Cullaton Lake	Gold/Silver	N.W.T.	1983-1985	130	7/7 42/21
10. Key Lake	Uranium	Sask.	1983	425	7/7
11. Detour Lake	Gold	Ont.	1983	350	7/7 4/3
12. Salmita	Gold	N.W.T.	1983-1987	25	14/14 35/21
13. Lac Shortt	Gold	Que.	1984	183	14/7 7/7 5/2 4/3
14. Star Lake	Gold	Sask.	1987-1989	45	7/7
15. Hope Brook	Gold	Nfld.	1987	273	14/14 4/3
16. Emerald Lake	Gold	Ont.	1988	85	4/4
17. Golden Patricia	Gold	Ont.	1988	192	14/14
18. Lawyers Property	Gold	B.C.	1988	65	14/14
19. Golden Bear	Gold	B.C.	1989	111	28/14 14/14
20. Johnny Mountain	Gold	B.C.	1989-1990	133	28/14
21. Colomac	Gold	N.W.T.	1990	342	14/14
22. Jasper	Gold	Sask.	1990	80	7/7

Source: Shrimpton and Storey, 1992.

Several of the mines employ relatively short rotation patterns with the most common structure being seven days on-site followed by seven days at home. According to research by Shrimpton and Storey (1992), the 7/7 model was utilised by approximately 45 percent of all long distance commuting employees at the time in 1990. The table demonstrates that the 14/14 model is the second most common structure representing a third of the total fly-in labour force. However, several of the mines employ a multitude of rotation periods that are conducive to the remoteness of the mine and number and location of pick-up points. Longer rotation periods are more conducive to pick-up points that are located a further distance from the mine so as to spread the travel time over hours worked.

The ideal rotation structure and number of pick-up points will be discussed in the following sections and help to inform policy considerations as it may help to retain money within the local economy and encourage employment supply from nearby communities.

Although data is limited on the current share of mines operating by way of long distance commuting in Canada their rapid growth throughout the 1980s when the industry was struggling is evidence of their prevalence. It is likely that their use in Canada will continue to grow especially in strong commodity markets and in more remote areas.

4.0 Reasons for the Increased Use of Fly-in/Fly-out Camps

Coping with closure is an ongoing or imminent problem for many communities in northern regions of Canada that often requires much financial and social assistance from senior levels of government. As communities such as Elliot Lake in northern Ontario continue to adjust to structural changes and transition toward a post-staples economy, short and especially long-range planning issues are likely to intensify as mobile residents migrate to more diversified economies in southern regions.

The fact that there has been no new purpose-built resource town since Tumbler Ridge, British Columbia in 1981 is not by coincidence. The waves of turbulent conditions as a result of industrial restructuring have provided learning experiences among communities such as Elliot Lake. The increased use of fly-in/fly-out camps in northern Canada are a collective response to the several limitations of former resource towns; shifts in policies and the regulatory environment favouring fly-in models; improvements to transportation and communications technology; and of course the industrial restructuring of the mining industry which will now be explored in greater detail.

4.1 Limitations of Former Purpose-built Resource Towns

The many limitations of former purpose-built resource towns have been well-documented within the last two decades (Robson, 1992; Shrimpton and Storey, 1992; Ritter,

2001; Neil et al., 1992; Keyes, 1992). As single-industry towns continue to experience structural shocks and turbulent planning transitions, research is likely to continue.

Several researchers (i.e. Saarinen, 1992; Mawhiney and Pitbaldo, 1999) have identified the lack of economic diversity in single-industry communities as a fundamental reason for their contemporary decline. Specialisation, especially in remote areas, is risky given that there is no variation within the community able to withstand shocks to the economy. As such, structural changes and resultant shocks are magnified because the entire community is dependent upon the ongoing operation of a single-industry. The intention of purpose-built communities was to provide infrastructure and community services to a workforce employed in staples extraction indefinitely. Given the finite nature of resources extraction the model of establishing permanent settlement is flawed.

In addition to the volatile nature of resource markets, establishment of purpose-built resource towns has proven very costly, especially considering their temporary nature. The total development cost for the community of Tumbler Ridge in British Columbia exceeded \$274 million, a per capita investment of \$45,700 in 1981 dollars (McGrath, 1986). Costs are especially great considering that such communities are built with the intention of supporting mining facilities during peak operation. In periods of downturn or resource exhaustion, outward migration results in greater per capita investment that could have perhaps been better utilised. Moreover, infrastructure costs have shown to be unrecoverable after collapse.

The infrastructure costs of permanent settlement were traditionally borne by senior levels of government which helped to subsidise the operations of private firms engaged in resource extraction. However, in fly-in/fly-out camps accommodations and food are now provided on-site.

Despite the differences in financing between the two models, fly-in camps have demonstrated to have significant cost savings. Graham (2000) projected costs of a hypothetical Australian mining facility employing 160 workers on a five year period to be 23 percent cheaper than permanent settlement. While costs would vary according to government regulations and local context, there seems to be an economic case for the use of fly-in mines which substantiates their growth in Canada and abroad.

While the financing structure of new camps is often exclusively paid for by private firms, the temporary nature of facilities and accommodations in fly-in operations enable the reuse of physical structures. Figure 3.1 of the Raglan mine operation in Quebec demonstrates the portable characteristics of accommodations. Fly-in models are unique in that many of the physical structure are transferable to other sites once the mine is exhausted or deemed no longer financially viable.

Since exploration often occurs in remote locations, permanent settlement is difficult given the issues attracting and retaining top-quality labour within mining facilities and in businesses that support mine operations. The changing rural economy of Canada is not conducive to settlement in new regions because of the strength of regional growth centres such as Sudbury in Ontario. Such regions are recipients of migration from smaller communities. The fly-in/fly-out option enables individuals to seek employment in remote regions while remaining within their respective communities.

4.2 Shifts in Policy and Regulatory Environment

Several shifts in public policy and regulatory mechanisms have impacted the choice between permanent resource town settlement and fly-in alternatives (Markey et al., in press). Purpose-built resource towns were often created from a top-down planning process initiated by a single entity. In the case of Elliot Lake the process was initiated by a private uranium firm and in the case of Tumbler Ridge by the provincial government to service the emerging coal industry.

