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10-Year Economic Impact Assessment of Public-Private Partnerships in Canada (2003-2012)

Prepared for
The Canadian Council for Public-Private Partnerships

Prepared by
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Executive Summary

Public-private partnerships (P3s) are providing an innovative means for governments to deliver infrastructure, and are contributing directly to employment and Canada's economy. With the public sector facing aging infrastructure, population growth and budget constraints, P3s are bringing together the expertise of both the private and public sector to expand the number and scale of infrastructure investments for public benefit. Since 1991, 206 P3 projects were initiated in Canada, with a total value of those projects currently operational or under construction exceeding $63 billion.[1]

Each infrastructure P3 project generates:

- Jobs involved in the construction of infrastructure, including architects, plumbers, electricians, project managers, and engineers;
- Jobs needed to maintain and/or operate the respective projects;
- Growth in the country's economic sectors through contributions to income, gross domestic product (GDP) and economic output; and,
- Tax revenue contributions to federal and provincial governments.[2]

Over the last ten years, over 500,000 cumulative full-time equivalent jobs have been created; 291,000 of them through direct employment. Nearly $32.2 billion in total income and wages have been paid, and $48.2 billion in total GDP and $92.1 billion in total economic output contributed to the national economy.

Impact of 10 Years of P3 Projects:

- ***517,430 total full-time equivalent jobs, including 290,680 direct full-time equivalent jobs***
- ***$32.2 billion in total income, including $19 billion in direct income***
- ***$48.2 billion in total gross domestic product (GDP), including $25.1 billion in direct GDP***
- ***$92.1 billion in total economic output, including $51.2 in direct economic output***
- ***$9.9 billion in cost savings***
- ***$7.5 billion in tax revenue***

Source: CCPPP Project Database and InterVISTAS

[1] Taken from the Canadian Council for Public-Private Partnerships (CCPPP) Database.

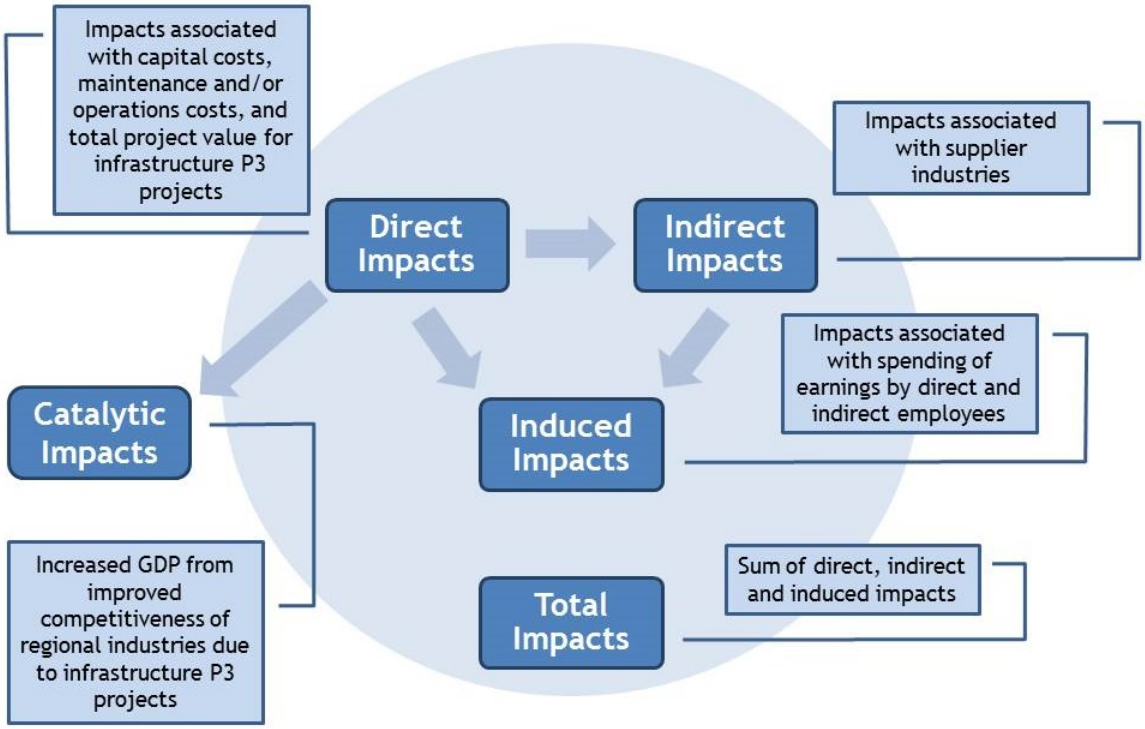
[2] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

These partnerships have also led to millions of Canadians enjoying faster travel times, access to modern health, recreational, cultural, water and waste water treatment facilities, and other services that enhance their quality of life and increase the economic activity of their communities.

Economic Impact of Infrastructure P3 Projects in Canada, 2003-2012

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (such as the construction of a new facility), or a change in government policy or regulation. [3] The three major components of economic impact are classified as *direct, indirect and induced impacts*. These classifications are used as a base for the estimation of the total economic impact of infrastructure P3 projects in Canada. P3 projects also contribute other additional benefits to direct users and positive effects to a region that can be more difficult to assess and quantify, called *catalytic impacts*. **Figure ES-1** illustrates the various elements that account for the economic impact of these projects.

Figure ES-1: Economic Impact Overview



[3] Economic impact is different from a cost-benefit analysis that weighs benefits against costs.

Economic impact is most commonly measured in several ways, including employment, income/wages and benefits, gross domestic product (GDP) and economic output, as explained in **Figure ES-2.**

Figure ES-2: Measurements of Economic Impact

Employment *(Full-Time Equivalent Jobs)*	• Full-time equivalent (FTE) jobs or person years of employment generated. Because many jobs may be only part-time or seasonal, the number of jobs is greater than the number of FTE jobs.
Income / Wages & Benefits	• Includes wages, salaries, and benefits associated with employment tied to the sector, project or policy/regulatory change.
Gross Domestic Product (GDP)	• A measure of the money value of final goods and services produced locally as a result of economic activity. This measure *does not include the value of intermediate goods and services* used up to produce the final goods and services. For example, the value of the completed bridge of the infrastructure P3 project is counted in GDP. The steel used to build the bridge, which is an intermediate good, is already considered in the value of the completed bridge and not included in the GDP measure.
Economic Output	• It reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals. The direct economic output of P3 projects is equivalent to the total project value of the P3 projects or the total value of expenditures represented by the P3 projects, *including the value of intermediate goods and services*.

The total P3 project value or project agreement cost includes the capital cost plus any associated maintenance/operations cost. The total P3 project value is the total value of expenditures represented by infrastructure P3 projects, and is equivalent to the *direct* economic output. From 2003-2012, the total project value of P3 projects amounts to over $51.2 billion.[4] The economic impact of the total P3 project value in Canada, which includes the impact of the capital costs and the impact of the maintenance/operations costs of infrastructure P3 projects, are summarised in **Table ES-1.** Over the 10-year time period, these infrastructure P3 projects support *direct* employment of 290,680 full-time equivalent (FTE) jobs for the duration of the projects, earning $19.0 billion in *direct* income/wages and benefits. Additionally, the infrastructure P3 projects contribute $25.1 billion in *direct* GDP to Canada.[5]

Table ES-1: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in Canada, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	290,680	$19,010	$25,140	$51,170
Indirect	133,690	$8,440	$12,610	$23,860
Induced	93,060	$4,760	$10,410	$17,050
Total Canada	***517,430***	***$32,210***	***$48,160***	***$92,080***

Notes:
* Results are based on total P3 project value of projects and are presented in 2013 dollars.
** Applies to 121 projects with financial close dates between 2003 and 2012. Results reflect data available as of August 2013.

Estimated Tax Impacts of Infrastructure P3 Projects in Canada, 2003-2012

Infrastructure P3 activity is also an important generator of taxation revenues to the federal and provincial levels of government. Total taxes paid by employers and employees from 2003-2012 are estimated at $7.5 billion as seen in **Table ES-2**.[6] The federal government is the largest recipient of

[4] Results are based on total P3 project value of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

[5] Figures are presented in 2013 dollars.

[6] Results are based on total P3 project value of 121 projects. Estimates were developed for 34 projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

tax revenue, receiving nearly $5.2 billion (69% of the total) over the 10-year time period. The provincial government also benefits from infrastructure P3 projects, with provincial government revenue amounting to over $2.3 billion.

Table ES-2: Estimated Tax Revenues of Infrastructure P3 Projects in Canada, 2003-2012

Taxpayer	Federal ($ Millions)	Provincial ($ Millions)	*Total ($ Millions)*
Employers or Employees	$5,180	$2,330	***$7,510***

Notes:
* Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.
** Applies to 121 projects with financial close dates between 2003 and 2012.

Value for Money of Infrastructure P3 Projects in Canada, 2003-2012

A value for money assessment compares the costs of delivering a public infrastructure project through a P3 model against the cost of using a traditional public sector delivery method, referred to as the Public Sector Comparator (PSC).[7] The difference between the P3 cost and the PSC is referred to as the Value for Money (VFM).[8] If the value of the P3 is less than the PSC, there is positive value for money by procuring a project using the P3 model.

- ***Total value for money for 121 infrastructure P3 projects from 2003-2012: $9.9 billion***

Based on the value for money assessments conducted by provincial procurement agencies for 121 P3 projects with financial close between the study period of 2003-2012, the total value for money is estimated to be in the range of $9.9 billion.[9]

Infrastructure P3 Projects in Canada, 2003-2012

This study presents an assessment of the economic impact of 121 infrastructure P3 projects with financial close date over a 10-year time frame from 2003-2012, as most of the projects were

[7] Design Build (DB), also referred to as Design-Bid-Build (DBB), has typically been the most common method of traditional infrastructure procurement by the public sector. Under this approach, the public sector is responsible for the design of the asset, with the design development being in-house or contracted to private design firms. (Definition retrieved from the CCPPP's, "Public-Private Partnerships – A Guide for Municipalities.")

[8] Value for money is also referred to as total cost savings.

[9] Results are based on total value for money of 121 projects and are presented in 2013 dollars. Estimates were developed for 31 projects with incomplete value for money data.

initiated during this period.[10] The study's analysis is based on infrastructure project data provided to the CCPPP from various sources, such as public reports released by provincial procurement agencies. During the 10-year time period, 121 of the 206 P3 infrastructure projects were operational or under construction. A summary of the 121 infrastructure P3 projects by province and by sector is provided in **Table ES-3**.

Table ES-3: Summary of Infrastructure P3 Projects by Province and by Sector, 2003-2012

Province	Sector	Number of Projects
Alberta	Education	3
	Environmental	3
	Justice/Corrections	1
	Transportation	5
	Alberta Total	***12***
British Columbia	Environmental	3
	Hospitals & Healthcare	10
	Justice/Corrections	2
	Real Estate (Housing & Facilities)	1
	Transportation	7
	British Columbia Total	***23***
Manitoba	Environmental	1
	Transportation	2
	Manitoba Total	***3***
New Brunswick	Education	1
	Hospitals & Healthcare	1
	Justice/Corrections	1
	Transportation	2
	New Brunswick Total	***5***

[10] Results reflect data available as of August 2013.

Province	Sector	Number of Projects
Ontario	Defence	1
	Environmental	1
	Government Services	2
	Hospitals & Healthcare	39
	Justice/Corrections	10
	Real Estate (Housing & Facilities)	1
	Recreation & Culture	6
	Transportation	5
	Ontario Total	***65***
Quebec	Hospitals & Healthcare	9
	Recreation & Culture	1
	Transportation	3
	Quebec Total	***13***
TOTAL		***121***

Source: The Canadian Council for Public-Private Partnerships (CCPPP) Project Database, and public reports released by provincial procurement agencies.
Note: Applies to 121 projects with financial close dates between 2003 and 2012.

