

# Connecting Canada

## Coast to Coast to Coast

A Proposal to Complete the  
Mackenzie Valley Highway  
to the Arctic Coast



November 2005



# Message from the Government of the Northwest Territories



In 1958, as part of the Roads to Resources Strategy, the federal government announced it would complete the Mackenzie Valley Highway to the Arctic Coast with the vision of a strong and prosperous Canada, connected coast to coast to coast. In 1972, Canada began construction of the highway to ensure that the benefits of northern resource development would flow to all of Canada and help assert Canada's sovereignty over the North and its abundant resources.

In 1977, along with the release of the Berger inquiry and the resulting 10-year moratorium on oil and gas development in the North, construction of the Mackenzie Valley Highway was halted.

Thirty years later, things have certainly changed. The political and economic difficulties that impeded the completion of the Mackenzie Valley Highway over three decades ago have improved. There is renewed interest in oil and gas exploration in the Mackenzie Valley and Beaufort Delta. The Mackenzie Valley Pipeline has been re-proposed with aboriginal groups now as development partners. The benefits that will flow to Canada from the Mackenzie Valley Highway are greater now than ever.

In August, the Council of the Federation met in Banff to discuss strategies to enhance the competitiveness and prosperity of Canada. Premiers from coast to coast to coast agreed that Canada's transportation infrastructure must include a north-south focus. The premiers concluded that Canada's transportation system is one of the most important foundations of our country's international competitiveness and is key to ensuring a better standard of living for all Canadians.

The time has come to complete what the federal government began almost four decades ago. It is time for Canada to be connected coast to coast to coast. Completion of the Mackenzie Valley Highway will improve the social and economic opportunities for the people of Canada and will ensure a sovereign, strong and prosperous Nation for generations to come.

A handwritten signature in black ink, appearing to read "J. Handley". The signature is fluid and cursive, with a large initial "J" and "H".

Joseph Handley  
Premier

A handwritten signature in black ink, appearing to read "Michael McLeod". The signature is highly stylized and cursive, with many loops and flourishes.

Michael McLeod  
Minister of Transportation





**Beaufort Delta Near Tuktoyaktuk**



# Table of Contents

	Page
<b>The Vision</b>	<b>2</b>
<b>The Plan</b>	<b>5</b>
<b>The Benefits</b>	<b>7</b>
<b>Conclusion</b>	<b>12</b>





# The Vision

The vision of an all-weather highway through the Mackenzie Valley to the Arctic Coast has been considered a strategic priority for Canada as far back as 1958 by the federal government. This road was seen as the final link to connect Canada from coast to coast to coast.

This vision has been recently restated in a number of GNWT strategic documents, including the Department of Transportation's 2000 Highway Strategy, **Investing in Roads for People and the Economy: A Highway Strategy for the Northwest Territories**, and two funding proposals in pursuit of this vision, **Corridors for Canada** and **Corridors for Canada II**. It is anticipated this highway will be included in a current provincial/territorial initiative to develop a National Transportation Strategy.

In the 1960's and 70's there were a number of studies undertaken by the federal government in support of constructing an all-weather highway through the valley. These studies include detailed road alignment, environmental data gathering and engineering design.

By 1972, the federal government started construction of the Mackenzie Valley Highway from Fort Simpson to Inuvik. Extensive construction, survey, environmental and design work was carried out until 1976.

In 1977, with the increasing uncertainty regarding oil and gas development potential and other political, economic and legal issues of the time, construction was halted. The federal government abandoned the route 18 kilometres south of Wrigley.

Work on this highway was revived by the GNWT in the early 2000's. Through a funding partnership with the federal government a program was started to construct permanent bridges at all stream crossings. These bridges, which will extend the winter road window of operation and reduce environmental concerns at stream crossings, will ultimately serve the future all-weather highway.

Canada is on the brink of significant opportunities with the development of oil and gas discoveries in the Mackenzie

*"...the Federation was built on a vision, expressed in a railway, to unite the country from coast to coast. This tangible expression of unifying the country continues to be reflected in our national transportation infrastructure, which now must include both east-west and north-south focus...Absent or aging highway systems ... are eroding Canada's ability to compete in the global economy"*

*From the Council of the Federation Communique, August 2005, issued by Canadian Premiers*



Valley and Beaufort Delta. The potential for Arctic shipping is a not so distant future reality. The significant natural gas and oil reserves in the Mackenzie Delta and Basin are key to the economic future and prosperity of the Canada. Connecting Canada to the Arctic Coast would both facilitate Canada's development of these resources and safeguard against the associated challenges.