The intention of master planning a resource town was to create a complete community for workers to service the industry and mine facilities. During this time, new town establishment was subject to few policy restrictions and controls which often led to poor urban environments, which have since been well documented (Kuyek and Coumans, 2003; Veiga et al., 2001; Mawhiney and Pitbaldo, 1999; Dixon, 1996).

Beginning in the 1970s and onward, there have been dramatic changes to environmental legislation which now require environmental impact assessments for new town establishment mandated by the federal government under the Canadian Environmental Assessment Agency. As a result, new town proposals are now subject to potentially lengthy waiting periods before development may be initiated (Jackson and Curry, 2002; Markey et al., in press). The uncertainty of the waiting period poses a significant barrier to the industry because of the need to initiate operations quickly. If for example a proposal for new town establishment was made and not approved until several years later, the economic viability of resource extraction may be vastly different due to fluctuations in global commodity prices.

Beyond environmental impact assessments, new towns are subject to evolving design guidelines as regulated by municipal councils which can be costly to facilities with temporary lifespan. While fly-in/fly-out camps are subject to environmental impact assessments, proposals are often approved in a shorter time given the temporary nature of facilities. Moreover, since camps are often without municipal councils there are little or no bylaws regulating development and design.

While cost is a significant barrier to new town development, some provincial jurisdictions have altogether forbidden development in certain locations. During the 1970s, the Alberta government refused the creation of any new towns in the Coal Branch area west of Edmonton. Since municipal incorporation is dependent upon provincial approval as set out in the Canadian constitution, industry had no choice but to rely on fly-in camps with long distance commuting models (Berg, 1986).

The policy and regulatory environment has also been increasingly subject to influence by first nations groups as consultation processes are strengthened, especially in cases where first nations lay claim to resource rich land. In such instances, resource development agreements may be negotiated between aboriginal groups and industry without the participation of provincial and/or federal governments. As Markey et al. (in press) point out, “benefit agreements have become a recognised part of the package of regulatory requirements associated with major resource projects” (Markey et al., in press: 4). The contemporary regulatory environment governing fly-in/fly-out camps will be discussed in further detail in section 6.0.

In addition to changes in provincial consultation legislation which outline processes pertaining to aboriginal engagement, federal labour laws have provided first nations with a more central role in resource extraction by way of affirmative action provisions contained in resource development agreements. Purpose-built towns have proven ineffective in including aboriginal groups in resource extraction because they create difficulties in the retention of traditional aboriginal lifestyle. In order to participate in resource development in permanent town establishment, aboriginals have been required to relocate which often meant leaving behind traditional ways of life.

Fly-in/fly-out models have been advanced as an opportunity to pursue objectives of aboriginal hiring while also enabling the protection of culture through more flexible work arrangements. Fly-in/fly-out camps have been advanced as a model similar to traditional aboriginal lifestyle in which hunting and gathering required extended periods away from home (Sosa and Keenan, 2001; Costa, 2004).

Aboriginal hiring provisions will be discussed in greater length in the policy considerations section since together with northern hiring provisions both function as a strategy to help disperse employment opportunities across regional communities to retain development within the north.

4.3 Improvements in Transportation and Communications Technology and Infrastructure

Technological advancements have dramatically shaped the landscape of rural Canada especially related to the means of production. Contemporary extraction facilities require only a fraction of labour than in the past as a result of capital substitution for labour. As a result, more flexible work arrangements such as fly-in camps are more useful because contemporary employment levels would be unlikely to support entire new communities.

From a labour supply perspective, complete towns are no longer necessary because extraction facilities employ fewer individuals than in the past. Fewer regional economies would be able to survive solely on the operation of a single mine given the improvements in production efficiency. Instead, northern communities are recognising the benefits that remote fly-in mines may offer to local communities. For example, the Detour Lake gold mine in northern Ontario employed a total of 350 long distance commuting employees from two key cities within the region: Timmins and Cochrane. Although workers represent a small fraction of the total eligible workforce in their respective communities, their positions are well-paying and enable them to participate in their respective local markets. Each workers income provides purchasing power within their local community help to support other vertically linked businesses.

Fly-in operations are made possible by improvements in automation as well as to transportation and telecommunications technology. In decades since the 1980s, there have been vast improvements made to air travel. Now more than ever air travel is both safe and dependable. Although existing literature has maintained that air travel is relatively inexpensive

(i.e. Shrimpton and Storey, 1992), there are present and future concerns over the rising price of oil which may threaten the affordability of air travel.

It is likely that in response to rising fuel costs, on/off rotation periods may become lengthier or pick-up points limited so as to offset rising costs. The potential for rising costs however represent an opportunity for firms to hire from more local labour pools as opposed to larger ones in the south which contribute to fly-over. Regardless of the potential for rising costs, improvements in automation and the reduction in labour have served to somewhat offset the rising costs of air transportation. Whether this will remain true in the future remains uncertain.

The opportunities for air travel were greatly expanded during intense phases of aviation infrastructure improvements delivered during the 1960s and 1970s. During this time, aviation was growing in popularity and viewed as an opportunity to strengthen links with other parts of the globe. Airport improvements were undertaken to enable smaller remote communities to participate in global markets, which facilitated the free flow of ideas, people, and products.

In Canada, this period also represented a time of rapid expansion with Air Canada operating as a Crown corporation. Airport construction was undertaken in remote regions so as to provide for new business opportunities and to enable settlement in more remote communities. The expansive airport construction during this period has since presented an opportunity for new employment opportunities in the north related to fly-in mining.

4.4 Restructuring within the Mining Sector

Perhaps the greatest shift away from the traditional resource town has been the result of several key structural changes within the minerals sector. The collapse of the commodities boom in the late 1970s and early 1980s was hard felt in communities such as Elliot Lake which began a trajectory of downsizing and corporate restructuring into and throughout the 1980s.

