

11. SOCIO-ECONOMICS

Introduction

The findings of the socio-economic impact assessment for the Mackenzie Gas Project (see EIS Volume 6) were based on developing the following components (see Section 1, Introduction, of this document):

- anchor fields
- gathering pipelines and associated facilities
- NGL and gas pipeline corridor
- gas pipeline corridor
- infrastructure
- NGTL interconnect facility
- NGTL Dickins Lake Section

The NGTL interconnect facility and the NGTL Dickins Lake Section, are located in northwestern Alberta. The NGTL interconnect facility and Dickins Lake assessment were included in the EIS.

This EIS supplemental information includes updated information on the proposed expansion and extension of the NGTL system. This includes the extension of the Northwest Mainline referred to as the Northwest Mainline (Dickins Lake Section) and the expansion of the Northwest Mainline referred to as the Northwest Mainline Loop (Vardie River Section).

The capital expenditure data for the NGTL interconnect facility and the Dickins Lake Section have been revised since the EIS was filed and new capital expenditure information, not available for the EIS, is provided for the Vardie River Section and the heater facility. The workforce that constructs the interconnect facility and the Dickins Lake Section in 2008–2009 will also construct the Vardie River Section and heater station during the same construction season.

See under EIS Summary for a summary of the EIS findings for socio-economics.

EIS Summary

The Mackenzie Gas Project has the potential to deliver significant economic benefits in the Northwest Territories and elsewhere in Canada. These benefits include:

- jobs
- labour income
- increases in gross domestic product (GDP) and government revenue

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However, these benefits carry the risk that existing social wellness conditions, particularly in the Northwest Territories, might be negatively affected. The challenge is to manage the flow and distribution of economic benefits, and undertake mitigation as necessary, to limit undesirable changes in wellness conditions.

Because socio-economic effects involve many aspects of everyday individual and community conditions and public services, the responsibility for managing these effects must be shared. The Mackenzie Gas Project will need the cooperation of potentially affected communities and governments to effectively meet this challenge. For the specific commitments of the Mackenzie Gas Project proponents toward implementing this shared responsibility, see EIS Volume 6.

The socio-economic valued components (VCs) assessed for the Mackenzie Gas Project in EIS Volume 6 included:

- procurement, employment, income and gross domestic product (GDP)
- population change and movement
- transportation infrastructure and services
- energy and utilities infrastructure
- housing
- recreation resources
- governance
- community well-being and delivery of social services
- health conditions and health care services
- public safety and protection services
- education attainment and service
- traditional culture and harvesting
- nontraditional land and resource use
- protected areas
- visual and aesthetic resources
- heritage resources

Key questions (see EIS Volume 6) were developed to address the issues identified, and to determine effects on the socio-economic VCs. The key questions were based on a summary of the concerns and issues identified during community meetings and technical regional workshops, and the expertise and professional knowledge of the assessment team.

Effect pathway diagrams were developed for each key question to illustrate the potential cause–effect relationships between the Mackenzie Gas Project and each VC.

The VCs and key questions used for the Mackenzie Gas Project were applied to NGTL's Dickins Lake Section in EIS Volume 6. In this supplemental document,

these VCs and key questions have been applied to the Dickins Lake and Vardie River sections and associated facilities. The VCs considered in this report are:

- procurement, employment, income and GDP
- transportation infrastructure and services
- nontraditional land and resource use

However, because only procurement, employment, income and GDP are expected to show a detectable change beyond what was predicted in the EIS, these VCs are the primary focus of the socio-economic assessment contained in this supplemental document.

Transportation infrastructure and services, and nontraditional land and resource use VCs will also be affected by the addition of the Vardie River Section. However, the changes are expected to be within the normal range of variability, and ultimately would not change the predicted residual effects identified in EIS Volume 6. No detectable change is expected in the other VCs, nor are they expected to change the predicted residual effects identified in EIS Volume 6. Therefore, they are not discussed in this document.

Study Area

The study area encompasses the communities of High Level, Rainbow Lake and Zama City, as well as three communities of the Dene Tha' First Nation (DTFN). It also includes the Dickins Lake and Vardie River sections (see Section 1, Introduction).