Contents

1 Introduction

The traditional approach to the provision of public infrastructure had been via the public sector, whether federal, provincial or municipal. Over time, however, the demands for new or expanded infrastructure began to tax the ability of the public sector to both fund and manage the provision of the infrastructure desired. New models for the provision of public infrastructure were developed that incorporate the private sector. These Public-Private Partnerships (P3s) join together the private sector with the public sector, and expand the number and scale of infrastructure investments that can be developed and maintained.

Through their activities, infrastructure P3 projects in Canada (henceforth, simply referred to as P3s) contribute directly to employment and the national economy. P3s play a role in facilitating growth in the country's economic sectors and generating social benefits in cities, provinces and the country as a whole.

The Canadian Council for Public-Private Partnerships (CCPPP) commissioned Inter*VISTAS* Consulting Inc. (Inter*VISTAS*) to conduct an assessment of the economic impact of P3 infrastructure projects with financial close dates over a 10-year time frame from 2003-2012.

The study's analysis is based upon various infrastructure project data, including capital cost, maintenance/operations cost and total P3 project value (or project agreement cost). These three spending measures are defined as:

- **Capital Cost:** The construction cost of a P3 project.
- **Maintenance/Operations Cost:** The cost of the entire maintenance/operations period, if any. The time length for this component varies on a project-by-project basis.
- **Total P3 Project Value or Project Agreement Cost:** The total cost incurred as a result of a P3 contract. This includes the capital cost, as well as any associated maintenance/operations cost. This is the total expenditures represented by P3 projects. Note that if there is no maintenance/operations cost component, then the capital cost

The Canadian Council for Public-Private Partnerships

- The study period only includes 121 projects with financial close dates between 2003 and 2012
- Value for money of these projects is approximately $9.9 billion

CCPPP Database (1991-2013)

- 206 projects initiated since 1991, providing a total project value of over $63 billion
- 52% of these projects are operational, 26% are under construction and 22% are in the procurement stage

Measurements of Economic Impact

- Employment (Jobs & Full-Time Equivalent Jobs)
- Income/Wages and Benefits
- Gross Domestic Product (GDP)
- Economic Output

equals the agreement cost. (Henceforth, the total project agreement cost will be simply referred to as total P3 project value.)

The study period for this data includes 121 projects with financial close dates between 2003 and 2012, as most of the projects were completed during this period. The study's analysis is based on infrastructure project data provided by the CCPPP from various sources, such as its project database and public reports released by provincial procurement agencies. During the 10-year time period, 121 of the 206 infrastructure P3 projects were operational or under construction. As comparable project cost data is not available for all infrastructure P3 projects, estimates were developed for projects with incomplete project cost data.[11] A summary of the 121 infrastructure P3 projects by province and by sector is provided in **Table 1-1**.

Table 1-1: Summary of 121 Operational/Under Construction Infrastructure P3 Projects by Province and by Sector, 2003-2012

Province	Sector	Number of Projects
Alberta	Education	3
	Environmental	3
	Justice/Corrections	1
	Transportation	5
	Alberta Total	***12***
British Columbia	Environmental	3
	Hospitals & Healthcare	10
	Justice/Corrections	2
	Real Estate (Housing & Facilities)	1
	Transportation	7
	British Columbia Total	***23***
Manitoba	Environmental	1
	Transportation	2

[11] Results are based on total P3 project value of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

Province	Sector	Number of Projects
	Manitoba Total	***3***
New Brunswick	Education	1
	Hospitals & Healthcare	1
	Justice/Corrections	1
	Transportation	2
	New Brunswick Total	***5***
Ontario	Defence	1
	Environmental	1
	Government Services	2
	Hospitals & Healthcare	39
	Justice/Corrections	10
	Real Estate (Housing & Facilities)	1
	Recreation & Culture	6
	Transportation	5
	Ontario Total	***65***
Quebec	Hospitals & Healthcare	9
	Recreation & Culture	1
	Transportation	3
	Quebec Total	***13***
TOTAL		***121***

Source: The Canadian Council for Public-Private Partnerships (CCPPP) Project Database, and public reports released by provincial procurement agencies.
Note: Applies to 121 projects with financial close dates between 2003 and 2012.

1.1 The Canadian Council for Public-Private Partnerships

Established in 1993, CCPPP is a national not-for-profit non-partisan, member-based organization with broad representation from across the public and private sectors. Its mission is to promote innovative approaches to infrastructure development and service delivery through public-private partnerships with all levels of government. The CCPPP is a proponent of evidence-based public policy in support of P3s, facilitates the adoption of international best practices, and educates stakeholders and the community on the economic and social benefits of public-private partnerships.

To document the increasing growth of P3 projects in Canada, the CCPPP developed a database containing data on P3 projects. It is the only such database in Canada, and includes all Canadian P3 projects since their inception in 1991. Launched in 2010, it contains over 200 projects that span across 10 provinces covering a 22-year period. These projects can be searched based on location, sector, stage, government level and model. **Table 1-2** displays total project value for all projects in the CCPPP database from 1991-2013, by sector. Since 1991, 206 P3 projects were initiated, generating over $63 billion in total project value according to the CCPPP database.

206 P3 projects were initiated since 1991, with a total project value of over $63 billion according to the CCPPP database (1991-2013).

Table 1-2: Total P3 Project Value by Sector of All Projects from CCPPP Database, 1991-2013

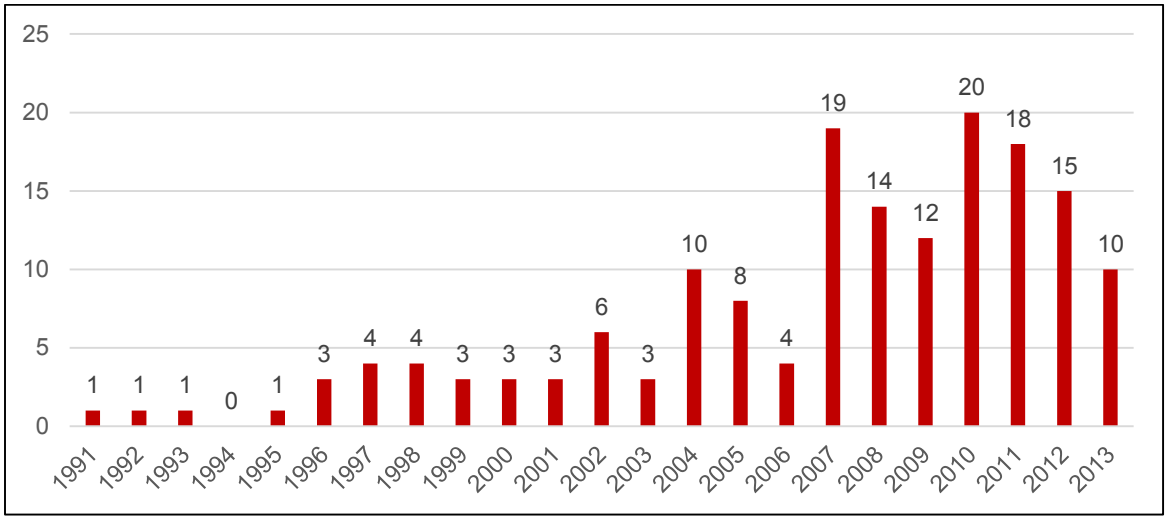
Sector	Number of Projects*	Value ($ Millions)**
Transportation	44	$26,420
Hospitals & Healthcare	78	$21,484
Justice/Corrections	19	$5,422
Energy	5	$4,250
Education	10	$1,880
Recreation & Culture	17	$1,379
Real Estate (Housing & Facilities)	3	$944
Defence	1	$867

Sector	Number of Projects*	Value ($ Millions)**
Environmental	22	$655
Facilities for Government Services	5	$172
IT Infrastructure	2	$1
TOTAL	***206***	***$63,474***

Source: The Canadian Council for Public-Private Partnerships (CCPPP) Project Database.
Notes:
* Includes all P3 projects (infrastructure projects, services contracts, etc.) from 1991-2013. Additional data on two projects are included as of December 31, 2013, which became available following the data set used in the Economic Impact project sample.
** Includes only costs of projects where costs have been finalized and released, and has not been adjusted to 2013 dollars.

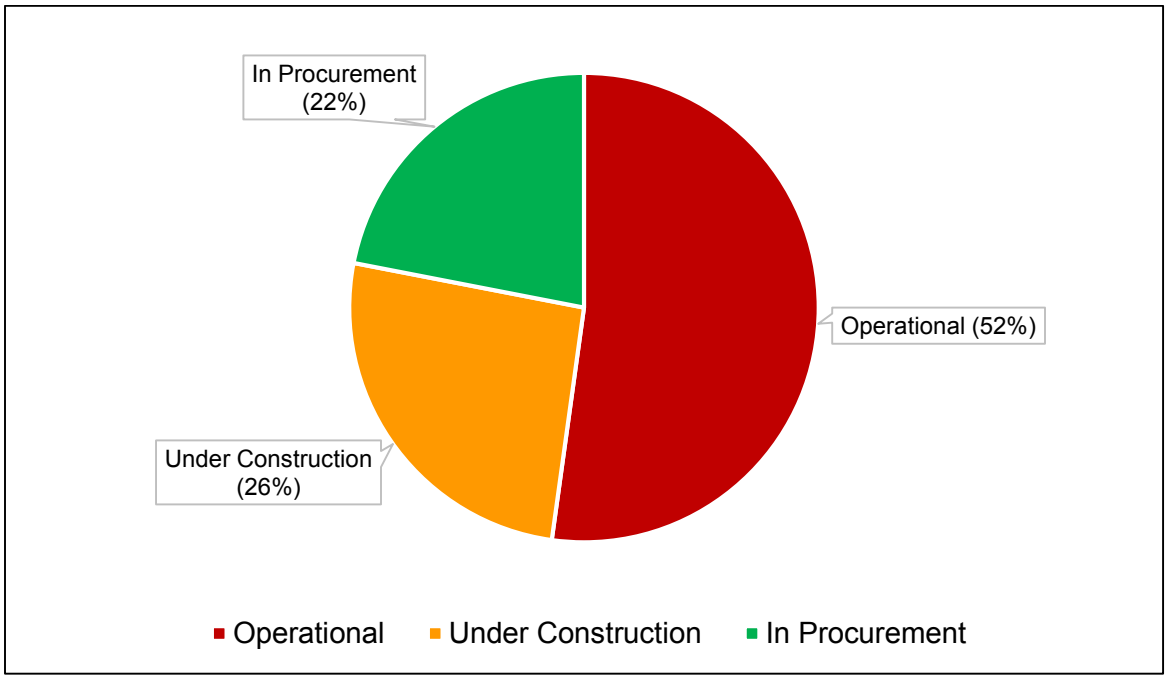
The data found within the CCPPP project database is drawn from a variety of publicly available information sources. For example, federal and provincial procurement agencies, various reports and press releases. Figures are also taken from case studies of selected recipients of CCPPP's National Awards for Innovation and Excellence in Public-Private Partnerships. Due to the variation in reporting methods from jurisdictions, the dataset found in the database is not complete; therefore, the study projects used in this report are subject to data availability and time frame. The study time frame of 10 years includes the period of significant P3 growth in Canada. Their popularity grew through to 2007, at which point the projects plateaued and remained steady to this day. **Figure 1-1** provides a breakdown of all projects found within the CCPPP database from 1991-2013 by financial close date, including infrastructure projects, services contracts, etc. A significant number of these projects have close dates that fall within the last decade, which drives the reasoning behind limiting the study period to the 2003-2012 timeframe. Based on the CCPPP project database, 52% of infrastructure P3 projects from 1991-2012 are operational, while 26% are under construction and 22% are in procurement, as shown in **Figure 1-2**.

Figure 1-1: All P3 Projects from CCPPP Database by Financial Close Date, 1991-2013



Source: The Canadian Council for Public-Private Partnerships (CCPPP) Project Database.
Note: Includes all P3 projects (infrastructure projects, services contracts, etc.) from 1991-2013. Additional data on two projects are included as of December 31, 2013, which became available following the data set used in the Economic Impact project sample.

Figure 1-2: Infrastructure P3 Projects from CCPPP Database by Project Stage, 1991-2013



Source: The Canadian Council for Public-Private Partnerships (CCPPP) Project Database.
Note: Includes all P3 projects (infrastructure projects, services contracts, etc.) from 1991-2013. Additional data on two projects are included as of December 31, 2013, which became available following the data set used in the Economic Impact project sample.

