

RESEARCH APPENDIX:  
ECONOMIC BENEFITS OF  
INFRASTRUCTURE  
DEVELOPMENT IN FIRST  
NATIONS COMMUNITIES

# *ECONOMIC BENEFITS OF INFRASTRUCTURE DEVELOPMENT IN FIRST NATION COMMUNITIES*



First Nations Tax Commission  
Commission de la fiscalité des premières nations

*Prepared for: First Nations Tax*

*Commission By: Urban Systems Ltd.*

Date: March 2018

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## Economic Benefits of Infrastructure Development in First Nations Communities

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## Economic Benefits of Infrastructure Development in First Nations Communities

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## 1.0 INTRODUCTION

First Nation communities in Canada are served, to varying degrees, by different types of infrastructure which are intended to provide for the needs of members and, in some instances, economic development activities. In the context of this report, the term 'infrastructure' embraces a wide range of facilities including water and sanitary sewer utilities, transportation networks, buildings (for use as schools, health centres, residences and other purposes) and other components such as broadband communications networks and energy generation systems. These types of infrastructure are found predominantly within the settled portions of First Nation communities where residential, commercial, industrial, community and other activities are located. There are also instances where infrastructure such as transportation and energy networks serve activities (an example would be mining operations) within a Nation's traditional lands which may not contain settlements.

The purpose of this report is to describe the economic benefits of infrastructure development in First Nation communities. In many instances, these benefits can be quantified. The generation of employment and income for First Nation people is an excellent example of quantifiable benefits. In other instances, the benefits may be less tangible, but no less important. Improvement of the social and cultural conditions within a community through the use of community economic benefits is illustrative of this point. Both quantifiable and less-tangible benefits are explored in this document.

The focus of this report is benefits to First Nations. It should be recognized, however, that benefits of economic development initiatives on a Nation's lands can reach well beyond the First Nation community. Employment and income generation for non-Nation members who are employed in resort activities (i.e. golf courses), entertainment and gaming venues (i.e. casinos) and natural resource developments demonstrate this point. In instances such as this, Provincial and Federal governments also benefit through income and other taxes levied on non-Nation members earning wages through employment at economic generators hosted on First Nation lands.

It is important to consider the economic benefits of infrastructure development over different time frames. Some occur in the short term as the infrastructure is being designed and constructed. Other benefits unfold over longer time frames. This report considers benefits during the short, medium and longer time frames.

It is also important to recognize the role of Nations in connecting their communities and members to economic opportunities. These connections can be achieved in many ways – identifying and embracing viable new business opportunities, providing access to capital and business services, and formulating appropriate legal frameworks and related administrative support are some examples.

The remainder of this report is divided into three primary sections. These include:

- Section 2 – describes economic benefits
- Section 3 – suggests approaches to incorporating economic benefits into the infrastructure development process
- Section 4 – provides summary comments.



## 2.0 ECONOMIC BENEFITS OF INFRASTRUCTURE DEVELOPMENT

### 2.1 Introduction

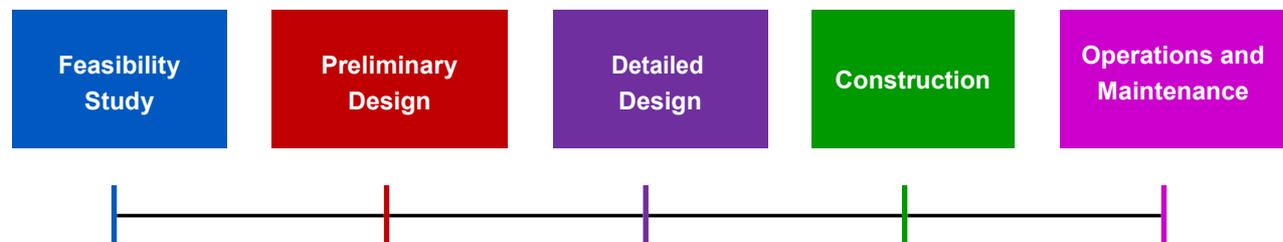
As noted in Section 1 of this report, the economic benefits of infrastructure development in First Nation communities occur over the short, medium and long terms. The length of these terms can be generally defined as:

- Short Term – up to 5 years
- Medium Term – 5 to 10 years
- Long Term – beyond 10 years.