Industrial and Commercial Centres and DTFN Communities

In the northwestern Alberta industrial and commercial centres (ICCs) of High Level, Rainbow Lake and Zama City, and the DTFN traditional land use area, capital expenditures for goods, services and labour will be linked to proposed NGTL components and activities including:

- the NGTL interconnect facility
- NGTL's Dickins Lake Section
- NGTL's Vardie River Section
- valves and heaters
- infrastructure sites for camps, fuel and equipment storage
- rail sidings and laydown areas for pipe storage
- logistics required to transport camps, fuel, pipe and equipment
- other labour, goods and services required

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Baseline

Methods

The socio-economic baseline conditions for the proposed NGTL extension and expansion are the same as those described in EIS Volume 4.

Relevant KIs for the Vardie River and Dickins Lake sections are:

- GDP for Alberta
- employment (direct, indirect and induced) for Alberta
- labour income for Alberta
- land and resource use in Alberta

The new data and analyses are for construction in Alberta for the year 2008–2009. These data and analyses affect only the Canada total and the Alberta KIs. The impacts on other KIs are small and do not change the assessment of effect attributes or the significance of effects.

Estimates of economic effects were determined from simulations using estimates of employment and new capital expenditures supplied by NGTL. Impacts for the combined Dickins Lake and Vardie River sections were estimated using the Alberta government's Input-Output Model (I-O Model).

The Alberta I-O Model simulates direct, indirect and induced effects at the provincial level only. The model does not provide estimates at the regional level for northwestern Alberta, or impacts on the rest of Canada.

The results from the Alberta I-O Model were added to those of the national I-O Model, which was used to estimate the impacts of the Mackenzie Gas Project components in the Northwest Territories, to estimate the combined effects.

Socio-Economic Effects

Effect Pathways

Key social and economic questions were developed to address the issues identified through community and stakeholder participation in the scoping process, and to determine effects on the valued components (VCs) chosen for this assessment. The assessment examined how the Dickins Lake and Vardie River sections might affect the regional economy in northwestern Alberta.

Figure 11-1 shows the effect pathway that addresses changes in procurement, employment, labour, income and the regional economies as applied to the Mackenzie Gas Project, and the regional and territorial economies of the Northwest Territories. This diagram is also relevant to the regional economy in northwestern Alberta.