1.2 What is Value for Money?

Public-Private Partnerships (P3s) is defined as a range of infrastructure project delivery methods which use private expertise and financing to strategically rebuild vital infrastructure, on time and on budget, while ensuring appropriate public control and ownership.[12]

A value for money assessment compares the costs of delivering a public infrastructure project through a P3 model against the cost of using a traditional public sector delivery method, referred to as the Public Sector Comparator (PSC).[13] The difference between the P3 cost and the PSC is referred to as the Value for Money (VFM).[14] If the value of the P3 is less than the PSC, there is positive value for money by procuring a project using the P3 model.

As an example, in a typical procurement process VFM analysis will be conducted within the business case phase, soon after the P3 model has been identified as a potentially viable option for the procurement process. This analysis compares project costs between the following models:

- **Traditional Procurement (PSC):** An estimation of all costs borne by the public sector of delivering the project.
- **Alternative Procurement (P3):** An estimation of all costs borne by the public sector of providing the same project under a different procurement method, such as P3.

There will be value for money if the risk-adjusted costs of the alternative procurement are lower than the risk-adjusted costs of traditional procurement.[15] A comparison would be made between the following two items:

- **Risk-Adjusted Traditional Procurement:** An estimate of all risk-adjusted costs, as identified by the risk register, borne by the public sector of delivering the project.
- **Risk-Adjusted Alternative Procurement:** An estimate of all risk-adjusted costs, as identified by the risk register, of providing the same project under a different procurement method, such as a P3.

The risk adjustment represents another component of the business case and serves to quantify risk. This is performed by holding a risk workshop, which involves using stakeholders and subject-

[12] Infrastructure Ontario, "Assessing Value for Money: A Guide to Infrastructure Ontario's Methodology".

[13] Design Build (DB), also referred to as Design-Bid-Build (DBB), has typically been the most common method of traditional infrastructure procurement by the public sector. Under this approach, the public sector is responsible for the design of the asset, with the design development being in-house or contracted to private design firms. (Definition retrieved from the CCPPP's, "Public-Private Partnerships – A Guide for Municipalities.")

[14] Value for money is also referred to as total cost savings.

[15] The degree to which risk is transferred varies from project to project. The public sector will extract a greater value when significant risk is transferred to the private sector. It is important to note that VFM will only grow if the private sector is capable of managing the increased risk.

matter experts to identify and quantify risk. Once this information is gathered, it will be placed into a risk register.[16]

All calculated figures will be assessed using their Net Present Value (NPV), to ensure fair comparisons between procurement methods.

Based on the value for money assessments conducted by provincial procurement agencies for 121 infrastructure P3 projects between the study period of 2003-2012, the total value for money is estimated to be in the range of $9.9 billion.[17]

- ***Total value for money for 121 infrastructure P3 projects from 2003-2012: $9.9 billion***

1.2.1 Other Savings

Various studies have noted that the P3 model provides incentives that can lead to various financial and non-financial benefits (e.g. innovation, early delivery of services, quicker reduction in traffic congestion, reduction to health care waiting times, cost certainty, and savings from integrating the design, build and operation phases into a single contract).[18] This study does not attempt to quantity these other benefits given the methodology for measuring them is complex and still evolving.

[16] The risk register is a tool used to quantify the value of the risks retained by the public partner under various procurement options. This information is a key component of the value for money analysis. Definition retrieved from the CCPPP's, "Public-Private Partnerships – A Guide for Municipalities".

[17] Results are based on total value for money of 121 projects with financial close between 2003-2012 and are presented in 2013 dollars. Estimates were developed for 31 projects with incomplete value for money data.

[18] Examples of other studies conducted that indicate there are other benefits gained from the P3 model include: European PPP Expertise Centre, "The Non-Financial Benefits of PPPs", 2011 and The Conference Board of Canada, "Dispelling the Myths: A Pan-Canadian Assessment of Public-Private Partnerships for Infrastructure Investments", 2010.

1.3 P3's in the Canadian Economy

P3 initiatives in Canada receive a significant amount of support at the federal and provincial levels. PPP Canada, a federal crown corporation since 2008, has a mandate to improve the delivery of P3 projects through taxpayer accountability, better value and timeliness.[19] To assist with this, the federal government established a $1.2 billion P3 Canada Fund, which can provide up to 25% of a project's capital costs. Since its inception, the fund has provided nearly $800 million to P3 projects across Canada, with the remainder to be spent by mid-2014.[20] Some examples of contributions from the fund include:[21]

- **Chief Peguis Trail Extension Project:** A commitment of up to $25 million contributed to this transportation sector project.
- **Biosolids Energy Centre Project**: $83.4 million contributed to this wastewater treatment system in Victoria, B.C.
- **Edmonton Light Rail Transit System**: $250 million provided to this project located in Edmonton, A.B.

The focal point of the P3 Canada Fund is on projects that allow for economic and job growth, while at the same time providing value to Canadians.[22]

Support for P3s is also provided at the provincial level. Provincial governments in Alberta, British Columbia, New Brunswick, Saskatchewan, Ontario and Québec have procurement agencies or offices that are responsible for P3 procurement. These agencies also assist with improving the efficiency and coordination of infrastructure procurement.[23]

In May 2012, results of a survey compiled by Partnerships Bulletin and P3 Bulletin International (two British subscription news sites, both owned by Rockcliffe Ltd), alongside Deloitte, indicated that Canada had the most desirable P3 model.[24] Further results from the survey showed that Canada was found at the top of the list of countries active in the P3 market. The level of activity is based on the 12 months before and after the February 2012 survey date.

Beyond the economic impacts, P3 projects also contribute other positive effects to a region that can be more difficult to assess and quantify. These "catalytic effects" are additional benefits to direct users and generates further positive impact on performance and economic activity of the

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[19] Government of Canada, PPP Canada website (http://www.p3canada.ca/home.php).

[20] McBride, John. (2013, June). Alternative approaches to infrastructure development, 2. Retrieved from http://www.p3canada.ca/_files/file/What's%20New/Media%20Planet%20Supplement%20_%20Public%20-%20Private%20Partnerships.pdf.

[21] Government of Canada, P3 Canada fund and Economic Action Plan website (http://actionplan.gc.ca/en/initiative/p3-canada-fund).

[22] Corporate Profile, PPP Canada website (http://www.p3canada.ca/about-ppp-canada-overview.php).

[23] Romoff, Mark. (2013, June). Public-private partnerships: an innovative solution, 2. Retrieved from (http://www.p3canada.ca/_files/file/What's%20New/Media%20Planet%20Supplement%20_%20Public%20-%20Private%20Partnerships.pdf)

[24] http://www.deloitte.com/assets/Dcom-UnitedKingdom/Local%20Assets/Documents/Industries/uk-icp-global-ppp-market-2012-report.pdf.

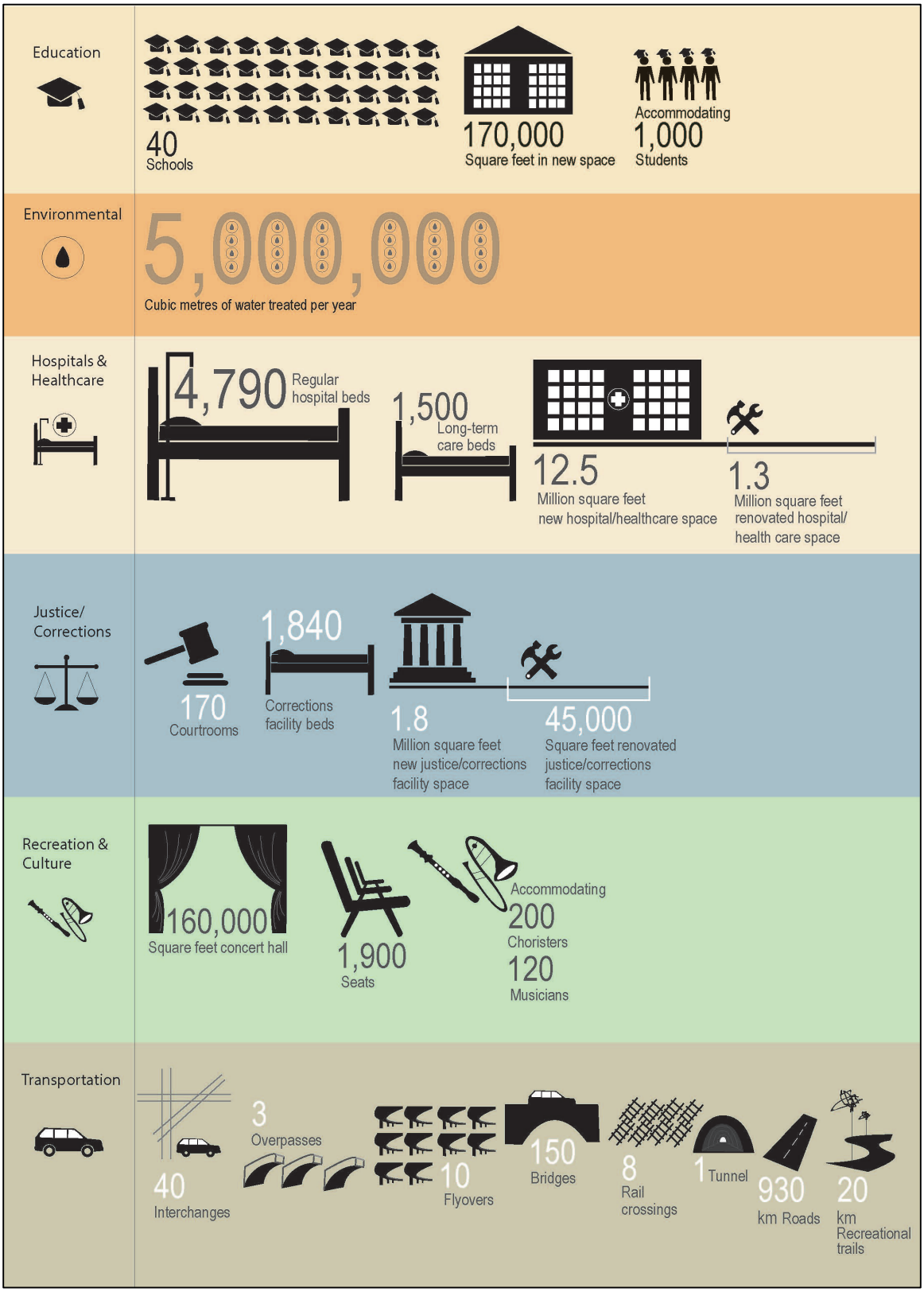
country. Catalytic effects are created in every P3 sector, contributing positively in other ways to the local, provincial and national economies:

- New and upgraded **hospitals** in the health care sector provide improved medical treatment to short and long-term patients. This provides Canada with a healthier workforce, reduces time lost to injury/illness, and increases labour productivity.
- P3 projects in the environmental sector include **water treatment facilities**, ensuring potable and drinking water is available for Canadians, with similar catalytic impacts as noted above.
- P3 projects also support Canada's commitment to ensuring young people have access to **education** through the construction of new schools. A well-educated workforce not only increases national productivity, it enables a more innovative workforce that adds value to production.
- The construction of additional courtrooms and provision of corrections facility beds allows the country to uphold the high standards of its **legal system**. A country with strong rule of law is a more attractive location for foreign investment, which leads to increased employment and economic activity.
- Through the construction of **concert halls** and **sports facilities**, P3 projects contribute significantly to Canada's recreation and culture sector, further enhancing the quality of life of all Canadians. This too makes Canada a more attractive location for high-paying jobs at research facilities and head or regional offices. These workers are very mobile and are looking for locations offering a high quality of life.
- Transport P3 initiatives create new and expanded **roads** to handle higher volumes of traffic. This facilitates exports and increases the attractiveness of Canadian communities as gateways to the NAFTA marketplace.
- **Public transit** systems contribute to the reduction in vehicle usage, thereby supporting low-carbon initiatives put in place by various levels of government as well as leading to a higher quality of life.