### 2.2 Short Term Economic Benefits (up to 5 years)

The process of developing infrastructure involves a number of stages. These are illustrated in the following graphic.

FIGURE 1: GENERAL ILLUSTRATION OF PROCESS OF INFRASTRUCTURE  
DEVELOPMENT



Employment is generated at each stage in this process. This employment can take three (3) key forms:

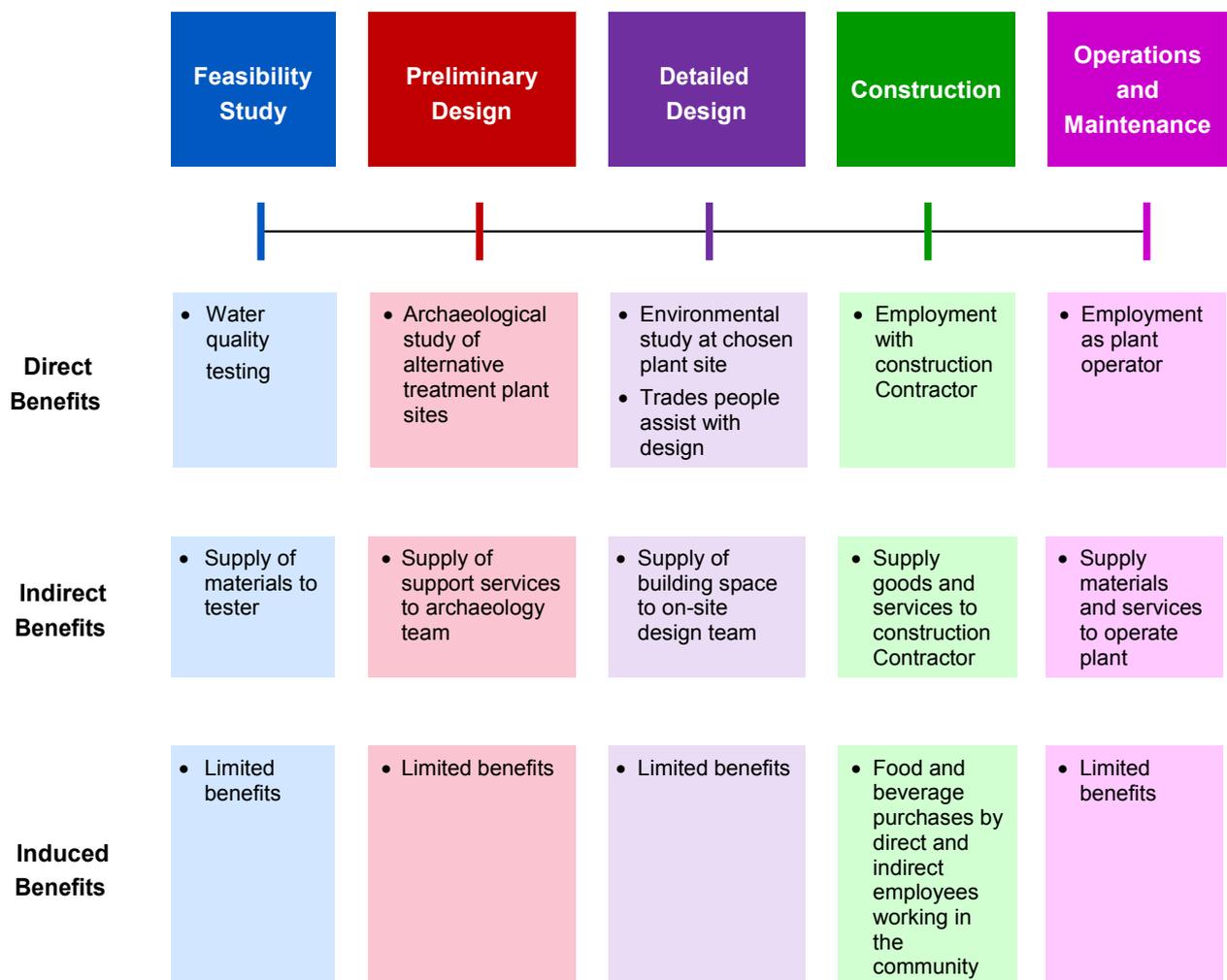
- Direct employment – these are the jobs generated by the entity who is engaged to undertake each stage of the infrastructure development process
- Indirect employment – this is the employment generated by those businesses who supply goods and services to the direct employer
- Induced employment – this includes employment resulting from the spending by direct and indirect employees.