While northern development offer significant opportunities for Canadians, it also poses significant risks. Canada's sovereignty, security and environmental integrity are threatened by the economic, political and environmental shifts ahead. These challenges, however, can be mitigated through the construction of an all-weather transportation corridor through the Mackenzie Valley to the Arctic coast. It is crucial that this major corridor be connected to Canada through an all-weather surface transportation link.

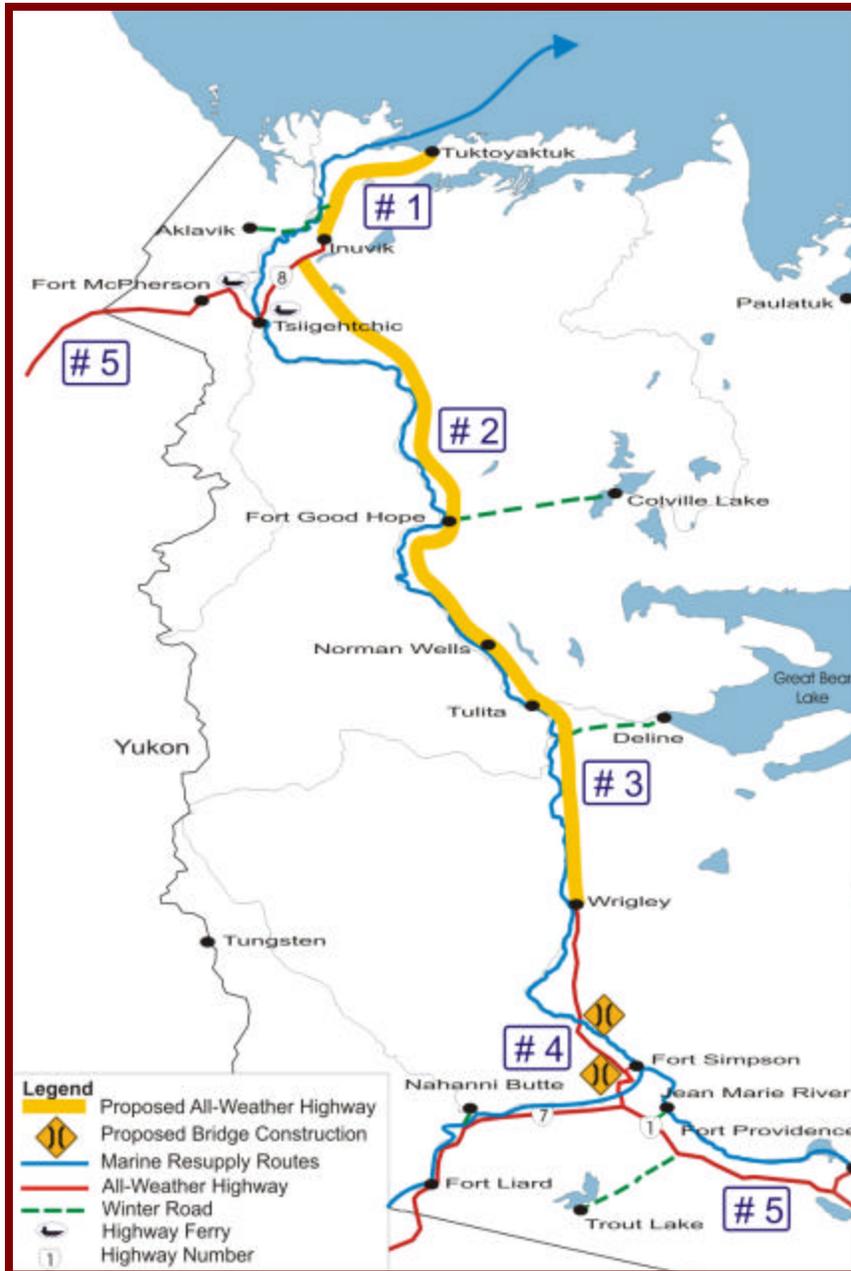
Connecting Canada to the Arctic coast is also crucial to the socioeconomic future of Canada. The completion of the Mackenzie Valley Highway to the Arctic coast will provide enormous opportunities for residents of the Northwest Territories and all Canadians. Its completion is a cornerstone of the GNWT's plan for present and future economic development in the NWT. However, the benefits of completing the Mackenzie Valley Highway extend much further than the northern regions it would be connecting. The benefits would extend coast to coast to coast. The highway is the final step in connecting Canada's three coasts and is critical for the future protection and prosperity of Canadians.