Project indicators for 73 P3 projects across Canada from 2003-2012 are summarised by sector in **Figure 1-3**.[25]

[25] From the 2003-2012 study period, 73 infrastructure P3 projects have data on project indicators available.

Figure 1-3: Summary of P3 Project Indicators across Canada by Sector, 2003-2012.



Source: Federal and provincial procurement agencies, various reports and press releases.
Notes: From the 2003-2012 study period, 73 infrastructure P3 projects have data on project indicators available.

1.4 What is Economic Impact?

Economic impact is a measure of the spending and employment associated with a sector of the economy, a specific project (such as the construction of a new facility), or a change in government policy or regulation. Economic impact is most commonly measured in several ways, including employment, income/wages and benefits, gross domestic product (GDP) and economic output, as explained in **Figure 1-4.** These measures can be useful in developing an appreciation of projects, investments and economic sectors.[26]

Figure 1-4: Measurements of Economic Impact

Employment *(Full-Time Equivalent Jobs)*	• Full-time equivalent (FTE) jobs or person years of employment generated. Because many jobs may be only part-time or seasonal, the number of jobs is greater than the number of FTE jobs.
Income / Wages & Benefits	• Includes wages, salaries, and benefits associated with employment tied to the sector, project or policy/regulatory change.
Gross Domestic Product (GDP)	• A measure of the money value of final goods and services produced locally as a result of economic activity. This measure *does not include the value of intermediate goods and services* used up to produce the final goods and services. For example, the value of the completed bridge of the infrastructure P3 project is counted in GDP. The steel used to build the bridge, which is an intermediate good, is already considered in the value of the completed bridge and not included in the GDP measure.
Economic Output	• It reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals. The direct economic output of P3 projects is equivalent to the total project value of the P3 projects or the total value of expenditures represented by the P3 projects, *including the value of intermediate goods and services*.

[26] Economic impact is different from a cost-benefit analysis that weighs benefits against costs.

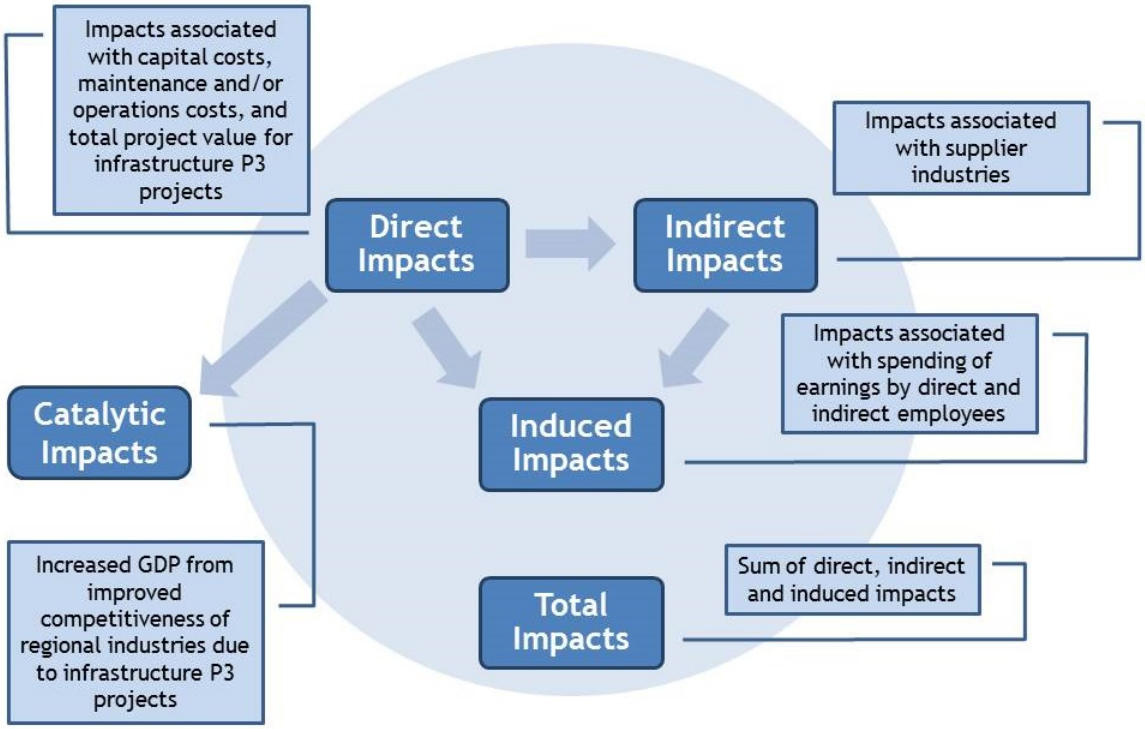
1.5 Economic Impact of P3 Projects

The three major components of economic impact are classified as *direct*, *indirect* and *induced* impacts. These classifications are used as a base for the estimation of total economic impact of a P3 project. Each of these three components requires different tools of analysis. Employment impact analysis determines the economic impact in terms of jobs created and salaries and wages paid out.

- ***Direct impacts*** account for the economic activity of the target sector itself. Direct employment impacts are measured by counting those individuals who work in a particular sector of the economy. In the case of a P3 project, all of those people who work in a construction-related capacity either on-site or off-site would be considered direct employment (e.g. a builder, plumber, electrician, project manager, engineer, etc.). Individuals needed to maintain/operate the respective projects are also considered direct employment.
- ***Indirect impacts*** are those that result because of the direct impacts. For a P3 project, indirect impacts are the consequence of economic activities of the off-site firms that serve a P3 development project. Indirect employment includes the portion of employment in supplier industries which are dependent on sales to the construction sector. An example would be lumber suppliers that supply plywood to a construction firm.
- ***Induced impacts*** are economic impacts created by the spending of wages, salaries and profits earned in the course of the direct and indirect economic activities. Induced employment is employment generated from expenditures by individuals employed indirectly or directly. For instance, if a construction firm employee decides to purchase a new car or recreational vehicle, or take an additional vacation to Niagara Falls or Banff, this would result in additional (induced) employment hours in the general economy. The purchase/expenditures would support hours of induced employment in the manufacturing and/or tourism industry, etc. Induced impact is often called the household-spending effect.
- ***Total impacts*** are the sum of direct, indirect and induced effects.

Figure1-5 illustrates the various elements that account for the economic impact of these projects.

Figure 1-5: Economic Impact Overview



2 Methodology for Estimating Economic Impacts

2.1 Overview

Inter*VISTAS* conducted this economic impact study during the spring and summer of 2013. The study estimates the economic impact of infrastructure P3 projects with financial close dates between 2003 and 2012.

The study is based on P3 infrastructure project data provided by the CCPPP for projects in the study period, which were used as direct inputs to assess the direct effects of P3 projects. Inter*VISTAS* estimated the indirect and induced effects using economic multipliers developed by Statistics Canada that are derived from models of how the Canadian national and provincial economies operate. Inter*VISTAS* utilizes a proprietary model in order to conduct multiplier analysis and estimate indirect and induced impacts.

2.2 Estimating Direct Economic Impact

Direct spending or economic output related to P3 infrastructure projects is measured first. To calculate the direct output or spending impacts, Inter*VISTAS* analysed data provided by the CCPPP on capital costs, maintenance/operations costs and total project value for infrastructure P3 projects within the study time frame.[27] It is important to note that as the terms for the maintenance/operations of each project may vary, the impact figures are not annualized and represent the entire maintenance/operations cost component of the project over the 10-year time frame.

Economic Impact

- Based on P3 infrastructure project data provided by the CCPPP
- Capital costs, maintenance/operations costs and total project values of P3 infrastructure projects are examined for the study time frame

Economic Multipliers Source

- Statistics Canada economic multipliers from the 2009 interprovincial input-output model for the study provinces

Tax Revenues

- Tax revenues generated by P3 projects to both provincial and federal levels of government are calculated

[27] Results are based on total P3 project value of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data. Results reflect data available as of August 2013.

In addition, economic multipliers were used to infer other economic impacts from the project cost figures, such as employment, income/wages and benefits and gross domestic product (GDP).

2.3 Estimating Indirect and Induced Impacts with Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it may be possible to conduct a survey of downstream employers, the survey would need to cover thousands of firms in order to completely cover indirect employment. For induced impacts, the entire economy would need to be scrutinized. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured using *economic multipliers.* Multipliers are derived from models of the general economy. They come in a variety of forms and differ greatly in definition and application.

In addition, the use of multiplier analysis is limited by a number of factors, these being:

- The accuracy of the structure and parameters of the underlying model;
- The level of unemployment in the economy;
- The assumption of constant returns to scale in production;
- The assumption that the economy's structure is static over time; and
- The assumption that there are no displacement effects.

Inter*VISTAS* applied economic multipliers based on Statistics Canada economic multipliers from the 2009 Interprovincial Input-Output model, the most recent available, to estimate the direct, indirect and induced employment, income/wages and benefits and GDP generated by each dollar of spending.[28] The provinces with P3 projects included in the study time frame are: Alberta, British Columbia, Manitoba, New Brunswick, Ontario and Québec. These provincial multipliers were updated with Consumer Price Indices to account for inflation.

2.4 Estimating Tax Revenues

The tax revenues generated by P3 projects to both the federal and provincial levels of government are also estimated.[29] This includes taxes paid by employers and employees as a result of the activity generated from the infrastructure P3 projects.

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[28] The multipliers used for the analysis are based on Statistics Canada economic multipliers for the Provinces of Alberta, British Columbia, Manitoba, New Brunswick, Ontario and Québec from the 2009 Interprovincial Input-Output model, the most recent available. These provinces are the provinces with P3 projects included in the study time frame. These multipliers were updated with Consumer Price Indices to account for inflation.

[29] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3

2.5 Study Time Frame

The study included 121 projects with financial close dates between 2003 and 2012, as most of the projects were initiated during this period. [30]

projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

[30] Results are based on total P3 project value of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

3 Direct, Indirect and Induced Economic Impacts

3.1 Introduction

Each of the infrastructure P3 projects across Canada generates direct employment nation-wide. This includes employment needed for the construction of the infrastructure and the employment required to maintain/operate each of the projects. Infrastructure P3 projects also contribute significantly to the economy and GDP of the country and each of the respective provinces.

Section 3.2 provides a summary of the economic impact of 121 infrastructure P3 projects in Canada at a national level during the study period, from 2003-2012. Economic impacts are broken down and shown for each of the three project cost components:

- Capital costs;
- Maintenance/operations costs; and
- Total P3 project value.

In the last 22 years, infrastructure P3 projects were initiated across a wide range of sectors – including environmental, hospitals/healthcare, education, transportation, and many others.
Section 3.3 summarises the economic impact of infrastructure P3 projects in Canada by sector, for the projects with during 2003-2012.

A breakdown of economic impacts of infrastructure P3 projects across Canada, by province, can be found in **Appendix C** to **Appendix H**. The provinces of Alberta, British Columbia, Manitoba, New Brunswick, Ontario and Québec are included in this study, as these are the provinces with infrastructure P3 projects included in the study time frame between 2003-2012.

Economic Impacts of Capital Costs in Canada, 2003-2012

- 210,400 *direct* FTE jobs supported
- $13.4 billion in *direct* income/wages & benefits earned
- $17.3 billion *direct* GDP to Canada's economy

Economic Impacts of Maintenance/Operations Costs in Canada, 2003-2012

- 80,200 *direct* FTE jobs supported
- $5.7 billion in *direct* income/wages & benefits earned
- $7.9 billion *direct* GDP to Canada's economy

Economic Impacts of Total P3 Project Value of Infrastructure P3 Projects in Canada, 2003-2012

- 290,680 *direct* FTE jobs supported
- $19 billion in *direct* income/wages & benefits earned
- $25.1 *direct* GDP to Canada's economy

3.2 Economic Impact of Infrastructure P3 Projects in Canada

3.2.1 Economic Impacts of Capital Costs

The construction of public infrastructure has labour requirements of individuals from a wide range of job types, such as architects, plumbers, electricians, project managers, and engineers, in order to complete the P3 project on time and on budget. There are also other requirements needed to develop public infrastructure, such as materials, machinery and equipment. Based on available data from 2003-2012, the total capital cost (or total cost of construction) of infrastructure P3 projects in Canada amounts to $38.4 billion dollars.[31]

This capital spending contributes significantly to the national economy. Over the 10-year study period, capital costs from P3 projects support *direct* employment of 210,400 FTE jobs, with *direct* income/wages and benefits of $13.4 billion. Additionally, infrastructure P3 projects contribute $17.3 billion in *direct* GDP to Canada's economy, based on capital costs.[32] **Table 3-1** provides a summary of the economic impact of the capital cost of infrastructure P3 projects in Canada.