Income is also generated at each stage in the infrastructure development process, in the form of wages and salaries earned by those engaged in direct, indirect and induced employment.



The concepts of different forms of employment and income is somewhat abstract. The following diagram provides a graphic illustration of some methods whereby a First Nation community and its members can benefit from employment and income generated by infrastructure development, in this case a water treatment plant.

FIGURE 2: EMPLOYMENT AND INCOME BENEFITS DURING WATER TREATMENT PLANT DEVELOPMENT\*



\* Please note that this is not a complete listing; for illustrative purposes only

There is also less-quantifiable but highly-important skill development which takes place over the short-term. These include technical skills gained through on-the-job training. Using the examples in Figure 2, these skills could include



## Economic Benefits of Infrastructure Development in First Nations Communities

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water quality technician, archaeologist, environmental scientist, tradesperson (electrician, carpenter, plumber, other) and treatment plant operator. In many cases this training could be applied toward a person's education, apprenticeship or similar program.



In many First Nation communities, the availability of clean drinking water is limited. Using the example above, an additional economic benefit is the reduction of illness caused by poor drinking water, and the consequent ability to enjoy all aspects of life (including employment) in a more fulsome manner.

### *2.3 Medium-Term Economic Benefits (5 to 10 years)*

During the medium term, the constructed infrastructure will be operated and maintained. There will be continuing opportunities for all forms of employment (direct, indirect and some limited induced) and related income generation during this period. Generally speaking, unless the infrastructure is very labour-intensive to operate, the annual employment and income generation will be less than that generated during construction. Over the life of the infrastructure (i.e. 25-50 years), however, the cumulative amount of employment and income generation can still be significant.

While the quantifiable employment and income benefits of infrastructure operations and maintenance impacts may be less than those during construction, the less-quantifiable benefits certainly continue and can be very significant. Using the water treatment plant noted above as an example, there will be ongoing technical skill development. Some examples include:

- Laboratory analysis (i.e. water quality testing)
- Treatment process operation and maintenance
- Hydraulic system operations and maintenance (for pumps and related treatment works)
- Data base maintenance (for water quality and other data)
- Report preparation (for submission to health authorities).

Another important dimension of economic impacts are the fiscal benefits received by the First Nation. The focus of this portion of the report is those Nations who choose to use a portion of their lands for economic development purposes. The principle here is that infrastructure development is, in most instances, a vital part of the foundation upon which economic initiatives can unfold on a Nation's lands.

In the case of in-community infrastructure (such as water and sanitary sewer systems, and transportation networks), the development of land for residential resort communities, industrial parks and commercial sites can occur if this infrastructure is provided. These land development initiatives can generate a host of revenues for the community – land lease, property taxation, utility user fees and capital charges (such as development cost charges) are all examples. Where these revenues collectively exceed the costs of providing infrastructure, there are real and measurable fiscal benefits which can be derived from infrastructure development.

With respect to more remote infrastructure (such as transportation and energy links to resource development areas), the implementation of this infrastructure can allow the resources to be extracted and moved to market. Where this occurs, fiscal benefits (such as resource revenue sharing) can be realized by the First Nation, along with the employment, income and skill development benefits noted above.



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There is also the opportunity for reinvestment of the fiscal benefits from economic initiatives for development of additional infrastructure. This cycle of realizing fiscal benefits, reinvesting these in additional infrastructure, capturing further fiscal benefits, undertaking further reinvestment and so forth can be continuous.