***“...a strong Northwest Territories is in the best economic, social, and security interests of Canada and all Canadians... We are in a period of unprecedented economic development in the Northwest Territories – development that not only benefits our territory but the country as a whole. This development provides a unique opportunity to make the Northwest Territories a self-reliant territory...The people of this territory want to be sure our communities are ready for large-scale development, such as the Mackenzie Valley pipeline. This means investing in our communities and people to prepare for and help mitigate the infrastructure and social pressures that will accompany this development... The additional needs created by our rapidly expanding economy place an increased demand on our resources. The long-term implication for our territory is serious.”***

***Premier Joseph Handley  
Wednesday, February 23, 2005  
Statement to the Legislative Assembly: A Northern Strategy***



# The Plan



## Connecting Canada to the Arctic Coast

The proposed all-weather highway through the Mackenzie Valley up to the Arctic coast is estimated to cost \$700 million. This investment would bring measurable and lasting economic and social benefits to the Northwest Territories and Canada. The construction components of the \$700 million investment to be considered include:

1. Construction of an all-weather road from Inuvik to Tuktoyaktuk
2. Extension of the Mackenzie Valley Winter Road from Fort Good Hope to the Dempster Highway south of Inuvik
3. Construction of an all-weather road from Wrigley to the Dempster south of Inuvik
4. Construction of permanent bridges across the Mackenzie and Liard rivers on the Mackenzie Highway
5. Upgrades to the existing Mackenzie and Dempster highways

## The Financing Solution

The GNWT proposes a partnership with the federal government to fund the construction of the Mackenzie Valley Highway extension. The \$700 million in capital would be borrowed from a financial institution with the backing of a federal loan guarantee to ensure the best interest rate. The debt would be repaid over a 35-year period; the GNWT would be responsible for 25% and the federal government 75%. The annual revenue requirement to service the debt and cover O&M costs is estimated at \$40 million.



The GNWT would consider a toll on commercial vehicles to partially offset the annual revenue requirement. At a rate of \$500 per vehicle and a projection of 10,000 vehicles, the governments initially would recoup \$5 million per year. With the toll rate adjusted for inflation, the amount of revenue generated likely will more than double over the course of the repayment period. With an average inflation rate increase of 1.5% and similar increase in traffic, the governments could collect over \$300 million.

It is estimated that the direct cost savings from the efficiencies of operating on the all-weather road versus the winter road or other more expensive modes of transportation will more than cover the toll for commercial vehicle operators and users.

The toll revenue projection, which is derived from Prolog's **Logistics Opportunities and Transportation Impacts In the Northwest Territories during the Mackenzie Gas Project**, is conservative.

This initial projection of commercial traffic is just the beginning. Once a pipeline is in place and capable of delivering oil and gas from the Northwest Territories to market and an all-weather Mackenzie Valley Highway is open to the oil and gas industry, a permanent exploration and production sector will develop to rival those in Alberta and northern British Columbia. As with the construction of the Canadian National Railway, it is difficult to truly anticipate the degree of development that will occur with the completion of the Mackenzie Valley Highway to the Arctic Coast. This will result in a corresponding increase in the volume of commercial vehicles.

The GNWT could also consider alternative financing options such as a development fee on oil and gas exploration.

This option is attractive because the cost of community re-supply would not increase as it would with a toll on commercial vehicles.

Cost Estimate	
Construction	\$600 million
Engineering	\$60 million
Financing	\$40 million
<b>Total \$700 million</b>	

Annual Revenue Requirement (per year)	
Loan Repayment	\$35 million
Operation and Management	\$5 million
<b>Total \$40 million</b>	
Federal Government Share	\$30 million
GNWT Share	\$10 million

Annual Commercial Traffic Projection (2010) Prolog 2005	
Baseline	3,000 Loads
Oil and Gas Exploration	3,000 Loads
Pipeline Induced	1,000 Loads
Diversion from Barge	2,000 Loads
Diversion from Dempster Highway	500 Loads
Diversion from Air Freight	500 Loads
<b>Total 10,000 Loads</b>	

# The Benefits

## The Mackenzie Valley Highway will Facilitate Resource Development that will Bring Significant Benefits to All of Canada

Increased development activity in the Mackenzie Valley, facilitated by all-weather access, will result in increased revenue flows to Canada, through royalties and taxes. Much of the increased employment impacts will occur outside of the Northwest Territories. Economic modeling estimates that southern Canada would capture approximately 71 percent of jobs and 85 percent of tax revenue resulting from Northwest Territories resource development.