During and after this period, lower cost operations emerged in overseas markets, especially in South America, where there was comparatively less government intervention and employment laws resulting in real cost savings for private business. As a result, attention was focused on improving productivity and reducing production costs as much as possible in North America. Specifically, firms began seeking out more remote exploration where they could find higher grade deposits (Markey et al., in press). It was during this time in the 1980s that Ontario Hydro cancelled its contracts in Elliot Lake due to the existence of higher grade uranium in northern Saskatchewan. By way of fly-in models, Saskatchewan was able to offer higher grade uranium at comparative prices (Mawhiney and Pitbaldo, 1999).

New remote mining locations provide a competitive edge over traditional purpose-built resource communities in that they require less start-up costs as a result of long distance commuting models. Isolated mines had shorter extraction lifetimes and smaller work forces as a result of industrial restructuring calling for greater extraction efficiency. Both of these characteristics have proven particularly conducive to fly-in models whereby large start-up costs are avoided or minimised.

In the case of uranium extraction in northern Saskatchewan, firms were not required to undergo expensive investments in infrastructure to spearhead extraction. The temporary

nature of the new mines also was better able to respond to mineral price fluctuations than traditional settlements. Given the comparatively small investment, firms were no longer required to make long term commitments to a particular site. Operations could be expanded and contracted with changes in global prices and as other business needs changed.

Research has also suggested that such mines have several operational advantages to the individual firm with respect to labour (Shrimpton and Storey, 1992; Nogas, 1986). Fly-in models are comparatively easier in attracting and retaining skilled workers given that fewer family disruptions result from having to relocate to new towns. Although, research suggests that fly-in camps disrupt traditional family structures and often require several adaptations within the mine workers immediate family as a result of lengthy separations.

However, the Rabbit Lake uranium mine in northern Saskatchewan began with a turnover rate of 28 percent when it began operations in 1975 which declined to six percent in 1986 after employing long distance commuting models (Nogas, 1986). While the decline in turnover may be in part due to a lack of alternative mining opportunities during the period of restructuring, it too is likely because fly-in camps provide for flexible work arrangements. Under such systems, workers are no longer required to relocate to isolated and remote settlements in which they have no family or social ties.

While much more research is needed, fly-in/fly-out camps have also demonstrated to have lower turnover rates, less unionisation, and a reduction in absenteeism and labour disputes than resource towns (Shrimpton and Storey, 1992).

5.0 Issues and Challenges with Fly-in/Fly-out Camps

Over the last three decades, fly-in/fly-out camps have been shaped by and adapted to a mishmash of federal and provincial policy regulation. Without direct oversight, there has been recognition that such developments may have growing negative impacts, especially with respect to regional and community development.

While fly-in models have been proposed as an opportunity to retain employment within the regional economies of the north, some camps have demonstrated the potential for fly-over whereby adjacent communities close to mines reap few benefits as labour and supplies are drawn from distant parts of the region or from entirely different provinces.

In addition, fly-in camps present the potential for the north to lose some of its skilled labour. If for example, pick-up points are dispersed over several communities across broad regions, employees are provided with the opportunity to migrate to their preferred settlement which may offer the greatest range of urban services or best lifestyle. The likelihood of this occurring is greatly influenced by the fact that employees bear little to no cost for transportation costs. Northern development is increasingly concentrated as the expansion of regional centres continues at the expense of closure of other communities. If not properly structured, fly-in mines may serve to expedite this process and stunt development in remote areas.

A growing body of literature has captured some of the model's shortcomings and challenges concerning fly-over of employment; fly-over of business; outward migration; social

and health issues; and taxation. Each issue will be explored in greater detail and used to help guide and shape policy considerations. A comprehensive list of the benefits and issues/challenges associated with the use of fly-in/fly-out camps is captured in Appendix A.

5.1 Fly-over of Employment

Fly-over occurs when a firm almost exclusively draws its employment base from more distant communities effectively flying over smaller communities in the adjacent region. The result is a lost opportunity for local residents and businesses to participate in the economic benefits provided from a mine. It also effectively stunts northern development because several localities in the north exhibit high unemployment. Without drawing on their skilled labour pools there is little opportunity for economic growth given that alternative businesses opportunities are limited.

Fly-in models may have profound impacts on the development of northern regions, especially as they may lead to population decline in smaller communities. Research has suggested that the existence of and potential for fly-over is heavily dependent upon the mine location and structure of the rotation periods and number of pick-up points. Community capacity in remote northern regions remains a large issue with many unable to provide significant pools of skilled labour to staff mining facilities. The table below highlights the spread of employment by region of residence in seven mines across Canada.

Table 5.1: Regional distribution of employees by long distance commuting mines in Canada, 1989

Region	Lupin, N.W.T.	Johnny Mtn., B.C.	Golden Bear, B.C.	Golden Patricia, O.N.	Detour Lake, O.N.	Lac Shortt, Que.	Hope Brook, Nfld.
N.W.T. – Yellowknife	2.7	-	-	-	-	-	-
N.W.T. – Other	6.7	-	-	-	-	-	-
Yukon	-	3.8	5.6	2.0	-	-	-
British Columbia	17.9	94.7	90.7	6.0	-	-	-
Alberta – North	17.4	1.5	1.9	3.0	-	-	-
Alberta – South	44.6	-	1.9	-	-	-	-
Saskatchewan – North	1.1	-	-	-	-	-	-
Saskatchewan – South	3.3	2.0	-	5.0	-	-	-
Manitoba – North	0.4	-	-	31.8	-	-	-
Manitoba – South	2.7	-	-	44.8	-	-	-
Ontario – North	1.3	-	-	7.0	94.0	-	-
Ontario – South	0.7	-	-	-	4.5	2.7	0.7
Quebec – North	-	-	-	-	0.6	77.6	-
Quebec – South	0.2	-	-	-	0.6	17.5	-
Atlantic Provinces	0.9	-	-	0.5	0.3	2.2	99.3

Source: Shrimpton and Storey, 1992.

The table provides a snapshot of the regional distribution of employees across the country in each of the seven fly-in/fly-out mines. It is quite evident from the data that mine location and rotation patterns have an impact on employment distribution. Among the mines, Lupin in the Northwest Territories has the greatest distribution of employees and utilises longer rotation patterns of 28/14 and 14/14 days on/off. In this case, there is a high degree of fly-over.