## *2.4 Long-Term Economic Benefits (10 years and beyond)*

Similar to the medium-term period, this will also be the operations and maintenance phase of the constructed infrastructure. There will be continuing opportunities for all forms of employment (direct, indirect and some limited induced) and related income generation over the long term. Other benefits relating to technical skill development will also be sustained.

A new set of benefits relating to economic diversification can also arise over the long term in First Nations communities who engage in economic initiatives supported by infrastructure. This diversification results from individual and community skill sets (technical and other) that have grown to the point that they can be exported from the community, and hired by other communities in need. Using water treatment plant operations and maintenance as an example, this service could be provided for a fee to other communities (First Nation and otherwise) who utilize similar treatment processes. This example is particularly relevant at this time given the shortage of qualified water treatment plant operators available in communities throughout Canada.

It is also important to reach beyond economic benefits to consider other positive attributes which can be enabled by infrastructure development and associated economic development on First Nations lands. Achievement of other community objectives can be made possible due to fiscal and other economic benefits. As an example, revenues generated by leases, property taxation, resource-sharing and other sources can be used to further a wide range of community social, cultural and other objectives. There are myriad illustrations – culture and language preservation, enhanced education, improved health services, elder and child care, and recreation programming are a few examples.



## **3.0 INCORPORATING ECONOMIC BENEFITS INTO THE INFRASTRUCTURE DEVELOPMENT PROCESS**

### *3.1 Introduction*

Three key approaches to incorporating economic benefits into the infrastructure development process have been identified. These include:

- Recognizing that economic benefits can be realized by infrastructure development
- Establishing and applying metrics to gauge economic benefits
- Integrating economic planning with other key First Nation planning initiatives.

Each of these approaches is explored more fully in the following sub-sections.

### *3.2 Recognizing Economic Benefits*

The previous section of this report attempts to describe the various economic benefits which can result from infrastructure development. These benefits will vary in scope, magnitude and longevity depending upon the circumstances within individual communities. There are, however, potential economic benefits in all instances. Recognition of this is a vital first step.

### *3.3 Establishing and Applying Metrics to Gauge Economic Benefits*

There are a variety of metrics which can be used to gauge the economic impacts of infrastructure development in First Nations communities. Some are related to individual infrastructure projects (such as design, construction and operation of a water treatment plant – the example used earlier in this report), while others may relate to a broader infrastructure network (such as roads, water and sewer utilities, communications, etc.) that support economic development activities on lands identified for that purpose by the Nation.

#### **3.3.1 INDIVIDUAL INFRASTRUCTURE PROJECTS**

The following metrics can be applied to individual infrastructure projects. Cumulative results from a number of projects which proceed either simultaneously or in sequence can also be measured.

The information required to support employment and income generation metrics is outlined below.

- Pre-Construction Stages (Feasibility Studies, Preliminary and Detailed Designs)



- 
- Total Budget
  - Labour component – budget, direct employment in community
  - Materials component – budget, materials sourced in community
  - Construction Stage
    - Total budget
    - Labour component – budget, direct employment in community
    - Materials component - budget, materials sourced in community
  - Operations and Maintenance
    - Total annual budget
    - Labour component – budget, direct employment in community
    - Materials component – budget, materials sourced in community

Once this information is available, calculations of a broad range of benefits can be prepared:

- Indirect and induced employment can be derived from 'employment multipliers' which are available from various Provincial, Federal and other sources. A standardized approach should be selected and applied to gauge these employment benefits within Nations
- Direct incomes can be calculated by applying an average wage level to direct employment jobs, as well as indirect and induced jobs. If more detailed labour and related wage data are available, then more detailed calculations can be made.

### **3.3.2 BENEFITS FROM BROADER INFRASTRUCTURE NETWORK**

Beyond the economic benefits of an individual infrastructure project are those which can be realized over the medium and longer-terms described above in Section 2. These benefits are noted below.