Over the next 30 years, Northwest Territories petroleum developments alone are expected to generate the following impacts:

- **Contribute up to \$58.9 billion to the national GDP**
- **Create between 86,000 to 181,000 person-years of employment across Canada, 71,118 to 159,719 of which would be created outside the NWT, and**
- **Generate up to \$15 billion in government revenues, of which the vast majority would flow to the federal government.**

The Northwest Territories experienced economic growth of 20.8 percent in 2003, while the growth for Canada was two percent. Among provinces and territories, the Northwest Territories had the highest growth in both 2001 and 2003. Economic forecasting

predicts that it will grow by a further 10.6 percent in 2004 and 10.1 percent in 2005.

Fuelled by non-renewable resource development, the NWT GDP has grown 52.5 percent from 2000 to 2004. To put this in perspective, the comparable number for Canada is about 12 percent. Non-renewable resource development is expected to continue to drive strong economic growth for the foreseeable future.

At 6 trillion cubic feet per year (tcf/year), Canada is the world's third largest producer of natural gas. With total export growth already over 300 percent since 1989, the demand is expected to reach approximately 32 tcf/year by the year 2010. Export volume is expected to increase another 40 percent over the next decade and 50 percent by 2025. To meet the growing global demand, the Northwest Territories will be the main new source of natural gas production and export in Canada.



**Mackenzie Delta**



The Northwest Territories has 60 to 70 tcf of proven natural gas, with an estimated total value of over \$140 billion. The National Energy Board estimates that the Beaufort Delta region contains a further 55 tcf of potential reserves.

In March 2005, Northrock Industries announced the largest oil and gas discovery in the last decade. The well, expected to produce 100 times the volume of the average well in Northern Alberta, was discovered near Tulita. This significant discovery, coupled with improved logistics provided by upgraded infrastructure, will increase exploration activities into the future. The benefits of exploration and development, in terms of business and employment opportunities, will continue to improve and support the quality of life of Northerners.

Along with oil and gas development and exploration, the Mackenzie Gas Project will bring significant benefits to Canada. Pre-construction work is expected to start in 2006, with pipeline construction scheduled from 2007 to 2010. If the Mackenzie Gas Project is approved, and this work schedule holds, natural gas will begin flowing south from the Beaufort Delta by the end of this decade. Based on the proven reserves alone, NWT gas will supply southern markets until at least 2033. It is estimated that six times the proven reserves exist.

Investment for these gas projects and the associated long-term development of the Beaufort Delta reserves will be approximately \$7.6 billion. The return in dollars and jobs, over the next 30 years, based on a price scenario of \$4 US per thousand cubic feet (Mcf), would see:

- **Total project revenues of \$65.9 billion**
- **Gross Domestic Product of \$58.8 billion**
- **Total government revenues of \$15.1 billion**
  - **\$13.3 billion to the federal government, and**
  - **\$631 million to the GNWT**
- **Total labour income would be \$9.9 billion**
- **Total direct and indirect employment would be an estimated 180,000 person years**
- **Re-investment of corporate profits in new exploration and development could generate an additional \$22 billion in GDP and between 26,000 and 272,000 additional person years of employment, and**
- **The impact of the spending of labour income could generate another \$0.2 to \$0.4 billion in GDP and 58,000 to 132,000 more person years of employment.**



**Mackenzie Valley Winter Road**



*The NWT was ranked 4th out of 64 countries worldwide surveyed by the Fraser Institute in terms of mineral potential. However the NWT ranked last in terms of quality of infrastructure. 41% of mining companies indicated the quality of infrastructure was a strong deterrent to investment, with 4% indicating they would not pursue exploration due to this factor.*

*The Fraser Institute Annual Survey of Mining Companies  
2004/2005*

New gas supplies would also help restrain gas price increases, saving Canadian consumers \$350 million per year. The availability of this supply of cleaner burning fuel could also save Canada up to \$230 million per year in greenhouse gas emission costs.

Oil and gas deposits in the Northwest Territories are located



in remote regions and lack the required transportation infrastructure. This increases the cost of exploration programs. To overcome this deficit, deposits must be larger and higher in grade to be considered for development compared with other regions with better transportation access.