Table 3-1: Total Economic Impacts of the Capital Cost of Infrastructure P3 Projects in Canada, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	210,400	$13,360	$17,290	$38,390
Indirect	97,410	$6,290	$9,250	$17,890
Induced	65,360	$3,340	$7,290	$11,970
Total Canada	***373,170***	***$22,990***	***$33,830***	***$68,250***

Notes:
* Results are based on capital cost of projects and are presented in 2013 dollars.
** Applies to 121 projects with financial close dates between 2003 and 2012.

3.2.2 Economic Impacts of Maintenance/Operations Costs

In addition to the construction costs needed to develop the P3 projects, there are also costs incurred to maintain and operate the projects, if there is a maintenance/operations component included in the project agreement. The total maintenance/operations cost of Canada's

[31] Results are based on capital cost of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

[32] Results are presented in 2013 dollars.

infrastructure P3 projects over the study period with available data is equivalent to approximately $12.8 billion dollars.[33]

In addition to the employment and other economic impacts related to a project's capital costs, maintenance/operations costs help sustain jobs in the region and promote further contributions to the national economy. **Table 3-2** provides a summary of the economic impact of the maintenance/operations cost of infrastructure P3 projects in Canada from 2003-2012. These projects support *direct* employment of 80,280 FTE jobs, earning $5.7 billion in *direct* income/wages and benefits. Based on maintenance/operations costs, infrastructure P3 projects also contribute $7.9 billion in *direct* GDP to the national economy.[34]

Table 3-2: Total Economic Impacts of the Maintenance/Operations Cost of Infrastructure P3 Projects in Canada, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	80,280	$5,650	$7,850	$12,780
Indirect	36,280	$2,150	$3,360	$5,970
Induced	27,700	$1,420	$3,120	$5,080
Total Canada	***144,260***	***$9,220***	***$14,330***	***$23,830***

Notes:
* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars.
** Applies to 121 projects with financial close dates between 2003 and 2012.

3.2.3 Economic Impacts of Total P3 Project Value

The total P3 project value is the total cost incurred as a result of an infrastructure P3 contract, which includes capital cost plus ongoing maintenance/operations costs for a project, if any. This includes jobs involved in the construction of the project and the employment of individuals involved in the maintenance/operations of the project, as well as any other associated project spending.

[33] Results are based on maintenance/operations cost of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

[34] Results are presented in 2013 dollars.

Over the last 10 years, infrastructure P3 projects with available data have a total P3 project value of over $51.2 billion.[35]

Together the capital costs and maintenance/operations costs of infrastructure P3 projects contribute directly to employment and the economy across the country. The economic impact of the total P3 project value in Canada during the study period, which includes the impact of the capital costs and the impact of the maintenance/operations costs of infrastructure P3 projects, are summarised in **Table 3-3.** Over the study period, infrastructure P3 projects support *direct* employment of 290,680 FTE jobs, receiving $19 billion in *direct* income/wages and benefits. In addition, these P3 projects across Canada generate an estimated $25.1 billion in *direct* GDP.

The *total* economic impact of the total P3 project value would also include indirect and induced effects. Considering multiplier effects (indirect and induced), the *total* economic impacts of the total P3 project value of infrastructure P3 projects over the last 10 years amount to approximately 517,430 employment (FTE jobs), with income/wages and benefits of nearly $32.2 billion. Furthermore, the total P3 project value of infrastructure P3 projects contribute an estimated $48.2 billion and $92.1 million, in *total* GDP and *total* economic output, respectively, to the national economy.

Table 3-3: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in Canada, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	290,680	$19,010	$25,140	$51,170
Indirect	133,690	$8,440	$12,610	$23,860
Induced	93,060	$4,760	$10,410	$17,050
Total Canada	***517,430***	***$32,210***	***$48,160***	***$92,080***

Notes:
* Results are based on total P3 project value of projects and are presented in 2013 dollars.
** Applies to 121 projects with financial close dates between 2003 and 2012.

[35] Results are based on total P3 project value of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

3.3 Economic Impact of Infrastructure P3 Projects in Canada by Sector

This section of the report discusses the economic impact of infrastructure P3 projects in Canada on a sector-by-sector basis. There are nine sectors reviewed, in total.

3.3.1 Economic Impacts of Capital Costs

A variety of Canada's economic sectors currently benefit from the infrastructure development of P3 infrastructure projects. The capital costs (or construction costs) of P3 projects across the country generate employment and facilitate economic growth in each of these sectors.[36] **Table 3-4** provides a summary of the economic impact of the capital cost of infrastructure P3 projects in Canada from 2003-2012, including employment, income/wages and benefits, GDP and total economic output.[37] With the hospitals and healthcare sector contributing the highest capital spending over the study period of $17.8 billion, infrastructure P3 projects in the hospitals and healthcare sector supports *direct* employment of 100,450 FTE jobs, earning $6.3 billion in *direct* income/wages and benefits, and contributes $8.1 billion in *direct* GDP to the national economy.

Table 3-4: Total Economic Impacts, by Sector, of the Capital Cost of Infrastructure P3 Projects in Canada, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Defence	Direct	3,670	$230	$300	$630
	Indirect	1,640	$100	$150	$300
	Induced	1,150	$60	$130	$220
	Total	***6,460***	***$390***	***$580***	***$1,150***
Education	Direct	5,590	$410	$580	$1,280
	Indirect	2,550	$210	$310	$580
	Induced	1,600	$90	$220	$350
	Total	***9,740***	***$710***	***$1,110***	***$2,210***

[36] Results are based on capital cost of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

[37] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Environmental	Direct	730	$50	$60	$140
	Indirect	340	$20	$30	$60
	Induced	220	$10	$30	$40
	Total	***1,290***	***$80***	***$120***	***$240***
Government Services	Direct	660	$40	$50	$110
	Indirect	290	$20	$30	$50
	Induced	210	$10	$20	$40
	Total	***1,160***	***$70***	***$100***	***$200***
Hospitals & Healthcare	Direct	100,450	$6,300	$8,070	$17,830
	Indirect	47,830	$2,970	$4,390	$8,590
	Induced	32,230	$1,610	$3,450	$5,740
	Total	***180,510***	***$10,880***	***$15,910***	***$32,160***
Justice/ Corrections	Direct	14,820	$930	$1,200	$2,580
	Indirect	6,570	$420	$620	$1,210
	Induced	4,580	$240	$510	$860
	Total	***25,970***	***$1,590***	***$2,330***	***$4,650***
Real Estate	Direct	2,290	$140	$180	$400
	Indirect	1,050	$70	$100	$180
	Induced	730	$40	$80	$130
	Total	***4,070***	***$250***	***$360***	***$710***
Recreation &	Direct	9,420	$590	$760	$1,640

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Culture	Indirect	4,300	$270	$400	$790
	Induced	2,980	$150	$330	$550
	Total	***16,700***	***$1,010***	***$1,490***	***$2,980***
Transportation	Direct	72,760	$4,660	$6,080	$13,770
	Indirect	32,840	$2,210	$3,210	$6,130
	Induced	21,660	$1,110	$2,530	$4,040
	Total	***127,260***	***$7,980***	***$11,820***	***$23,940***
All Sectors	Direct	210,390	$13,360	$17,290	$38,390
	Indirect	97,420	$6,290	$9,250	$17,890
	Induced	65,360	$3,340	$7,290	$11,970
	Total	***373,170***	***$22,990***	***$33,830***	***$68,250***

Notes:
* Results are based on capital cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.
** Applies to 121 projects with financial close dates between 2003 and 2012.

3.3.2 Economic Impacts of Maintenance/Operations Costs

As infrastructure P3 projects exist in a wide range of Canada's economic sectors, employment and economic contributions also arise in each sector as a result of the maintenance/operations costs of these P3 projects.[38] A summary of the estimated economic impacts of project maintenance/operations costs of infrastructure P3 projects at the national level, broken down by sector, from 2003-2012 is provided in **Table 3-5**. Based on projects over the study period with available data, the hospitals and healthcare sector records the highest maintenance/operations costs of $4.9 billion. Infrastructure P3 projects in the hospitals and healthcare sector supports

[38] Results are based on maintenance/operations cost of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

direct employment of 38,830 FTE jobs, earning $3.1 billion in *direct* income/wages and benefits, and contributes $3.5 billion in *direct* GDP to Canada's economy.[39]

Table 3-5: Total Economic Impacts, by Sector, of the Maintenance/Operations Cost of Infrastructure P3 Projects in Canada, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Defence	Direct	1,440	$140	$180	$260
	Indirect	810	$40	$60	$120
	Induced	650	$30	$70	$120
	Total	***2,900***	***$210***	***$310***	***$500***
Education	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Environmental	Direct	260	$20	$30	$50
	Indirect	120	$10	$10	$30
	Induced	70	$0	$10	$10
	Total	***450***	***$30***	***$50***	***$90***
Government Services	Direct	100	$10	$10	$40
	Indirect	210	$10	$20	$30
	Induced	80	$0	$10	$10
	Total	***390***	***$20***	***$40***	***$80***
Hospitals &	Direct	38,830	$3,090	$3,510	$4,850

[39] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Healthcare	Indirect	12,690	$720	$1,110	$1,860
	Induced	13,600	$710	$1,510	$2,520
	Total	***65,120***	***$4,520***	***$6,130***	***$9,230***
Justice/ Corrections	Direct	12,190	$770	$2,020	$2,690
	Indirect	6,830	$390	$620	$1,070
	Induced	4,290	$220	$490	$790
	Total	***23,310***	***$1,380***	***$3,130***	***$4,550***
Real Estate	Direct	850	$60	$80	$180
	Indirect	900	$60	$80	$130
	Induced	390	$20	$40	$70
	Total	***2,140***	***$140***	***$200***	***$380***
Recreation & Culture	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Transportation	Direct	26,620	$1,580	$2,020	$4,710
	Indirect	14,700	$920	$1,450	$2,740
	Induced	8,610	$430	$970	$1,560
	Total	***49,930***	***$2,930***	***$4,440***	***$9,010***
All Sectors	Direct	80,280	$5,650	$7,850	$12,780
	Indirect	36,280	$2,150	$3,360	$5,970

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Induced	27,700	$1,420	$3,120	$5,080
	Total	***144,260***	***$9,220***	***$14,330***	***$23,830***

Notes:
* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.
** Applies to 121 projects with financial close dates between 2003 and 2012.