- Land lease, property taxation, user fee, resource revenue sharing agreements and other revenues generated can constitute economic benefits where the revenues are more than sufficient to cover any associated costs
- Revenue generated by exporting skills to other communities. This revenue can accrue at the individual level, as well as at the community level such as in relation to First Nations business ventures. Revenues can be used to pay member salaries and other costs, with the potential for the business venture to make a profit for reinvestment, distribution or other use
- Reduction of reliance on the social safety net, which can have positive financial benefits within the First Nations community as well as at other levels of government
- Support for other community objectives. Surplus revenues from land leasing, business ventures and other sources can be used to achieve various community objectives. These in turn can have measurable outcomes. Some examples are provided below.



- Education Objective – measured by cultural and language retention, graduation rates, post-secondary attendance and other metrics
- Community Infrastructure Objective – measured by internet connectivity, clean water, and safe streets
- Housing Objective – measured by adequate number of homes in good condition, no overcrowding, and appropriate housing available to all
- Recreation Objective – measured by well-attended cultural events, facilities and programs available for all ages
- Land Base Objectives – measured by all valued traditional, cultural and environmentally-sensitive sites protected
- Health Objectives – measured by long life expectancy, healthy babies and children, services available for all physical, emotional and other health issues.

### *3.4 Integrating Economic Planning with Other Key First Nation Planning Initiatives*

First Nations undertake a variety of planning initiatives on a periodic basis. Some key examples of these planning initiatives include:

- Comprehensive Community Plans (CCPs) – this is the broadest-based community planning exercise which is intended as a ‘holistic process that enables a community to build a roadmap to sustainability, self-sufficiency and improved governance capacity’ (CCP Handbook, Third Edition, Indigenous and Northern Affairs Canada, 2016, p. 1). Consideration of the economy is noted as one aspect of CCPs
- Land Use Plans – many First Nations have prepared land use plans for their Reserve and other lands. These plans are physical expressions of how residential, community, industrial, commercial and other uses and their buildings are arranged on the land. In addition, areas set aside for cultural preservation, environmental sensitivity, agriculture / forestry / other resources uses are identified
- Infrastructure Plans – these outline how residential, community and other land uses are to be served by transportation, water, sanitary sewer and other networks. Where funding from Indigenous Services Canada is sought, these plans take the form of First Nations Infrastructure Investment Plans (FNIIPs)
- Financial Plans – sources of funding for infrastructure (from Federal government and various other sources) are set out in a Nation’s Financial Plan.

Economic planning can be integrated into these other Plans as both an output, as well as an input.

The previous sections of this report describe economic and other **outputs** from infrastructure development. Section 2 describes these outputs over the short, medium and long term. The prior discussion in Section 3 outlines metrics which can be used for measurement purposes.



From an **input** perspective, many Nations have taken a proactive stance to identify economic development objectives along with specific business plans. Where a Nation's land is required to facilitate advancement of these economic initiatives, this can be identified on a land use plan. The next step in many communities is to identify infrastructure requirements and cost recovery strategies to support the economic activity on the land. An example of this situation could include a Nation identifying land lease revenues derived from a business park as an economic development objective, earmarking a location within Nation lands for this use, outlining the road / utility / communication infrastructure network (and associated costs) needed to serve the business park at the chosen location, and framing a financial strategy to recover the capital and operating costs of the infrastructure.

There are challenges and risks of not integrating economic planning with other key Nation planning initiatives. These are particularly acute with respect to infrastructure development, and include issues such as higher capital and operation / maintenance costs, a longer time period to move an infrastructure project from concept to construction, and a shorter life span for the infrastructure once constructed. These topics are explored more fully in a report prepared for the First Nations Tax Commission entitled 'Comparative Analysis of Infrastructure Development Processes – First Nations and Local Governments' (Urban Systems, March 2017).