The Mackenzie Valley also has significant mineral resource potential, however, unlike the diamond industries of the Slave Geologic Province, base metal deposits of the Mackenzie Valley require significant transportation demands to export large volumes of ore. This has been the main impediment to further exploration and development of mineral resources. Recent upturns in base metal prices have resulted in renewed interest in mineral production. The Cantung mine near the Yukon border has announced its reopening and the Prairie Creek Mine in the southern Mackenzie Valley continues to pursue the necessary permits to begin construction and operation. An all-weather



corridor would facilitate increased exploration and development of the Valley's potentially rich mineral potential.

In addition to non-renewable resource development, the Mackenzie Valley Highway would also facilitate renewable resource development, such as hydro and tourism. Preliminary studies indicate that the Northwest Territories has the potential to generate more hydro power than James Bay or Churchill Falls, using modern, run-of-the-river technology that eliminates the need for large dams and massive flooding. Not only will hydro development diversify the NWT economy but it will also help reduce Canadian greenhouse gas emissions by supplying a renewable and clean energy alternative.

The NWT hydroelectric generation potential is massive, with as much as 11,000 megawatts in undeveloped sites. This potential is world class. Future hydro development prospects include Upper Snare River, Taltson, Great Bear River and Lac La Martre River. Improved transportation infrastructure will help facilitate the development of these future hydro projects.

The Mackenzie all-weather connection will also improve tourism opportunities in both the Northwest Territories, Yukon Territory and British Columbia. The link would provide a circle route through the three western provinces. This would attract additional tourists that are presently deterred from visiting the North due to long travel distances and the necessity to travel back the same way they arrived. The circle route would essential double the tourism opportunities for visitors.

The tourism industry is an important part of our renewable resource sector. Tourists and business visitors contribute \$90 million in direct spending annually into the NWT economy and the tourism industry has the potential to provide an even larger contribution, especially in smaller communities. We need to continue to support the tourism industry in its efforts to market the NWT as a four-season destination and as a safe, secure place for adventure travel.

## **The Mackenzie Valley Highway will Ensure Canada's Sovereignty in the North**

In the three northern territories, only one road, the Dempster Highway, crosses the Arctic Circle. This road does not reach the Arctic coast. The Arctic coast perimeter is longer than Canada's other two coasts combined. This vast, remote and largely unpatrolled coastline poses an increasing threat in terms of national security.



**Pingo Near Tuktoyaktuk**



**Entrance of the Ice Road to Tuktoyaktuk**

In these times of a shifting political landscape, globalization, climate change and energy concerns, the global focus on Canada's North is greater than it ever has been. Correspondingly, asserting Canada's sovereignty has never been so important.

Sovereignty over an area is generally provided by the presence of people, communities, a governance structure and support infrastructure. Sovereignty can be compromised if one or more of these elements is missing. The support infrastructure required to maintain sovereignty in the North is inadequate. This lack of infrastructure will eventually whittle away at the other support elements that do exist—people and communities.

Canada's sovereignty is currently being challenged by many countries interested in an "over the top" shipping route from Europe to Pacific North America and Asia. The trend of global warming may, in the not too distant future, make trans-navigation of the Northwest Passage economically viable. A highway to the Arctic would help assert Canadian sovereignty over Canadian Arctic waterways as shipping routes become increasingly accessible.

## **The Mackenzie Valley Highway will Improve Canada's Northern Security and Emergency Response**

Existing northern infrastructure is inadequate to respond to northern security, environmental emergencies, natural disasters, and non-environmental accidents in the Mackenzie Valley and the Arctic Coast. As Northern resource development, shipping and polar route flights increase, the threat of environmental emergency or other disaster increases. Surface infrastructure will be instrumental in planning for and responding to the increasing threat of security breaches, accidents or other emergencies.

These risks would be significantly reduced with all-weather road access. All-weather access would protect the delicate northern environment by improving and reducing the high cost of environmental monitoring activities and reducing the emergency response time. In addition, emergency and environmental response equipment, such as pump trucks, that would normally not have access to remote sites would



become available. The Mackenzie Valley Highway will be instrumental in the protection of both human and environmental health.

## **The Mackenzie Valley Highway will Support the Economic and Social Development of Northerners**

For the NWT, an all-weather highway would connect Mackenzie Valley and Beaufort Delta communities and provide the mobility and access to services that other Canadians take for granted. Moreover, it would provide the opportunity to diversify the NWT's economy through expanded renewable and non-renewable resource development and tourism opportunities. Increased resource development will, in turn, result in employment, investment, and business opportunities for NWT companies, including manufacturing and value-added opportunities. Economic diversification will lead towards self-reliance and the opportunity for more NWT residents to provide a good standard of living and quality of life for their families.