On the other hand, the Detour Lake mine almost exclusively derives its employment from northern Ontario (94%) with only two pick-up points in the immediate region: Timmins and Cochrane. While some of the concentration is partly explained by the relative proximity of the two communities to the mine, the rotation pattern is much shorter at 7/7 and 4/3 days on/off, which makes it feasible to draw from nearby labour pools.

Markey (2010) suggests that the potential for fly-over may be mitigated by structuring development agreements which include provisions that provide employment preference to workers and communities within the local region provided they meet industry requirements. Since northern communities in the vicinity of mines often exhibit high levels of unemployment and typically have pools of skilled labour there is perhaps an opportunity to incentivise hiring from such communities. The structure of rotation periods and designation of pick-up points may be structured to help achieve such objectives. This will be discussed further in section 7.0.

5.2 Fly-over of Business

While fly-in developments require far less community resources than traditional purpose-built resource towns, particularly with respect to infrastructure, still they require several inputs for start-up and ongoing operation. The remoteness of contemporary fly-in/fly-out camps has meant that firms are required to provide on-site food and accommodations in addition to vital services such as healthcare and, increasingly, addictions counselling. Although the scale of inputs and supplies is vastly different between purpose-built towns, the responsibility of providing infrastructure has changed. Whereas municipal, regional, provincial and/or federal governments took a role in the provision of infrastructure, fly-in/fly-out models are largely financed through private means. As such, the fly-in/fly-out model offers new business opportunities in the mining services industry.

In addition to raw materials needed for the construction of shelter, mines require heavy equipment and machinery in order to carry out extraction processes. Transportation to downstream manufacturing facilities also provides opportunity for business in northern communities and enables economic retention. In her work, Saarinen (1992) discusses how Sudbury has expanded its mining services industry to broaden the economic base and capitalise on a growing industry.

While traditional purpose-built communities and fly-in/fly-out camps offer several business opportunities, the latter model is vulnerable to fly-over. Similar to fly-over of labour, fly-over of business occurs when a mine purchases a significant amount of inputs from jurisdictions outside the vicinity of the mine.

Ernst and Whinney (1987) were commissioned by the federal government to identify business opportunities in the Northwest Territories to help strengthen business in the mining services and exploration sector. Table 5.2 below provides a snapshot of the purchasing profile of both traditional town mines and ones which utilise a long distance commuting model in the territory.

Table 5.2: Input purchasing profile of fly-in/fly-out mines and traditional town-based mines in Northwest Territories by product origin, 1986

Source (%)	Fly-in/Fly-out Mines (N=2)	Day-Shift Mines (N=3)
Northwest Territories	19.3%	34.7%
Alberta/British Columbia	30.0%	2.8%
Saskatchewan/Manitoba	1.5%	3.4%
Ontario/Quebec	43.0%	8.0%
United States	4.1%	1.0%
Other	2.3%	0.0%

Source: Stevenson Kellog Ernst and Whinney, 1987.

Table 5.2 illustrates the purchasing pattern of five mines according to employment pattern in the Northwest Territories by product origin. Within the territory, mines based on fly-in/fly-out patterns rely less on intra-territorial suppliers than mines that operate on a day shift pattern. The fly-in/fly-out mines are heavily dependent on product purchases from Ontario with nearly half (43%) of inputs originating here.

More recent research (Shrimpton and Storey, 1992) suggests that input purchases are heavily dependent on transportation linkages to the mine in addition to the existence of specialist suppliers. The input purchase patterns of Golden Patricia and Detour Lake gold mines in northern Ontario purchase 88 percent and 80 respectively from within the northern Ontario region. Cities such as Timmins, Thunder Bay, and Sudbury have all significantly developed their mining services industry, which is largely responsible for the heavy reliance on northern Ontario suppliers.

In short, it is difficult to make generalisations based on the purchasing profile of mines given that product origin depends heavily on the remoteness of the mine, transportation linkages to the mine, and the existence of a nearby mining services industry. For example, mines located in eastern Canada derive much of their supplies from European countries because they are purchasers of the ore. The ships which transport ore to Europe return back with mining supplies for workers (ibid).

The fly-over business phenomenon is by no means unique to the mining sector and resource extractive operations but rather a reality of a globalising world. Just as there appear to be economic leaks outward from northern economies to suppliers outside Canada there too is evidence to suggest that resource operations in the northern United States and Alaska purchase a significant amount of their inputs from Canadian suppliers (ibid).

While fly-over business is a more pressing issue for mines located in the far north, there is an opportunity for governments to expand the mining services industry in order to meet the demands of a growing sector.

In recognition of the potential benefits a mining services sector may offer, Mayor George Farkouh of Elliot Lake incorporated components of fly-in/fly-out camps within the City's economic development strategy. Specifically, Council identified the opportunity for Elliot Lake to participate in fly-in/fly-out models as a designated pick-up point given their pool of skilled labour and former experience in the mining industry (Mawhiney and Pitbaldo, 1999).

Within this realm, northern communities have a competitive advantage over their southern counterparts given their experience in mining and often closer geographic proximity to the mine which requires less long distance transportation.

5.3 Outward Migration

The fly-in/fly-out model has significant potential to be utilised as a way to spread employment across traditionally high unemployment areas in the north. There have been several cases of lease agreements between federal and provincial governments and mining firms containing equity provisions which stipulate that a certain share of the workforce must be composed of particular groups such as northerners or aboriginals. While the definition of what constitutes a northerner varies between agreements, it represents evidence of attempts to spread equity.

The inclusion of employment quotas is often negotiated on a best effort basis (Markey et al., in press). In Saskatchewan, hiring of northerners contained in mines increased from 18.5 percent in 1989 to 34.2 percent in 1991 due to the increased use of employment targets in development agreements (McBain, 1995). However, the composition can change dramatically, especially when there are pick-up points provided to communities further south of the mine.

Recent research has suggested that fly-in/fly-out operations may actually remove skilled labour from northern communities depending on how rotation periods and pick-up points are structured. Since transportation to the site is provided by the firm, individual employees incur little to no individual transportation costs. Such a structure has demonstrated to have profound implications on the migratory patterns of mine workers.