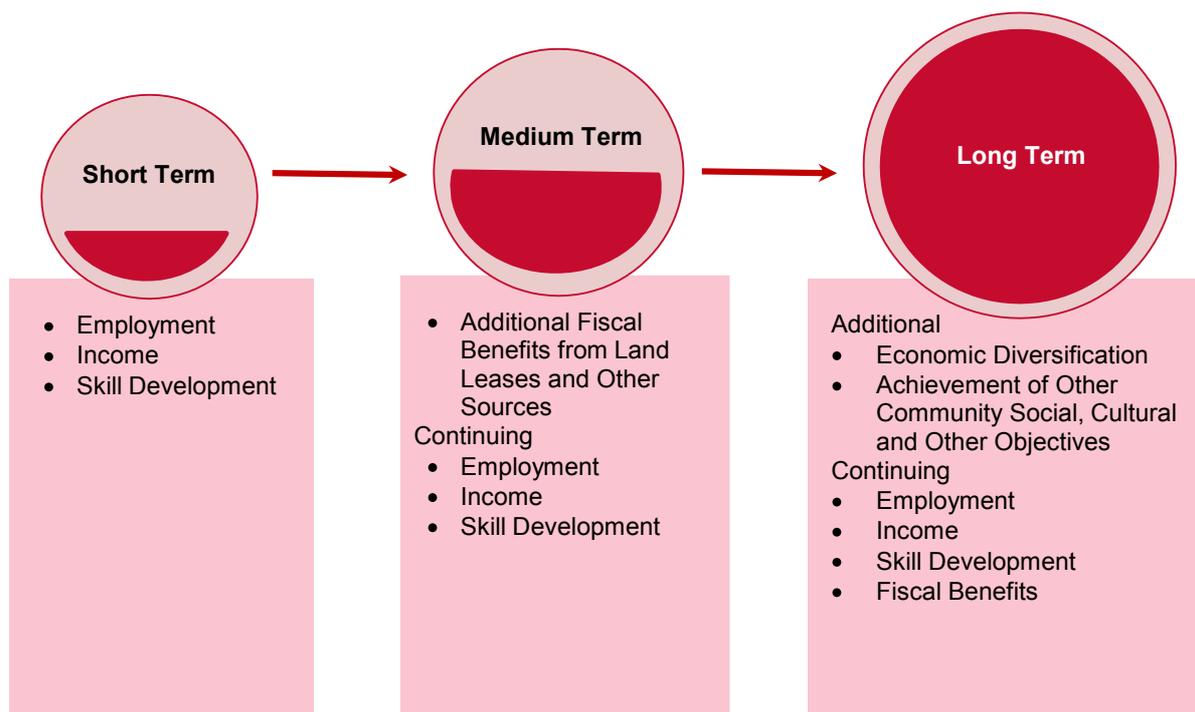
## 4.0 SUMMARY

### 4.1 Summary Comments

The purpose of this report is to describe the economic benefits of infrastructure development in First Nation communities.

These benefits can occur over the short, medium and long terms as infrastructure is developed and, in instances where a Nation has chosen to use a portion of its land base for economic development purposes, where the infrastructure serves these economic initiatives. Figure 3 summarizes these benefits.

FIGURE 3: SUMMARY OF ECONOMIC BENEFITS OF INFRASTRUCTURE DEVELOPMENT IN FIRST NATION COMMUNITIES



Economic benefits to a Nation can be measured in very tangible terms. Measurements can be applied to the development of an individual infrastructure project, or more broadly to initiatives which are supported by a network of infrastructure. Figure 4 provides a summary of the metrics which can be used for measurement purposes.