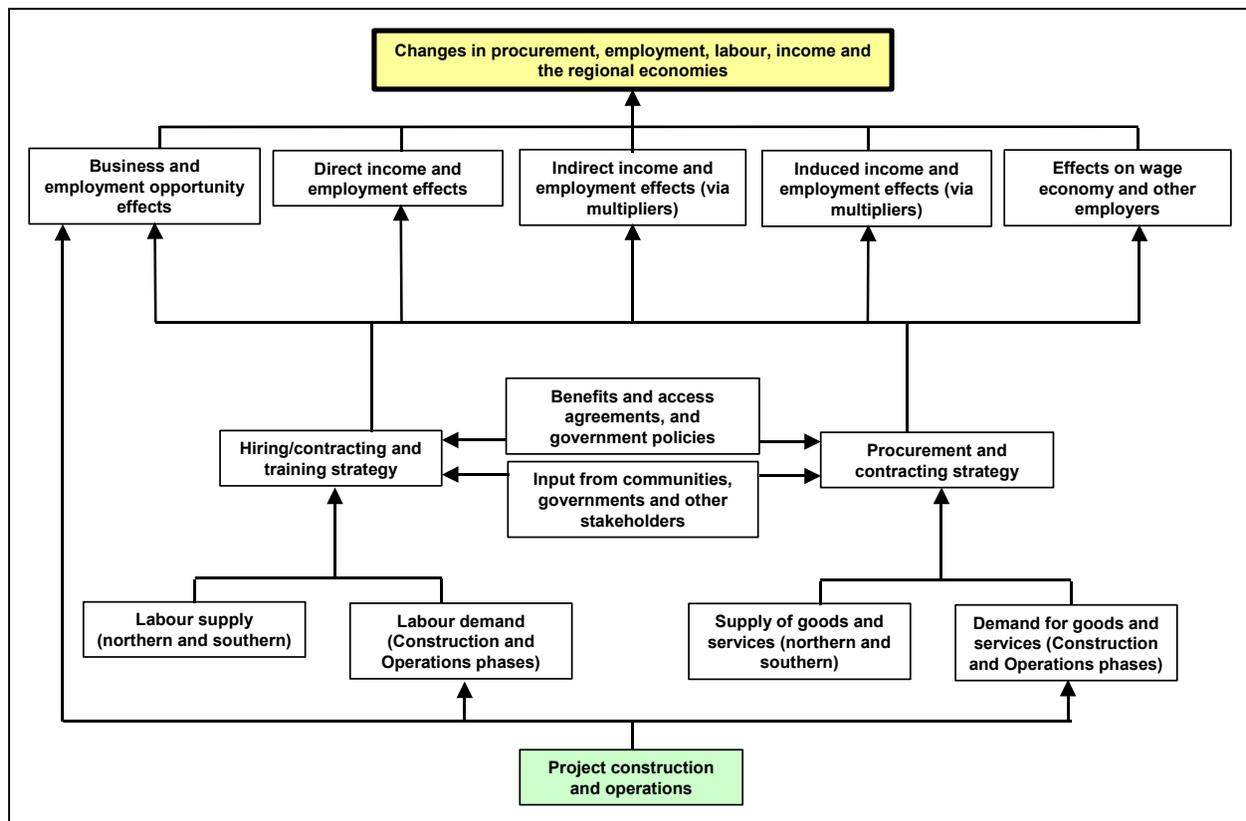


Figure 11-1: Mackenzie Gas Project Effects on Regional and NWT Economies

Procurement and contracting strategies will be affected by:

- the supply of goods and services
- the demand for goods and services
- any benefits and access agreements
- inputs from communities and other stakeholders

These strategies will have multiple regional effects on:

- business opportunities
- revenue and capacity development
- direct, indirect and induced income and employment

The analysis of the associated effect pathways for the combined Dickins Lake and Vardie River sections' effects on the regional and Alberta economies, and employment and expenditures, is based on quantitative and qualitative data.

Effect Attributes

The economic effects assessed are presented in terms of employment, income and GDP. However, no standard numerical thresholds exist against which to measure

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attributes. Table 11-1 defines the attributes used to determine effect significance, based on this limitation. Professional judgment, and linkages to other disciplines, were used to develop attribute definitions and to predict effects.

Table 11-1: Definitions of Effect Attributes for Socio-Economics

Attribute	Definition
Direction	
Adverse	Effect is worsening or is not desirable
Neutral	Effect is not changing compared with baseline conditions and trends
Positive	Effect is improving or is desirable
Magnitude	
No effect	Effect does not occur
Low	Effect occurs that might or might not be detectable, but is within the normal range of variability
Moderate	Clearly an effect but unlikely to pose a serious risk to the VC or represent a management challenge
High	Effect is likely to pose a serious risk to the VC and represents a management challenge
Geographic Extent	
Local	Effect is limited to specific affected persons or communities
Regional	Effect extends to several communities in the affected region
Beyond regional	Effect extends beyond one region to include communities in more than one region of the study area, or to include commercial or industrial centres in the Northwest Territories and northwestern Alberta
National	Effect on the VC extends nationally, or beyond the communities in the study area
Duration	
Short term	Effect is limited to construction
Medium term	Effect is not applicable
Long term	Effect extends throughout operations or beyond
Far future	Not applicable
NOTES: Definitions in this table provide a framework for describing project effects. See EIS Volume 6 for applications of definitions for specific topics.	

Socio-economic effects can be either positive or adverse in direction, and sometimes both. If the effect is both positive and negative, the net effect is estimated and the predominant direction is stated.

Analysis and Significance

**Procurement, Employment and Regional Economic Effects –
Northwestern Alberta**

The Dickins Lake and Vardie River sections are expected to be constructed during winter 2008–2009. These sections will connect the termination point of the

Mackenzie Valley pipeline just south of the Northwest Territories–Alberta boundary to NGTL’s existing Thunder Creek compressor station.