If a firm provides pick-up points to several localities in a region, individuals may choose to locate in different communities with no consequences for transportation costs. This trend has proven most evident in mines which offer pick-up points to both north and south localities.

Often employees will choose to relocate based on a number of key factors, such as cheaper living conditions, better weather, proximity to family, and/or access to a wider range of urban services, particularly in the area of education and health care. Such trends have profound implications for regional development whereby skilled labour is relocated to more diversified economies in the south furthering uneven patterns of development.

In Saskatchewan, McBain (1995) found that 36 percent of northern hires in Saskatchewan uranium mines had relocated to the south over several years. While the definition of a "northerner" may have been loosened, migratory trends have profound

consequences for regional development patterns and may lead to growing inequalities between intra-provincial communities and inter-regional towns. There is however an opportunity to mitigate out-migration by structuring shorter rotational periods and limiting the number of pick-up points.

Fly-in/fly-out may bring employment opportunity to residents of depressed northern communities only if there is a feasible threshold of workers to warrant pick-up. Resource firms attempt to spread operational and transportation costs by drawing several workers from single sites. Doing so helps to limit variable costs. As a result, highly-skilled workers are limited in their individual ability to secure travel benefits from distant points.

5.4 Social and Health Issues

While employees involved in resource extraction have often been the interest of social science researchers, especially with respect to family structure dynamics and substance abuse, there is often little research to differentiate between different employment structures and the prevalence of social issues.

The Peace River Regional District in the northeast corner of British Columbia is home to a large and growing transient workforce employed in the oil and gas industry. Markey et al. (in press) indicate that the region has the second worst serious drug offense rate in the province for years 2004 to 2006. While it is likely that much of offenses stem from a relatively young and transient workforce with high disposable income, there is little to suggest that fly-in/fly-out structures are responsible for enabling substance abuse or that it is exclusively a problem they contend with. It may be likely that fly-in/fly-out models are more conducive to hiring young individuals without families who are a population at increased risk of drug use.

Traditional purpose-built resource towns that do not rely on long distance commuting as well have earned reputations as being rife with substance abuse problems, especially during times of economic downturn and restructuring. During the closure of the uranium mines in Elliot Lake, the provincial government delivered much assistance to construct an addictions and counselling facility (Mawhiney and Pitbaldo, 1999; Dixon, 1996).

With respect to family impacts, there is an obvious erosion of the traditional family structure as a result of fly-in/fly-out operations. Costa (2004) maintains that the stress on families is especially great during leave times when a family member returns to the mine for a shift. In addition, fly-in/fly-out models have profound implications for women because men are disproportionately employed in the mining sector. As a result, women often assume childcare and home responsibilities. According to Costa (2004) significant family adaptations are necessary to accommodate having an intermittent spouse. Adaptations deal primarily with organisational duties and responsibilities while the spouse is away. When the partner is at home, organisational restructuring is required to accommodate their additional needs and demands.

Despite research on rotation patterns and accidents, no clear evidence has been able to suggest a preferential structure to improve health and safety. However, there is speculation that longer rotational periods in which workers spend extended times away from the mine

require a greater learning curve upon return to reacquaint workers with mine operations. Such a structure may lead to more accidents. Such claims however require more research in order to draw conclusive evidence.

Fly-in/fly-out operations have profound implications for social issues of which many still require additional research. While they are often responsible for lower levels of community engagement, many suggest that rotation based employment which offers intermittent work is conducive to aboriginal lifestyles. Researchers maintain that the on and off structure of fly-in camps is similar to subsistence living in that hunting and fishing often required extended leaves from community and family members. Moreover, the rotation structure is viewed as separating work and home so that aboriginals may retain their traditional lifestyle.

However, Costa (2004) maintains that fly-in/fly-out camps which offer employment to aboriginals must also offer increased services such as assistance in managing finances and budgeting to ensure full participation.

5.5 Taxation

Regardless of the employment structure utilised, resource extraction firms have historically paid low taxes to local government despite the high demand their operations place on municipal infrastructure. The construction of purpose-built resource communities were often funded by a combination of provincial and federal tax dollars in addition to financing secured by the private firm itself. The benefit that extractive facilities provided to municipal governments were not in the collection of property tax revenue but rather through the collection of property taxes from mine employees that resided in the immediate community.

According to the former Mayor of Kirkland Lake, Joe Mavrinc, in 1989 the largest gold producer paid just \$204,000 to the town while \$9.5 million went to senior levels of government (Shrimpton and Storey, 1992). The high taxes by senior levels of government were likely an opportunity to recoup some of the costs associated with initial start-up and assistance provided during bust phases.

In some instances, resource firms have all together refused to pay municipal property taxes given the importance of their operations to the local economy. In single-industry communities, the municipality often has limited bargaining power as a result of dependence on industrial activity.

Fly-in/fly-out models have created new taxation issues given that labour pools are drawn from communities outside of the mine area. Jurisdictional issues arise whereby labour supply communities are unable to collect taxes from the mine despite an increase in service demands among a working population.

A new mine which draws labour from an adjacent community may lead to increased population levels and new demands for municipal infrastructure to service their respective needs. Although mine employees pay taxes in their local community, there is no requirement for revenue sharing between the community in which the mine is located and towns where labour is drawn from, although there have been recent advances in this area.

The Fair Share Agreement negotiated between municipalities within the Peace River Regional District in the northeast corner of British Columbia is a precedent serving model for improved revenue sharing among municipalities. Throughout the 1990s, the District exploded as a result of an expansive oil and gas industry. The rapid growth and development placed increased strain on municipal budgets struggling to provide services and infrastructure to a growing workforce. The municipal governments were limited in their individual ability to generate revenue because the oil and gas exploration often occurred on private and Crown land outside their respective jurisdictions (Markey, 2010).

In recognition of the fiscal imbalance, the Province of British Columbia spearheaded negotiations in 1993 which later became the Fair Share Agreement. The Agreement contains a revenue sharing mechanism to ensure that local governments are compensated for services and infrastructure associated with development that occurs within the District.