3.3.3 Economic Impacts of Total P3 Project Value

The total P3 project value of infrastructure P3 projects across Canada, which includes capital costs and any applicable maintenance/operations costs, yield a significant contribution to the employment and economic growth of each project's respective business sector.[40] **Table 3-6** outlines the total economic impact of the total P3 project value of infrastructure P3 projects in Canada by sector over the study period. From 2003-2012, the hospitals and healthcare sector accounts for the highest total P3 project value of $22.7 billion. Employment associated with the infrastructure P3 projects in this sector is equivalent to *direct* employment of 139,280 FTE jobs, generating direct income/wages and benefits estimated at more than $9.4 billion. Furthermore, based on total P3 project value, the hospitals and healthcare sector's infrastructure P3 projects could contribute an estimated $11.6 billion and $22.7 billion, in *direct* gross domestic product (GDP) and *direct* economic output, respectively, to the national economy.[41]

Table 3-6: Total Economic Impacts, by Sector, of the Total P3 Project Value of Infrastructure P3 Projects in Canada, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Defence	Direct	5,110	$370	$480	$890
	Indirect	2,450	$140	$210	$420

[40] Results are based on total P3 project value of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

[41] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Induced	1,800	$90	$200	$340
	Total	***9,360***	***$600***	***$890***	***$1,650***
Education	Direct	5,590	$410	$580	$1,280
	Indirect	2,550	$210	$310	$580
	Induced	1,600	$90	$220	$350
	Total	***9,740***	***$710***	***$1,110***	***$2,210***
Environmental	Direct	990	$70	$90	$190
	Indirect	460	$30	$40	$90
	Induced	290	$10	$40	$50
	Total	***1,740***	***$110***	***$170***	***$330***
Government Services	Direct	760	$50	$60	$150
	Indirect	500	$30	$50	$80
	Induced	290	$10	$30	$50
	Total	***1,550***	***$90***	***$140***	***$280***
Hospitals & Healthcare	Direct	139,280	$9,390	$11,580	$22,680
	Indirect	60,520	$3,690	$5,500	$10,450
	Induced	45,830	$2,320	$4,960	$8,260
	Total	***245,630***	***$15,400***	***$22,040***	***$41,390***
Justice/ Corrections	Direct	27,010	$1,700	$3,220	$5,270
	Indirect	13,400	$810	$1,240	$2,280
	Induced	8,870	$460	$1,000	$1,650

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Total	***49,280***	***$2,970***	***$5,460***	***$9,200***
Real Estate	Direct	3,140	$200	$260	$580
	Indirect	1,950	$130	$180	$310
	Induced	1,120	$60	$120	$200
	Total	***6,210***	***$390***	***$560***	***$1,090***
Recreation & Culture	Direct	9,420	$590	$760	$1,640
	Indirect	4,300	$270	$400	$790
	Induced	2,980	$150	$330	$550
	Total	***16,700***	***$1,010***	***$1,490***	***$2,980***
Transportation	Direct	99,380	$6,240	$8,100	$18,480
	Indirect	47,540	$3,130	$4,660	$8,870
	Induced	30,270	$1,540	$3,500	$5,600
	Total	***177,190***	***$10,910***	***$16,260***	***$32,950***
All Sectors	Direct	290,670	$19,010	$25,140	$51,170
	Indirect	133,700	$8,440	$12,610	$23,860
	Induced	93,060	$4,760	$10,410	$17,050
	Total	***517,430***	***$32,210***	***$48,160***	***$92,080***

Notes:
* Results are based on total P3 project value of projects and are presented in 2013 dollars. Totals may not add up due to rounding.
** Applies to 121 projects with financial close dates between 2003 and 2012.

4 Estimated Tax Impacts

4.1 Introduction

This part of the report documents the impact to government revenues resulting from P3 infrastructure development and associated economic activity during the study period. The scope of the project focused on revenues received by federal and provincial governments.[42]

Revenue impacts are presented based on who is making the payment:

- **Taxes paid by employers and employees.** These are taxes paid by P3 project employers and employees. They include income/wages and benefits and payroll taxes, social insurance contributions (such as the employment insurance premiums).

Tax Contributions of Infrastructure P3 Projects

- Over the 2003-2012 study period, the federal and provincial government received an estimated $7.5 billion

Contribution to the Federal Government

- $5.2 billion

Contribution to Provincial Governments

- $2.3 billion

Taxes paid to the federal and provincial levels of government are separately identified.[43]

The purpose of this section is to present the tax revenue impacts resulting from the activity attributable to infrastructure P3 projects. As with all such studies, a conceptual decision has to be made as to how broad a definition of *economic activity* should be used in measuring the impacts. For this study a relatively narrow definition has been taken, for example, the following have **not** been included:

- Taxes associated with indirect or induced employment (i.e. multiplier effects).
- Consumption taxes (e.g., HST) paid by employees when they spend their income/wages and benefits.

[42] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

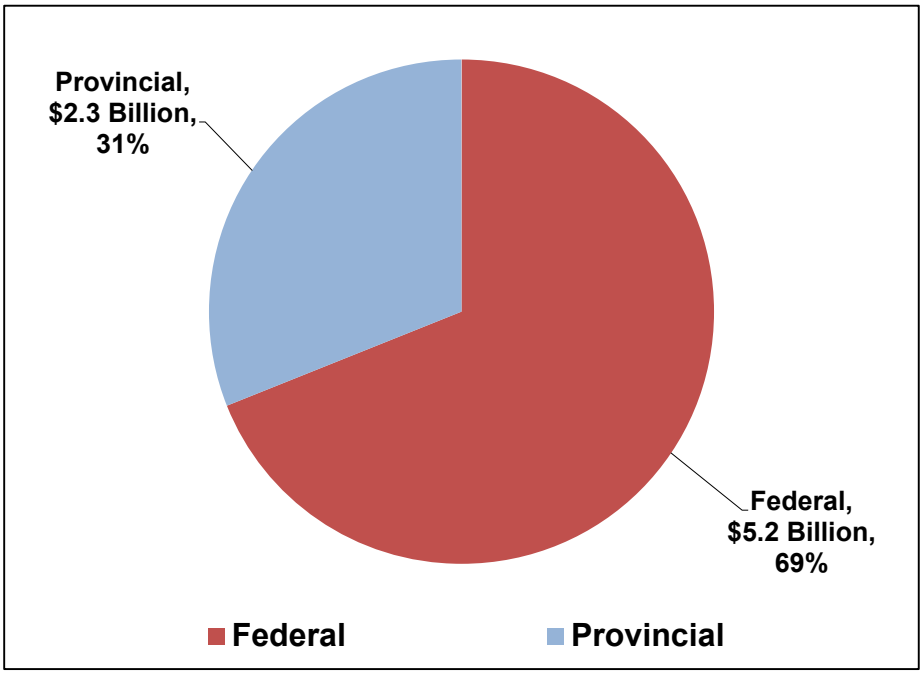
[43] For the most part, this study **estimates** taxes paid from information on the employers and employees of the P3 projects. In a few situations, such as the corporate income tax paid by employers, an approximate method was used to estimate taxes paid. In every case conservative methods were used. The taxes that have been included are: personal income tax, corporate income tax, Employment Insurance (EI), Canada Pension Plan (CPP), Workers Compensation Board (WCB) payments and health care. These tax payments are estimated for the direct employment and are based on 2012 tax rates.

It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. This being the case, impacts and speculation about the general economy would be complex and averages would not necessarily be precise or accurate. Therefore, the tax analysis in this report is limited to revenues attributable to direct employment only.

4.2 Taxes by Level of Government

Infrastructure P3 projects across Canada generate tax revenue contributions to federal and provincial levels of government, estimated to be in the order of $7.5 billion from 2003-2012.[44] Over the 10-year study period, the federal government is the largest recipient of tax revenue, receiving nearly $5.2 billion (69% of the total), as seen in **Figure 4-1**. The provincial government receives a tax revenue contribution of $2.3 billion (31% of the total).

Figure 4-1: Breakdown of Tax Revenues of Infrastructure P3 Projects in Canada by Government Level, 2003-2012



Notes:
* Results are based on 2012 tax rates and are presented in 2013 dollars.
** Applies to 121 projects with financial close dates between 2003 and 2012.

[44] Results are based on total P3 project value of 121 projects. Estimates were developed for 34 projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

4.3 Summary of Tax Impacts

A complete summary of estimated tax impacts by infrastructure P3 projects at the national level from 2003-2012 is provided in **Figure 4-2**.

Figure 4-2: Government Revenue Impacts of Infrastructure P3 Projects in Canada, 2003-2012

SUMMARY OF TAX CONTRIBUTIONS OF PPP PROJECTS (2003-2012) - CANADA

	Federal		Provincial		All Gov'ts
	Tax	Amount ($m)	Tax	Amount ($m)	Amount ($m)
Paid by Employers or Employees	Personal Income Tax	2,627	Personal Income Tax	1,292	
	Corporate Income Tax	525	Corporate Income Tax	356	
	EI - Employer	342	WCB	521	
	EI - Employee	244	Health Care	167	
	CPP - Employer	720			
	CPP- Employee	720			
	Total	**5,177**	**Total**	**2,335**	**7,512**
	Grand Total	**5,177**	**Grand Total**	**2,335**	**7,512**

Notes:
* Results are based on total P3 project value of 121 projects. Estimates were developed for 34 projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars. Totals may not add up due to rounding.
** Applies to 121 projects with financial close dates between 2003 and 2012.

5 Summary of Economic Impact Results

This section provides a summary of the economic impact and tax impact results from infrastructure P3 projects across Canada between 2003 and 2012.

5.1 Economic Impacts

By linking the private and public sectors, P3 projects have facilitated infrastructure development in Canada, contributing both economic and social benefits across the nation. Each infrastructure P3 project generates jobs involved in the construction of infrastructure, including architects, plumbers, electricians, project managers, and engineers. In addition, infrastructure P3 projects also support employment needed to maintain/operate the respective projects.

The total P3 project value is defined as the total cost incurred as a result of a P3 contract, which includes capital cost plus ongoing maintenance/operations costs for a project, if any. From 2003-2012 the total P3 project value of projects with available data amounts to over $51.2 billion.[45] The economic impact of the total P3 project value of infrastructure P3 projects includes the economic impact of both capital costs and applicable maintenance/operations costs. **Table 5-1** provides a summary of the economic impact of the total P3 project value of infrastructure P3 projects in Canada. Over the 10-year study period, these projects support *direct* employment of 290,680 FTE jobs, earning $19 billion in *direct* income/wages and benefits. Additionally, the infrastructure P3 projects contribute $25.1 billion in *direct* GDP to Canada.[46]

Economic Impacts of Total P3 Project Value of Infrastructure P3 Projects in Canada, 2003-2012

- 517,430 *total* FTE jobs supported
- $32.2 billion in *total* income/wages & benefits earned
- $48.2 billion *total* GDP to Canada's economy
- Total P3 project value of all projects with data amounts to over $51.2 billion

Tax Impacts of Infrastructure P3 Projects across Canada, 2003-2012

- $7.5 billion to all levels of Government
  - $5.2 billion (69%) to the Federal Government
  - $2.3 billion (31%) to the Provincial Government

[45] Results are based on total P3 project value of 121 projects and are presented in 2013 dollars. Estimates were developed for 34 projects with incomplete project cost data.

[46] Figures are presented in 2013 dollars.

Table 5-1: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in Canada, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	290,680	$19,010	$25,140	$51,170
Indirect	133,690	$8,440	$12,610	$23,860
Induced	93,060	$4,760	$10,410	$17,050
Total Canada	***517,430***	***$32,210***	***$48,160***	***$92,080***

Notes:
* Results are based on total P3 project value of projects and are presented in 2013 dollars.
** Applies to 121 projects with financial close dates between 2003 and 2012.

5.2 Tax Impacts

Infrastructure P3 activity is also an important generator of taxation revenues to the federal and provincial levels of government.[47] Total taxes paid by employers and employees, are estimated at $7.5 billion from 2003-2012, as seen in **Table 5-2**.[48] Over the 10-year study period, the majority of taxes collected accrue to the federal government at 69%. The provincial government also benefits from P3 projects, with provincial government revenue amounting to over $2.3 billion.

Table 5-2: Estimated Tax Revenues of Infrastructure P3 Projects across Canada, 2003-2012

Taxpayer	Federal ($ Millions)	Provincial ($ Millions)	*Total ($ Millions)*
Employers or Employees	$5,180	$2,330	***$7,510***

Notes:
* Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.
** Applies to projects with financial close dates between 2003 and 2012.

[47] As noted previously, tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

[48] Results are based on total P3 project value of 121 projects. Estimates were developed for 34 projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

Appendix A: Calculation of Person Hours per Year

The following are details of calculations for the average number of hours per person year.

Table A-1: Person Hours per Year

Calculation of person hours per year:

	365	days per year
Less:	(104)	weekend days
	(11)	legal holidays
	(15)	average vacation days
	(6)	sick leave
	229	days per person year
	* 8	hours per work day
1,832 hours per person year		

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8 hour workday was assumed.[49] Similarly, numbers of vacation and sick leave days may also vary.