The estimated capital cost of the proposed NGTL facilities is \$194.3 million, of which \$113.7 million will be spent on purchasing goods and services from Alberta businesses, and \$81 million will be spent outside Alberta (see Table 11-2). The value of expenditures that will be retained in the northwestern Alberta ICCs has not been determined (NGTL 2004).

Table 11-2: Direct Project Expenditures by Location (\$Millions 2003\$)

	2006–2007	2007–2008	2008–2009	2009–2010	Total
Atlantic	0	0	0	0	0
Quebec	0	0	24	0	24
Ontario	0	0	24	0	24
Alberta	0	0	114	0	114
Other Canada	0	0	24	0	24
NWT	0	0	0	0	0
Foreign	0	0	10	0	10
Total	0	0	194	0	194
NOTES: Numbers might not add up because of rounding					

Construction of the Dickins Lake and Vardie River sections is expected to generate a peak of 400 direct jobs for Alberta residents during winter 2008–2009. The same workforce will construct both the Dickins Lake and Vardie River sections. Camps will be provided for all workers involved in initial access development, pipeline and facilities construction and final cleanup. Construction of the Dickins Lake and Vardie River sections is expected to generate 1,096 indirect and 414 induced jobs, for a total of 1,910 jobs in the province.

Labour income associated with this project-related employment is expected to exceed \$75 million (NGTL 2004). Any construction effects are expected to be positive, low magnitude, regional and beyond regional in geographic extent, and short term (see Table 11-3).

Table 11-3: Effects of Procurement, Employment and Regional Economic Effects on ICCs from NGTL Facilities

	Effect Attribute				Significant
	Direction	Magnitude	Geographic Extent	Duration	
ICCs	Positive	Low	Regional and beyond regional	Short term	No

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Procurement, Employment and Regional Economic Effects – DTFN

Pipeline construction and related activities might generate economic benefits for DTFN members.

Economic benefits could include training, employment and business opportunities, which will increase the existing capacity of the DTFN labour force and businesses.

Previous pipeline projects located in or traversing DTFN traditional territory have created economic opportunities for the DTFN. Benefits have included:

- right-of-way clearing contracts
- camp and catering contracts
- training and employment of individuals for pipeline installation work
- pipeline inspection and monitoring
- band liaison
- wildlife monitoring

These types of economic opportunities could be provided to qualified and competitive DTFN businesses and qualified band members.

Economic effects on the DTFN are expected to be positive, low magnitude, and regional and beyond regional in extent (see Table 11-4).

Table 11-4: Effects of Procurement, Employment and Regional Economic Effects on DTFN from NGTL Facilities

	Effect Attribute				Significant
	Direction	Magnitude	Geographic Extent	Duration	
DTFN	Positive	Low	Regional and beyond regional	Short term	No

Alberta Economic Effects

The effect on the Alberta economy was analyzed using three KIs:

- GDP
- employment
- labour income

Effects on Gross Domestic Product

The GDP is a generally accepted measure of economic activity and performance. It describes the total value of all goods produced and services provided in a defined economic region in a year. Measurable effects will occur only during construction.

The effect of project expenditures on GDP is an accepted KI of general economic effects of large capital projects, such as this one. For the estimated effects of construction on the Alberta GDP, see Table 11-5. For this assessment, direct GDP is assumed to include all direct project construction labour income, regardless of the location of employee residence. For indirect and induced effects, labour income follows the concept of GDP and is attributed to the region or province where the employee lives and maintains a residence.

Table 11-5: Direct, Indirect and Induced Gross Domestic Product at Basic Prices

	2006–2007	2007–2008	2008–2009	2009–2010	Total
Direct	0	0	27	0	27
Indirect	0	0	62	0	62
Induced	0	0	28	0	28
Total	0	0	118	0	118

NOTES:
Figures are in millions of constant 2003\$
Numbers might not add up because of rounding

Direct effects during construction are expected to generate \$27 million of GDP. Indirect effects during construction are expected to generate \$62 million of GDP. Induced effects are expected to generate \$28 million of GDP.

A range of industries in Alberta will generate GDP effects. The two largest will be construction, and professional and technical services. For each of these industries, it is expected that more than \$28 million will be generated.

Employment Effects

Using employment as a KI is central to understanding the economic effects of a project.