Although the Fair Share Agreement indicates a potential for revenue sharing amongst municipalities impacted by resource development, there is no provincial legislation in Canada which requires such agreements. Rather, they are negotiated on a one-off basis and often commissioned by senior government. A provincial mandated cost share agreement between the community in which the mine is located and pick-up sites will be recommended in section 7.0.

As fly-in/fly-out models continue to be employed by firms in the Canadian north additional research is necessary to reveal implications for community and regional development, and more specifically, to arrive at the model's shortcomings and issues. Such research will serve to better inform public policy and strengthen development agreements to ensure harmonised development.

6.0 Regulatory Policy Environment

The shift toward fly-in/fly-out resource extraction models has meant new issues and challenges for remote communities in Canada's north but also created new opportunities for public policy. To date, the regulatory environment of long distance commuting camps is often limited to negotiations between industry and aboriginal groups with little involvement of regional, provincial or federal governments. Under the Canadian constitution, primary resource management falls under the jurisdiction of provincial governments with the exception of ocean and fisheries, international trade issues and aboriginal land claims.

Since each provincial government is responsible for setting their own legislation to govern natural resource exploitation in their respective jurisdiction, uneven regional development patterns exist amongst provinces and territories in Canada (Sosa and Keenan, 2001).

Regulatory public policy which assumes a multi-level approach may be utilised to mitigate some of the challenges and issues posed to regional development, such as reforms in consultation processes and reforms in revenue sharing. The section on policy considerations will contain information and suggestions for federal and provincial governments to improve retention of benefits in regional economies where the mine site is located.

6.1 Current Policy Regulating Fly-in/Fly-out Camps

Natural resources and extraction processes have long been at the centre of controversy over rights to land and development. However, the era of purpose-built resource town settlement was subject to little in the way of regulations which governed their creation and development. Recently, design guidelines and mandatory environmental impact assessments have contributed to escalating costs associated with settlement of traditional resource towns for resource extraction purposes. As a result, fly-in/fly-out models have emerged as an alternative development model. Despite their increased prevalence in the Canadian landscape and dramatic new forms, there have been few reforms to provincial and federal policy. The few changes that have occurred have rested largely on shifting consultation processes from involving several stakeholders to much fewer (Markey, 2010; Costa, 2004).

Permanent town establishment, development contained within, and daily operations are currently subject to a number of regulations from all levels of government. Fly-in/fly-out camps on the other hand are instead subject to secondary as opposed to primary policy since each development agreement is negotiated individually and in private between industry and stakeholders. As a result of the current lack of legislation which sets clear standards for development agreements, aboriginal groups are often required to negotiate terms and conditions contained with industry having little or no guidelines. There are essentially no direct regulations pertaining to the creation and operations of fly-in/fly-out camps with the exception of having to obtain a health permit for camp facilities.

According to Jackson and Curry (2002) the role of the federal government in resource management peaked during the 1960s and 1970s beginning with the establishment of the Agricultural Rehabilitation and Development Act (ARDA). The legislation was intended to revitalise the economies within rural Canada experiencing uneven growth and development compared to metropolitan counterparts. The agencies which flowed from the ARDA were later fused to create the establishment of the Department of Regional Economic Expansion (DREE) and the Department of Regional Industrial Expansion (DRIE). However, the DREE and DRIE were later decommissioned due to criticism of its top-down approach which provided little engagement for municipal government. In his work, Savoie (2001) provides evidence that funds were distributed to jurisdictions with few substantive reasons beyond political favouritism.

Since the collapse of DREE and its related programs, federal government involvement has been limited to requesting environmental assessments for potential development projects through the Canadian Environmental Assessment Agency (*ibid*). However, when resource development negotiations include aboriginal land, it is up to first nation groups to negotiate provisions requesting environmental impact assessments as part of the terms of an Impact and Benefit Agreement. This will be explored in greater detail in section 6.2.

Rather than direct policy oversight, mining camps are regulated by way of development agreements which are legally enforceable confidential contracts agreed to by parties involved in the development of camps and processes associated with resource extraction. Traditional development agreements laid out the terms of resource extraction between industry and government which was necessary in order to secure support from higher levels of government.

By way of the contract, the government promised to support extraction processes provided that the firm meet commitments to their specifications. Often, such agreements contained provisions to ensure industrial accountability to local and regional communities, the environment, cultural protection and preservation, in addition to other terms as outlined.

Some common provisions contained within development agreements are captured below (Markey, 2004; Markey, 2010):

- Employment quotas or targets
- Special training programs appropriate for local people
- Targets for local procurement of goods and services
- Support for local business development
- Support for women’s employment and training, as appropriate
- Supportive work environment for distinctive local cultures
- Contributions to regional infrastructure

Development agreements have the potential to incorporate social responsibility to mining development and equity provisions through clauses which regulate hiring locally or from indigenous groups. However, according to Markey et al. (in press) impact agreements have changed dramatically with greater reliance on aboriginal participation at the expense of community and regional involvement.

During the 1970s and 1980s when fly-in/fly-out camps first emerged, benefit agreements were typically signed between industry and government. In this model, government was responsible for negotiating contracts on behalf of community and aboriginal groups within the best interest of the province. Government adopted a regionalist perspective in attempts to harmonise development.

6.2 Impact and Benefit Agreements

Contemporary development agreements are now often negotiated solely between aboriginal groups and the industry with little or no involvement of community and non-aboriginal interests. This is especially true when potential resource exploration is to occur on aboriginal land. Moreover, many Impact and Benefit Agreements contain confidentiality clauses which pose a barrier to information sharing amongst communities impacted by resource development (Sosa and Keenan, 2001).

Aboriginal consultation is now mandatory when aboriginal groups lay claim to land rife with resources. The agreements between industry and aboriginal groups are referred to as Impact and Benefit Agreements (IBAs) and outline various targets within realms of employment, training, and business opportunities (Costa, 2004). Such agreements vary by

project and community. The Supreme Court of Canada has ruled that aboriginal title to land includes ownership of mineral resources although this does not necessarily mean that they may develop the resources (Keenan and Sosa, 2001). Rather, it entitles first nation groups to negotiate benefit agreements on their own without the involvement of government with industry.