As of December 2004, the territorial employment rate was almost 71 percent, the second highest in Canada. Despite our booming economy, we continue to observe quality of life indicators that are significantly below national standards. Economic activity in the NWT is unevenly distributed with unemployment rates ranging from 5 percent in Yellowknife to almost 40 percent in smaller communities.

In addition to these alarming employment statistics, population statistics are showing a decline in smaller

northern communities. Limited opportunities for employment and the high cost of living are factors contributing to this decline. In northern communities, average basic food prices are almost double the average prices in Yellowknife. For example, a 4 litre jug of milk costs over \$11 dollars in Paulatuk. Transportation system improvements would help turn around this trend and contribute to the sustainability of northern communities and, in turn, northern sovereignty.

Without an all-weather connection some communities' and residents' access to resource development opportunities will be lost. Also lost, will be an opportunity to move forward on an economic diversification agenda for these communities. The all-weather connection will ensure all communities have access to benefit from resource development and related opportunities.



**Two Pingos in the Distance from the Tuktoyaktuk Airport**



## **The Mackenzie Valley Highway will Improve the North's Capacity to Adapt to Climate Change**

According to the 2003 Environment Canada report on temperature and precipitation trends, warmer than normal temperatures have occurred in 25 of the last 26 seasons, and this warming trend has been strongest in northern Canada. This warming trend in the NWT has and will continue to pose challenges and opportunities for the transportation system.



The Mackenzie Valley transportation system relies on a number of ferries, ice bridges and winter roads to connect communities and provide access to resources.

Climate change has impacted fall freeze-up and spring thaw dates, which has delayed the opening dates of ice bridges on our all-weather highways and reduced the operating window of our winter road system.

The variable nature of the transportation system adds uncertainty to development projects and poses challenges for community mobility, resupply and economic diversification. The existing limited transportation window makes development and exploration activities expensive and inefficient.

An all-weather link through the Mackenzie Valley would alleviate the increasing problems associated with the reduction of winter road reliability, uncertainty of road opening and closing dates and reduced periods of operation. Bridge building and all-weather road construction would transform the current intermittent system to one that functions 365 days per year.



# Conclusion

In summary, the Mackenzie Valley Highway will enhance northern security and sovereignty and improve our ability to respond to emergencies and adapt to changing climatic conditions. The highway will support the non-renewable resource industry, facilitate the diversification of the Northwest Territories economy and improve the quality of life of its citizens who will gain better access to essential services, increased mobility and a lower cost of living. These benefits will realize safer and healthier communities.

An all-weather road corridor will enable us to create an environment that attracts industry, manages development effectively, and maximizes the benefits from resource development. Investment will ensure that additional large-scale resource developments are able to proceed which will, in turn, create numerous opportunities for business and industry in the Northwest Territories, and across Canada. The innovative approach to funding will significantly benefit Canadians, without placing any significant financial burden on any group or level of government.

Support for **Connecting Canada** will ensure that resource development in the Northwest Territories will contribute to self-reliant communities and a strong and prosperous nation. The stream of benefits that will be enjoyed by present and future generations of Northerners and Canadians over the next 30 years, from the Mackenzie Gas Project alone, will:

- **Contribute between \$29 and \$59 billion to the national GDP**
- **Create up to \$10 million in labour income**

- **Create between 86,000 and 181,000 person-years of employment across Canada, 71% of these jobs created outside the NWT, and**
- **Generate between \$6 and \$13 billion in government revenues, of which up to 95% will flow to the federal government.**

These benefits, which are already significant, do not include the considerable additional growth from new exploration and development, job-generating secondary industries and reinvestment of profits. Re-investment of profits into new exploration and development could generate an additional \$22 billion in GDP and 272,000 additional person years of employment.

While Northern development offer significant opportunities for Canadians, it also pose significant risks. Canada's sovereignty, security and environmental integrity are threatened with the economic, political and environmental shifts ahead. These challenges, however, can be mitigated through the construction of an all-weather transportation corridor through the Mackenzie Valley to the Arctic Coast. It is crucial that this major corridor be connected to Canada through an all-weather surface transportation link.

Connecting Canada to the Arctic Coast is crucial to the socioeconomic future of Canada. The completion of the Mackenzie Valley Highway to the Arctic Coast will provide enormous opportunities for residents of the Northwest Territories and all Canadians. The benefits would extend coast to coast to coast. The highway is the final step in connecting Canada's three coasts and is critical for the future protection and prosperity of Canadians.