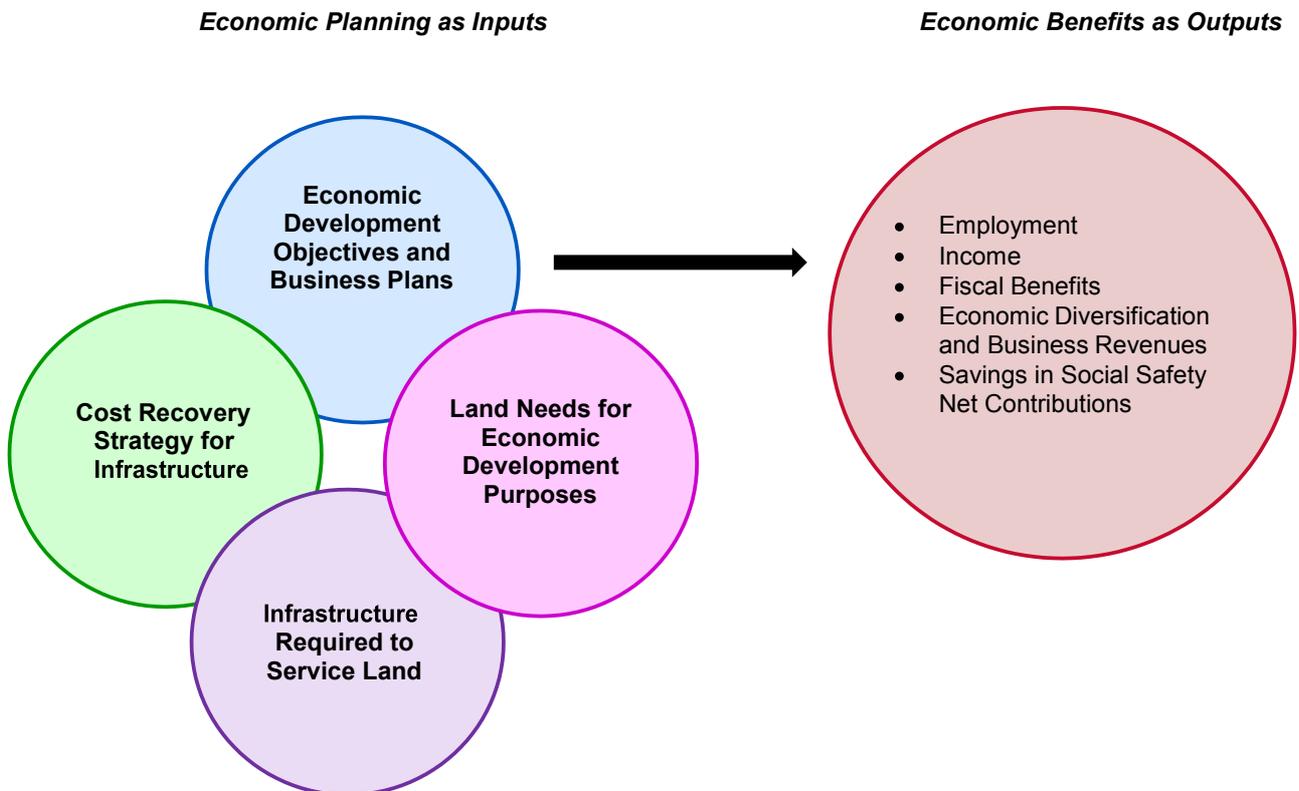


FIGURE 4: SUMMARY OF METRICS TO GAUGE ECONOMIC BENEFITS OF INFRASTRUCTURE DEVELOPMENT IN FIRST NATION COMMUNITIES

Individual Infrastructure Projects	Broader Infrastructure Network
<ul style="list-style-type: none"> <li>• Direct, Indirect and Included Employment</li> <li>• Income, Wages and Salaries</li> </ul>	<ul style="list-style-type: none"> <li>• Fiscal Benefits from Land Leases and Other Sources</li> <li>• Business Revenue from Nation Enterprises</li> <li>• Savings in Social Safety Net Contributions by Nation</li> <li>• Achievement of Other Community Objectives</li> </ul>

Economic planning can be integrated with all other aspects of planning in First Nation communities as both input and output. Figure 5 illustrates this integration.

FIGURE 5: INTEGRATION OF ECONOMIC PLANNING WITH OTHER COMMUNITY PLANNING INITIATIVES



## 4.2 *A Note About Institutional Arrangements to Support Economic Benefits*

First Nations in Canada recognize, integrate and measure the economic benefits of infrastructure development to varying degrees. Given the positive effects available to all communities, it would be worthwhile ensuring that information and tools are provided to all Nations. Institutional arrangements that would be helpful in this regard include:

- Guides or handbooks which provide both the foundational principles related to economic benefits accruing to infrastructure development, as well as practical approaches
- Case studies and examples
- Courses and seminars
- Support network, including First Nation mentors
- Central body which oversees all of the above, including a strong focus on economic and fiscal sustainability for First Nation communities.