Within the realm of Impact and Benefit Agreements, first nation groups also have the potential to set out environmental conditions for development with industry. However, since Impact and Benefit Agreements are negotiated individually and without sufficient standards or information sharing, first nation groups are often unaware that they may include environmental protection provisions and may even be convinced not to by the mining industry. The confidentiality of such agreements is also a significant barrier in sharing experiences with the negotiation process.

However, as first nation groups acquire more direct experience in the realm of Impact and Benefit Agreement negotiations, there is greater inclusion of environmental standards. Recently the Impact and Benefit Agreement for the Ekati diamond mine in the Northwest Territories contained several provisions to reduce the impact on caribou herds (ibid).

As first nation groups become more sophisticated in their negotiation of Impact and Benefit Agreements and gain more experience, it is likely that there will be greater inclusion of environmental provisions. Still there remain significant gaps across projects given that there are no clear standards. Many groups are unaware of the importance of requesting a baseline environmental study prior to the development of a mining operation. If an Impact and Benefit Agreement is called into enforcement, a baseline study is critical in determining the environmental landscape prior to mining operations.

Keenan and Sosa (2001) point out that it is equally important to include monitoring systems in Impact and Benefit Agreement to assess ongoing compliance and performance. Since such studies are often expensive, an Agreement should clearly set forth who is financially responsible for such initiatives.

As aboriginal consultation is strengthened at the federal and provincial levels, Impact and Benefit Agreements are becoming increasingly common in resource extraction as exploration continues further into the Canadian north. Given the reduced participation of stakeholders in such agreements, there is greater opportunity for uneven regional development. Oftentimes there is no entity responsible for negotiating on behalf of adjacent communities or operating from a regionalist perspective. Moreover, the confidentiality clauses that such agreements contain prevent information sharing amongst communities. As a result, sustainable community and regional government are uncoordinated.

6.3 Policy Gaps

While fly-in/fly-out models bring new forms of economic and industrial activity to new remote areas, development is often occurring within a vacuum without structural linkages to industry or support from senior government (Costa, 2004). Given the increased bargaining power provided to aboriginal groups and the removed participation of government, Impact and

Benefit agreements are negotiated individually without clear standards and without the full participation of impacted stakeholders.

Full stakeholder participation and involvement in negotiations greatly influences the amount of benefit extracted from adjacent communities as demonstrated by the agreement negotiated for the Eskay Creek gold mine operation in British Columbia. The Impact and Benefit Agreement was negotiated between Barrick Gold Corporation and the Tahltan Nation in 2004 during a time when provincial legislation governing first nation's consultations was in a period of transition (Markey et al., in press). New changes in provincial legislation meant that industry had to consult only with first nation groups laying claim to Crown land where resources were located.

Since the fly-in/fly-out mine encompassed such a broad regional geography in northern British Columbia, several regional development issues arose from the fact that the development agreement was negotiated solely between a single first nations group and industry. Although there were several additional stakeholders that had an interest in the establishment of the mine, many had to rely on more indirect streams to extract benefit (ibid).

The nearby community of Stewart, British Columbia only 50 kilometres north of the mine was at a loss given their inability to participate in negotiations. Consequently, Stewart was not identified as an employment pick-up site. Despite being a greater distance to the mine, Smithers was instead chosen as a regional pick-up point to service the mine because of the increased capacity of its airport. The failure to negotiate direct community benefits between regional communities meant that uneven patterns of development ensued.

In addition to the lack of participation of stakeholders now necessary to initiate development, there is often little in the way of regulation governing the terms of negotiation agreed upon beyond start-up. In the case of the uranium mines in northern Saskatchewan, firms were required to have a certain share of workforce hired to constitute "northern hires" as per terms of Impact and Benefit Agreements. However, McBain (1995) found that 36 percent of "northern hires" had relocated to the south over several years. The latter example suggests that simply agreeing to terms of agreement is not adequate enough for community development.

Instead, firms need to structure their operations so as to mitigate the potential for uneven regional development and monitor operations to ensure contract agreements are being met. In the case of the uranium mines, it is likely that relocation could have been avoided by structuring shorter rotational periods and limiting pick-up points to northern communities.

The current structure of Impact and Benefit Agreements negotiated between industry and first nation groups mean that several communities within the region of a mine have varying levels of success in extracting benefit. Oftentimes, non-aboriginal groups must compete with one another to reap benefits of new mines. Moreover, equity provisions within agreements have proven to have failed without monitoring systems and specific descriptions of how targets will be achieved. The policy considerations will contain some of the tools, including monitoring, that may be utilised to help better achieve conditions set out in agreements.

7.0 Recommendations and Conclusions

If senior levels of government are to adequately address the issues and challenges associated with resource extraction as models transition from permanent settlement to fly-in/fly-out models, then a regional perspective is needed. Many of the issues and challenges of contemporary fly-in/fly-out resource camps stem from a lack of information sharing and direct policy oversight and regulation, which fails to set clear standards for Impact and Benefit Agreements.

The policy considerations suggested within this report rest on the belief that a multi-level policy approach to the development of fly-in/fly-out camps with a regional perspective is most appropriate. As a globalising region with limited autonomy, the jurisdictions within the Canadian north are limited in their individual ability to respond to opportunities and challenges.

Policy considerations herein are meant to bridge the gap by fostering a greater collective response to waves of globalisation in the north and meant to retain some economic development within the immediate region. It should be noted that the policy recommendations are focused heavily on an economic development perspective. The assumption is that once regional growth and development is better coordinated then greater opportunity will exist to regulate more specific aspects of camps, such as health and well-being.

The recommendations take into account the industrial flexibility that is required by new fly-in/fly-out mine developments for the fast expansion and contraction of operations. As such, few policy considerations deal with suggesting rigorous design guidelines so as to help keep construction costs down. However, the importance of conducting environmental assessments and including mechanisms to minimise the impact of resource extraction projects remains critical.