Construction of the Dickins Lake and Vardie River sections is expected to generate a peak of 400 direct jobs for Alberta residents during winter 2008–2009. A total of 1,910 jobs is expected to be generated in the province, including 1,096 indirect and 414 induced jobs (see Table 11-6).

Table 11-6: Direct, Indirect and Induced Employment

	2006–2007	2007–2008	2008–2009	2009–2010	Total
Direct	0	0	400	0	400
Indirect	0	0	1,096	0	1,096
Induced	0	0	414	0	414
Total	0	0	1,910	0	1,910

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These jobs will occur in a wide range of industries. The professional and technical services sector will experience the largest growth, generating 516 jobs. The second largest industry affected will be construction, with 414 jobs, followed by accommodation and food services, with 252 jobs.

Labour Income Effects

Although job creation is central to measuring economic effects, generating labour income will most directly affect the quality of life of groups and individuals. For estimated effects of construction in labour income for Alberta, see Table 11-7. In Alberta, direct labour income is expected to be \$17 million (23%) of the labour income created. The largest effect is expected to be indirect, with \$43 million (57%) of total direct labour income. The induced effect is expected to be \$16 million (21%) of labour income generated.

Labour income during construction is expected to have the largest effect in the professional and technical services sector, at \$24 million, followed by construction, at \$17 million.

Table 11-7: Direct, Indirect and Induced Labour Income Effects

	2006–2007	2007–2008	2008–2009	2009–2010	Total
Direct	0	0	17	0	17
Indirect	0	0	43	0	43
Induced	0	0	16	0	16
Total	0	0	75	0	75
NOTES: Figures are in millions of constant 2003\$ Numbers might not add up because of rounding					

Transportation

The NGTL construction workforce for the Dickins Lake Section will also construct the Vardie River Section. This work is expected to be done during the winter construction season of 2008–2009, when the Dickins Lake Section is built. As a result, no noticeable change in the volume of traffic transporting the construction workforce to and from northwestern Alberta by air or ground is expected to occur as a result of constructing the Vardie River Section. However, the timing of this travel will change somewhat because of the longer construction activity.

Rail and ground transportation routes and schedules for transporting pipe, modules, materials and heavy equipment, should not differ noticeably from that reported in EIS Volume 6. However, the volume of road and rail traffic will increase and continue over a longer period.

The key questions and effects related to the traffic created as a result of transporting the construction workforce and materials will not change from the predictions in EIS Volume 6, nor will the assessment of residual effects change.

Land and Resource Use

Other than revised capital expenditures, the only new information for northwestern Alberta applies to land and resource use. The southern 22 km of the Vardie River Section (Townships 116, 117 and 118) are in Forest Management Agreement 0200040, a 25-year agreement held by Tolko Industries that allows the company to harvest conifers (Gabourie 2002). Tolko Industries has planned road development so it can begin harvesting in December 2004 (Cran 2004). Discussions will take place between NGTL and Tolko Industries before timber clearing starts. Following these discussions, the Vardie River Section is not expected to have an effect on timber operations in the area.

Combined Project Effects

The overall socio-economic effects of the proposed Dickins Lake and Vardie River sections will not change materially from those described in EIS Volume 6, Section 3. The updated analysis has resulted in increases in the few key economic benefit indicators discussed previously. These apply only during construction.

Incremental impacts during operations are small and are not included in this analysis.

Construction of the Dickins Lake and Vardie River sections is expected to generate:

- \$194 million in capital expenditures, which amounts to 3% of total Mackenzie Gas Project capital expenditures
- \$118 million in GDP, which represents 1.7% of the total GDP as a result of the Mackenzie Gas Project
- 1,910 total jobs (direct, indirect and induced), or 1.6% of the total number of jobs created by the Mackenzie Gas Project
- \$75 million in labour income, which represents 1.6% of total labour income generated by the Mackenzie Gas Project

The EIS concluded that the Mackenzie Gas Project in combination with NGTL's Dickins Lake Section would produce no significant socio-economic effects in northwestern Alberta.

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This assessment for northwestern Alberta concludes that the Mackenzie Gas Project combined with NGTL's Dickins Lake and Vardie River sections will also produce no significant socio-economic effects in northwestern Alberta.