[49] Essentially, a measure of paid hours per year is used. Using a measure of productive hours per year with 6.5 hour workdays (8 hours less 1 hour for lunch less two 15 minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of person years from seasonal and part-time jobs. Using the 1,832 figure, a lower number of person years is inferred.

Appendix B: Glossary of Terms

***Direct Employment*:** Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of P3 projects, all of those people who work in a construction- related capacity to deliver the P3 infrastructure project would be considered direct employment. Individuals needed to maintain/operate the respective projects are also considered direct employment.

Economic Output: It reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals. The direct economic output of P3 projects is equivalent to the total project value of the P3 projects or the total value of expenditures represented by the P3 projects, including the value of intermediate goods and services.

Full Time Equivalent (FTE): (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full time basis for one year. In this study we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.[50]

Gross Domestic Product (GDP): A measure of the money value of final goods and services produced locally as a result of economic activity. This measure does not include the value of intermediate goods and services used up to produce the final goods and services. For example, the value of the completed bridge of the infrastructure P3 project is counted in GDP. The steel used to build the bridge, which is an intermediate good, is already considered in the value of the completed bridge and not included in the GDP measure.

Indirect Employment: Indirect employment is employment which results because of direct employment. For P3 projects, it would include that portion of employment in supplier industries which are dependent on sales to the construction sector. In some cases, contract work would be considered indirect employment.

Induced Employment: Induced employment is employment created because of expenditures by direct and indirect employees. For instance, if a construction firm employee decides to purchase a new car or recreational vehicle, or take an additional vacation to Niagara Falls or Banff, this would result in additional (induced) employment hours in the general economy. The purchase/expenditures would support hours of induced employment in the manufacturing and/or tourism industry, etc.

Multiplier Analysis: Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect and total effects (see Multiplier.)

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[50] *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass.,1984.

Multiplier: Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. Multipliers are derived from models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, they must be used with great care.

Operation & Maintenance Contract (O&M)**:** A private operator, under contract, operates a publicly-owned asset for a specified term. Ownership of the asset remains with the public entity.[51]

Public-Private Partnership (P3)**:** A cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.[52]

Public-Sector Comparator (PSC)**:** A detailed analysis carried out by the public partner or its advisers to determine the all-in lifecycle cost of providing the project or service. The PSC can then be measured against the private sector proposal to determine the quantitative benefit to the public sector.[53]

Value for Money (VFM)**:** (also Total Cost Savings) A value for money assessment compares the costs of delivering a public infrastructure project through a P3 or alternative finance procurement (AFP) model against the cost of using a traditional public sector delivery method, referred to as the Public Sector Comparator (PSC). The costs of both procurement methods are then be adjusted for risk using a risk workshop. This workshop involves using stakeholders and subject-matter experts to identify and quantify risk. There will be value for money if the risk-adjusted costs of the alternative procurement are lower than the risk-adjusted costs of traditional procurement.

[51] Taken from Public-Private Partnerships - A Guide for Municipalities.

[52] Taken from the Canadian Council for Public-Private Partnership.

[53] Taken from Public-Private Partnerships - A Guide for Municipalities.

Appendix C: Economic Impact of Infrastructure P3 Projects in Alberta

The following appendix provides a summary of the estimated economic impacts and tax impacts from infrastructure P3 projects in Alberta during the 2003-2012 study period. The infrastructure P3 projects throughout Alberta generate direct employment province-wide and contribute significantly to the economy of the province.

Appendix C.a Economic Impact of Infrastructure P3 Projects in Alberta

Appendix C.a.i Economic Impacts of Capital Costs

The capital costs found in this section are associated with the construction of P3 infrastructure projects in Alberta. Associated with these projects are significant levels of labour and materials needed to develop the public infrastructure. The infrastructure P3 projects in Alberta during the study period have a total capital cost (or total construction cost) of over $5.9 billion.[54]

From 2003-2012, capital costs from the infrastructure P3 projects support *direct* employment of 25,320 FTE jobs in the province, with a *direct* income/wages and benefits of $1.9 billion. Additionally, the infrastructure P3 projects contribute $2.7 billion in *direct* GDP to Alberta's economy.[55] **Table C-1** provides a summary of the economic impact of the capital cost of infrastructure P3 projects in Alberta over the 10-year study period.

Table C-1: Total Economic Impacts of the Capital Cost of Infrastructure P3 Projects in Alberta, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	25,320	$1,910	$2,670	$5,940
Indirect	11,820	$970	$1,440	$2,730
Induced	7,400	$440	$1,020	$1,610
Total AB	***44,540***	***$3,320***	***$5,130***	***$10,280***

Notes:

[54] Results are based on capital cost of 12 projects and are presented in 2013 dollars. Estimates were developed for 10 projects with incomplete project cost data.

[55] Results are presented in 2013 dollars.

* Results are based on capital cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix C.a.ii Economic Impacts of Maintenance/Operations Costs

Alongside capital costs, P3 infrastructure projects incur costs to maintain and operate the completed infrastructure. In Alberta, total maintenance/operations costs associated with the study projects total approximately $1.1 billion from 2003-2012.[56]

In addition to the economic impacts related to capital costs of study projects in Alberta, maintenance/operations costs support employment and generate further contributions to the provincial economy. **Table C-2** provides a summary of the economic impact of maintenance/operations costs of infrastructure P3 projects in Alberta over the study period. These projects support *direct* employment of 5,500 FTE jobs, earning $390 million in *direct* income/wages and benefits. Based on maintenance/operations costs, infrastructure P3 projects also provide $580 million in *direct* GDP to the provincial economy.[57]

Table C-2: Total Economic Impacts of the Maintenance/Operations Cost of Infrastructure P3 Projects in Alberta, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	5,500	$390	$580	$1,130
Indirect	2,310	$190	$310	$600
Induced	1,560	$90	$220	$340
Total AB	***9,370***	***$670***	***$1,110***	***$2,070***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[56] Results are based on maintenance/operations cost of 12 projects and are presented in 2013 dollars. Estimates were developed for 10 projects with incomplete project cost data.

[57] Results are presented in 2013 dollars.

Appendix C.a.iii Economic Impacts of Total P3 Project Value

Total P3 project value costs include both the capital cost and maintenance/operations cost components of the project contract. This means that total construction cost and labour, as well as any labour and expenditure required throughout a maintenance/operations lifecycle is considered. In the Province of Alberta, the total P3 project value of infrastructure P3 projects amounts to close to $7.1 billion from 2003-2012.[58]

The capital cost and maintenance/operations cost of the infrastructure P3 projects generate significant contributions to the labour force and economy of the province. **Table C-3** summarises the economic impact of total P3 project value of infrastructure P3 projects in Alberta, which includes both capital and maintenance/operations costs. Over the study period, infrastructure P3 projects in the province support *direct* employment of 30,820 FTE jobs province-wide, receiving $2.3 billion in *direct* income/wages and benefits. Additionally, the total P3 project value of infrastructure projects contributes an estimated $3.3 billion in *direct* GDP to Alberta's economy.[59]

Table C-3: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in Alberta, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	30,820	$2,300	$3,250	$7,070
Indirect	14,130	$1,160	$1,750	$3,330
Induced	8,960	$530	$1,240	$1,950
Total AB	***53,910***	***$3,990***	***$6,240***	***$12,350***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[58] Results are based on total P3 project value of 12 projects and are presented in 2013 dollars. Estimates were developed for 10 projects with incomplete project cost data.

[59] Results are presented in 2013 dollars.

Appendix C.b Economic Impact of Infrastructure P3 Projects in Alberta by Sector

This section discusses the economic impact of infrastructure P3 projects in Alberta on a sector-by-sector basis. The infrastructure P3 projects in Alberta during the study time frame include the following sectors: education, environmental, justice/corrections and transportation.

Appendix C.b.i Economic Impacts of Capital Costs

The capital cost of nearly $5.9 billion associated with the infrastructure P3 projects in Alberta from 2003-2012 generates employment and facilitates economic growth within a variety of sectors.[60] A summary of the economic impact of the capital cost of infrastructure P3 projects in the province, including employment, income/wages and benefits, GDP and economic output, is provided in **Table C-4**. Based on capital costs, the transportation sector supports the largest proportion of *direct* employment, with 19,130 FTE jobs, earning $1.4 billion in *direct* income/wages and benefits, and contributing $2.0 billion in *direct* GDP to the provincial economy. The capital cost associated with the transportation sector totals approximately $4.5 billion.[61]

Table C-4: Total Economic Impacts, by Sector, of the Capital Cost of Infrastructure P3 Projects in Alberta, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Education	Direct	5,290	$400	$560	$1,240
	Indirect	2,470	$200	$300	$570
	Induced	1,550	$90	$210	$340
	Total	***9,310***	***$690***	***$1,070***	***$2,150***
Environmental	Direct	280	$20	$30	$70
	Indirect	130	$10	$20	$30
	Induced	80	$0	$10	$20
	Total	***490***	***$30***	***$60***	***$120***

[60] Results are based on capital cost of 12 projects and are presented in 2013 dollars. Estimates were developed for 10 projects with incomplete project cost data.

[61] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Justice/ Corrections	Direct	630	$50	$70	$150
	Indirect	290	$20	$40	$70
	Induced	180	$10	$30	$40
	Total	***1,100***	***$80***	***$140***	***$260***
Transportation	Direct	19,130	$1,440	$2,020	$4,490
	Indirect	8,930	$740	$1,080	$2,070
	Induced	5,590	$330	$770	$1,210
	Total	***33,650***	***$2,510***	***$3,870***	***$7,770***
All Sectors	Direct	25,320	$1,910	$2,670	$5,940
	Indirect	11,820	$970	$1,440	$2,730
	Induced	7,400	$440	$1,020	$1,610
	Total	***44,540***	***$3,320***	***$5,130***	***$10,280***

Notes:

* Results are based on capital cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix C.b.ii Economic Impacts of Maintenance/Operations Costs

The P3 projects in Alberta also have maintenance/operations lifecycles. The labour and expenditure requirements during each lifecycle yield significant contributions to the province. A summary of the estimated provincial economic impacts of maintenance/operations costs of infrastructure P3 projects during the study period, equivalent to $1.1 billion, are displayed in **Table C-5**.[62] The transportation sector has the highest maintenance/operations cost with approximately

[62] Results are based on maintenance/operations cost of 12 projects and are presented in 2013 dollars. Estimates were developed for 10 projects with incomplete project cost data.

$960 million. This sector supports *direct* employment of 4,860 FTE jobs, earning $350 million dollars in *direct* income/wages and benefits, and contributes $450 million in *direct* GDP to Alberta's economy.[63]

Table C-5: Total Economic Impacts, by Sector, of the Maintenance/Operations Cost of Infrastructure P3 Projects in Alberta, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Education	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Environmental	Direct	80	$10	$20	$20
	Indirect	30	$0	$10	$10
	Induced	20	$0	$0	$0
	Total	***130***	***$10***	***$30***	***$30***
Justice/ Corrections	Direct	560	$40	$120	$150
	Indirect	310	$20	$40	$60
	Induced	160	$10	$20	$30
	Total	***1,030***	***$70***	***$180***	***$240***
Transportation	Direct	4,860	$350	$450	$960
	Indirect	1,970	$160	$270	$530
	Induced	1,380	$80	$190	$300
	Total	***8,210***	***$590***	***$910***	***$1,790***

[63] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
All Sectors	Direct	5,500	$390	$580	$1,130
	Indirect	2,310	$190	$310	$600
	Induced	1,560	$90	$220	$340
	Total	***9,370***	***$670***	***$1,110***	***$2,070***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix C.b.iii Economic Impacts of Total P3 Project Value

Total P3 project value of infrastructure P3 projects in Alberta, which include both capital and maintenance/operations costs, contribute significantly to employment and economic growth of the province. From 2003-2012, the total P3 project value of infrastructure P3 projects in Alberta amounts to close to $7.1 billion.[64] As shown in **Table C-6**, the economic impact of the total infrastructure P3 project value in Alberta over the study period generates *direct* employment of 30,820 FTE jobs in the province, earning $2.3 billion in *direct* income/wages and benefits. Additionally, the infrastructure P3 projects contribute $3.3 billion in *direct* GDP to the province's transportation sector.[65]

Table C-6: Total Economic Impacts, by Sector, of the Total P3 Project Value of Infrastructure P3 Projects in Alberta, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Education	Direct	5,290	$400	$560	$1,240
	Indirect	2,470	$200	$300	$570

[64] Results are based on total P3 project value of 12 projects and are presented in 2013 dollars. Estimates were developed for 10 projects with incomplete project cost data.