In order to move toward a regionalist perspective, it is suggested that provincial and federal governments move toward adopting the following recommendations concerning fly-in/fly-out resource camps:

1. Continue to identify best practices in the industry and assess the success of fly-in/fly-out operations in other remote communities including the number and location of pick-up points, rotation periods, and taxation structures in place by:
 - a. Developing partnerships with researchers to assess the impacts fly-in/fly-out camps pose for regional and community development
 - b. Establishing an agency or sector within a federal ministry (e.g. Natural Resources Canada Minerals and Metals Sector) responsible for monitoring fly-in/fly-out camps across Canada to share experiences and best practices with provincial jurisdictions
2. Develop legislation which requires and legitimises multi-stakeholder and regional development agreements. More specifically:

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- a. Mandate regional negotiation schemes to ensure that aboriginals, communities, and stakeholders adjacent to the proposed facility are involved in and represented during development agreement negotiations (the scope and scale of the consultation process will depend on the size of the mine and workforce necessary to carry out extraction)
 - b. Require that adjacent communities which have pools of skilled labour and/or high unemployment are identified and ensure they are represented in negotiations and provided an opportunity to benefit from mine development
 - c. Require that development agreements contain clear employment quotas and targets. More specifically:
 - i. Ensure that detailed targets be set for aboriginal groups and northern residents
 - d. Require that employment quotas/targets outlined in the development agreement are feasible and have measurable targets and ongoing monitoring systems by:
 - i. Making it necessary to include aboriginal hiring provisions and northern hiring provisions to ensure that development is retained within the northern economies and the potential for fly-over is reduced
 - ii. Developing appropriate monitoring systems with fixed timelines to ensure that objectives and provisions are being met
 - iii. Adjust systems and hiring practices as new information becomes available so that practices may be adjusted to meet conditions
3. Require that clear environmental standards be included across development agreements by:
 - a. Requiring baseline studies be conducted prior to resource development
 - b. Outlining mechanisms and strategies to minimise environmental impacts of the project
 - c. Outlining monitoring systems and clear timelines to measure ongoing compliance and performance
 - d. Requiring a firm establish a special monetary fund for a specific number of years after mine closure to compensate for any potential environmental damages or settle litigation
 4. Require that adjacency principles be included in development agreements to reduce economic and employment leakages out of the immediate region by:
 - a. Working with industry to identify and where appropriate limit the number of pick-up points to regional centres within relative close proximity to the mine so as to reduce the potential for fly-over

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- b. Ensuring that the communities designated as pick-up points share similar characteristics with respect to geography, employment, demographics, and urban services so as to reduce the possibility of out-ward migration from smaller communities to larger diversified communities
 5. Require that shorter on/off rotation periods be structured so as to:
 - a. Reduce the risk of injury among mine employees by limiting extended periods away from the mines
 - b. Help ease the transition process and burden placed on family members
 6. Require revenue sharing structures and agreements be negotiated between regional and municipal governments involved in resource development (including municipalities where employees reside) to aid in the financing of service delivery and infrastructure as necessary
 - a. The Fair Share Agreement signed between municipalities in the Peace River Regional District of British Columbia should serve as a model
 7. Require that non-confidential sections of development agreements be shared with other communities and jurisdictions to aid in subsequent negotiation processes
 8. Encourage the sustainable development of community and regional development in the north by adopting policies to retain employment and economic benefits within the immediate region as appropriate
 9. Continue to value and support fly-in/fly-out mining camps as an alternative to purpose-built resource town development

Research suggests that mining will continue to play an important role in the economic development of the north. As exploration expands further there will be several implications for the built-form and community and regional development. As former purpose-built communities continue to undergo decline, innovative policy solutions are needed to encourage growth and development in the north by retaining employment within the vicinity. The current lack of public policy governing the development and operation of fly-in resource camps suggests an opportunity for governments to expand policy in an area that is currently unregulated.

Public policy may help solve some of the problems associated with fly-in/fly-out models by providing an opportunity to regional economies of the north to share in mine development. The policy considerations are meant to act as broad suggestions to help set standards for resource development agreements and to disperse some of the benefits associated with new mine development. Whether a government chooses to regulate the development and operation of fly-in camps will depend heavily on fundamental attitudes toward the north (Shrimpton and Storey, 1992).

The purpose of the recommendations is to create a dialogue between various levels of government and to share experiences in managing regional development as fly-in operations continue to be viable resource extractive models. Ultimately, the finer details of public policy are up to provincial and federal governments. The specific shape of public policy will depend on

who is deemed the most appropriate beneficiaries of northern development and rest on the most appropriate ways to regulate development, such as through outright restrictions or through incentives. Regardless of the finer details, the adoption of a multi-level policy approach is timely given development pressures in the Canadian north.

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Appendix A: Quick Reference Guide: Benefits and Challenges of Fly-in/Fly-out Camps

Benefits	Issues/Challenges
Provides greater employment opportunities to aboriginal groups and communities with traditionally high unemployment rates	In remote areas without municipal government, there is no representation to bring light to camp issues
A reduction in the ecological footprint without having to develop entirely new communities and concomitant infrastructure	Firms are often not required to pay municipal government taxes in sites where they are located
A reduction in start-up costs and infrastructure investment required to carry out mining operations	Drawing employment from adjacent communities may place greater demand on services and infrastructure without revenue potential
Provides the ability of mining workforce to access greater range of services in urban centres through flexible work arrangements	Increased wages may create income variation in smaller communities used as pick-up points
Helps retain employment and development within the immediate region	Increased wages and on/off rotation structure may lead to substance abuse
Enables spin-off benefits of mine development and wages to be spread over a wider geographic area	Erodes of the traditional family and places stress on members during leave times, especially on the worker's partner
Smaller more controlled environment allows for easier security enforcement which is particularly important to diamond and gold mines	Flexible and temporary camps make monitoring environmental impacts difficult
Spreads the risk and impacts of closure over several municipalities as opposed to one	Enables fly-over of adjacent communities to more distant centres
Enables greater flexibility to industry in response to overseas competition and changes in commodity prices	May influence the migratory pattern of workers since transportation costs are not incurred by the individual worker
Camp infrastructure, accommodations, and inputs may be reused due to temporary nature	Without proper policy oversight and regional coordination, uneven development may occur in northern areas
Enables exploration and development further into the Canadian north	Enables the severing of industry ties to community

Source: Kuyek and Coumans, 2003; Shrimpton and Storey, 1992.