[65] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Induced	1,550	$90	$210	$340
	Total	***9,310***	***$690***	***$1,070***	***$2,150***
Environmental	Direct	360	$30	$50	$90
	Indirect	160	$10	$30	$40
	Induced	100	$0	$10	$20
	Total	***620***	***$40***	***$90***	***$150***
Justice/ Corrections	Direct	1,190	$90	$190	$300
	Indirect	600	$40	$80	$130
	Induced	340	$20	$50	$70
	Total	***2,130***	***$150***	***$320***	***$500***
Transportation	Direct	23,990	$1,790	$2,470	$5,450
	Indirect	10,900	$900	$1,350	$2,600
	Induced	6,970	$410	$960	$1,510
	Total	***41,860***	***$3,100***	***$4,780***	***$9,560***
All Sectors	Direct	30,820	$2,300	$3,250	$7,070
	Indirect	14,130	$1,160	$1,750	$3,330
	Induced	8,960	$530	$1,240	$1,950
	Total	***53,910***	***$3,990***	***$6,240***	***$12,350***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix C.c Estimated Tax Impacts of Infrastructure P3 Projects in Alberta

Infrastructure P3 projects in Alberta generate tax revenue contributions to federal and provincial levels of government, estimated to be in the order of $850 million from 2003-2012.[66] The federal government is the largest recipient of tax revenue, receiving $590 million (70% of the total) over the study period.[67] The provincial government also receives tax revenues from infrastructure P3 projects, amounting to $260 million (30% of the total). A complete summary of tax impacts by infrastructure P3 projects at the provincial level is provided in **Figure C-1**.

Figure C-1: Government Revenue Impacts of Infrastructure P3 Projects in Alberta, 2003-2012

SUMMARY OF TAX CONTRIBUTIONS OF PPP PROJECTS (2003-2012) - AB

	Federal		Provincial		All Gov'ts
	Tax	Amount ($m)	Tax	Amount ($m)	Amount ($m)
Paid by Employers or Employees	Personal Income Tax	320	Personal Income Tax	156	
	Corporate Income Tax	56	Corporate Income Tax	50	
	EI - Employer	36	WCB	27	
	EI - Employee	26	Health Care	23	
	CPP - Employer	76			
	CPP- Employee	76			
	Total	**591**	**Total**	**256**	**848**
	Grand Total	**591**	**Grand Total**	**256**	**848**

Notes:

* Results are based on total P3 project value of 12 projects and are presented in 2013 dollars. Estimates were developed for 10 projects with incomplete project cost data. Results are based on 2012 tax rates and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

[66] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

[67] Results are based on total P3 project value of 12 projects and are presented in 2013 dollars. Estimates were developed for 10 projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

Appendix D: Economic Impact of Infrastructure P3 Projects in British Columbia

The following appendix provides a summary of the economic impact and tax impact results from infrastructure P3 projects in British Columbia during the 2003-2012 study period. The P3 infrastructure projects in the province support direct employment in B.C.'s labour force and contribute significantly to the economy of B.C.

Appendix D.a Economic Impact of Infrastructure P3 Projects in British Columbia

Appendix D.a.i Economic Impacts of Capital Costs

The province of B.C. benefits significantly from the construction of infrastructure P3 projects. The development of these projects requires high levels of labour from a variety of disciplines, as well as materials, machinery and equipment. During the study period, total capital costs of infrastructure P3 projects in B.C. totals over $6.5 billion.[68]

Table D-1 provides a summary of the economic impact of the capital cost of infrastructure P3 projects in B.C. from 2003-2012. Capital spending on infrastructure P3 projects over the study period contributes to the province by supporting *direct* employment of 36,350 FTE jobs, with *direct* income/wages and benefits of $2.2 billion. Additionally, infrastructure P3 project capital costs generate $2.8 billion in *direct* GDP to the provincial economy.[69]

Table D-1: Total Economic Impacts of the Capital Cost of Infrastructure P3 Projects in British Columbia, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	36,350	$2,200	$2,810	$6,450
Indirect	17,400	$1,120	$1,540	$2,790
Induced	11,680	$570	$1,340	$2,060
Total BC	***65,430***	***$3,890***	***$5,690***	***$11,300***

Notes:

[68] Results are based on capital cost of 23 projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[69] Results are presented in 2013 dollars.

* Results are based on capital cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix D.a.ii Economic Impacts of Maintenance/Operations Costs

Infrastructure P3 projects also incur costs needed to maintain/operate the project. These costs include the use of labour throughout the maintenance/operations component of a P3 project. Maintenance/operations costs of infrastructure P3 projects in B.C., over the study period, amounts to $3.1 billion.[70]

Employment in the province and further economic contributions are generated by the maintenance/operations costs of infrastructure P3 projects in B.C. **Table D-2** summarises the economic impact of the maintenance/operations cost of infrastructure P3 projects in B.C. over the 10-year study period. These projects support *direct* employment of 20,800 FTE jobs in the province, earning $1.2 billion in *direct* income/wages and benefits. Based on the maintenance/operations costs, infrastructure P3 projects also contribute $1.9 billion in *direct* GDP to B.C.'s economy.[71]

Table D-2: Total Economic Impacts of the Maintenance/Operations Cost of Infrastructure P3 Projects in British Columbia, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	20,800	$1,210	$1,910	$3,050
Indirect	8,810	$520	$790	$1,380
Induced	6,570	$320	$760	$1,160
Total BC	***36,180***	***$2,050***	***$3,460***	***$5,590***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[70] Results are based on maintenance/operations cost of 23 projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[71] Results are presented in 2013 dollars.

Appendix D.a.iii Economic Impacts of Total P3 Project Value

The sum of the capital cost and the maintenance/operations cost components of the infrastructure P3 contract equates to the total P3 project value. Total P3 project value includes the employment and expenditure associated with the construction of the project, as well as the labour and spending required to maintain and operate the project. In B.C., infrastructure P3 projects in the province over the last 10 years have a total P3 project value equivalent to nearly $9.5 billion.[72]

Together the capital costs and maintenance/operations costs of infrastructure P3 projects contribute directly to employment and the economy across the province. **Table D-3** provides a summary of the economic impact of total P3 project value in B.C. from 2003-2012, which includes both capital and maintenance/operations costs. These projects support *direct* employment of 57,150 FTE jobs in B.C., earning $3.4 billion in *direct* income/wages and benefits. Additionally, $4.7 billion in *direct* GDP is contributed to the provincial economy.[73]

Table D-3: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in British Columbia, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	57,150	$3,410	$4,720	$9,500
Indirect	26,210	$1,640	$2,330	$4,170
Induced	18,250	$890	$2,100	$3,220
Total BC	***101,610***	***$5,940***	***$9,150***	***$16,890***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[72] Results are based on total P3 project value of 23 projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[73] Results are presented in 2013 dollars.

Appendix D.b Economic Impact of Infrastructure P3 Projects in British Columbia by Sector

This section discusses the economic impact of infrastructure P3 projects in British Columbia on a sector-by-sector basis. Multiple sectors are represented in the analysis, including the environmental, hospitals and healthcare, justice/corrections, real estate (housing and facilities), and transportation sectors.

Appendix D.b.i Economic Impacts of Capital Costs

With over $6.5 billion in capital costs during the study period, infrastructure P3 projects in the province contribute to employment and economic growth to a variety of the province's different sectors.[74] **Table D-4** provides a summary of the economic impact of capital cost of infrastructure P3 projects in B.C. by sector from 2003-2012. The transportation sector accounts for the largest amount of capital spending with approximately $3.9 billion in total. Infrastructure P3 projects in this sector generates *direct* employment of 21,810 FTE jobs, earning $1.3 billion in *direct* income/wages and benefits, and contributing $1.7 billion in *direct* GDP to the province.[75]

Table D-4: Total Economic Impacts, by Sector, of the Capital Cost of Infrastructure P3 Projects in British Columbia, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Environmental	Direct	330	$20	$30	$50
	Indirect	160	$10	$10	$30
	Induced	110	$10	$10	$20
	Total	***600***	***$40***	***$50***	***$100***
Hospitals & Healthcare	Direct	12,490	$750	$970	$2,220
	Indirect	5,980	$390	$530	$960
	Induced	4,010	$200	$460	$710
	Total	***22,480***	***$1,340***	***$1,960***	***$3,890***

[74] Results are based on capital cost of 23 projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[75] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Justice/ Corrections	Direct	900	$50	$70	$160
	Indirect	430	$30	$40	$70
	Induced	290	$10	$30	$50
	Total	***1,620***	***$90***	***$140***	***$280***
Real Estate (Housing & Facilities)	Direct	810	$50	$60	$140
	Indirect	390	$30	$30	$60
	Induced	260	$10	$30	$50
	Total	***1,460***	***$90***	***$120***	***$250***
Transportation	Direct	21,810	$1,320	$1,690	$3,880
	Indirect	10,440	$670	$930	$1,680
	Induced	7,010	$340	$810	$1,240
	Total	***39,260***	***$2,330***	***$3,430***	***$6,800***
All Sectors	Direct	36,350	$2,200	$2,810	$6,450
	Indirect	17,400	$1,120	$1,540	$2,790
	Induced	11,680	$570	$1,340	$2,060
	Total	***65,430***	***$3,890***	***$5,690***	***$11,300***

Notes:

* Results are based on capital cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix D.b.ii Economic Impacts of Maintenance/Operations Costs

Employment and economic contributions also arise from the maintenance/operations cost of infrastructure P3 projects in B.C. The maintenance/operations cost of the infrastructure P3 projects and their resulting economic impacts span across a variety of sectors across the province. **Table D-5** summarises the economic impact of maintenance/operations costs of infrastructure P3 projects in B.C. Based on projects over the study period, the transportation sector incurs the greatest maintenance/operations costs out of all the sectors of $1.3 billion.[76] Infrastructure P3 projects in this sector support the highest contribution of employment in B.C., with *direct* employment of 7,900 FTE jobs, earning $480 million in *direct* income/wages and benefits. The projects in this sector also contribute $630 million in *direct* GDP to the province of B.C.[77]

Table D-5: Total Economic Impacts, by Sector, of the Maintenance/Operations Cost of Infrastructure P3 Projects in British Columbia, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Environmental	Direct	150	$10	$10	$20
	Indirect	70	$0	$10	$10
	Induced	40	$0	$0	$10
	Total	***260***	***$10***	***$20***	***$40***
Hospitals & Healthcare	Direct	6,830	$410	$470	$670
	Indirect	1,920	$110	$170	$270
	Induced	1,920	$90	$220	$340
	Total	***10,670***	***$610***	***$860***	***$1,280***
Justice/ Corrections	Direct	5,420	$290	$760	$990
	Indirect	2,380	$130	$210	$350
	Induced	1,610	$80	$190	$280

[76] Results are based on maintenance/operations cost of 23 projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[77] Results presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Total	***9,410***	***$500***	***$1,160***	***$1,620***
Real Estate (Housing & Facilities)	Direct	500	$30	$40	$60
	Indirect	150	$10	$10	$20
	Induced	130	$10	$10	$20
	Total	***780***	***$50***	***$60***	***$100***
Transportation	Direct	7,900	$480	$630	$1,310
	Indirect	4,290	$280	$400	$720
	Induced	2,870	$140	$330	$510
	Total	***15,060***	***$900***	***$1,360***	***$2,540***
All Sectors	Direct	20,800	$1,210	$1,910	$3,050
	Indirect	8,810	$520	$790	$1,380
	Induced	6,570	$320	$760	$1,160
	Total	***36,180***	***$2,050***	***$3,460***	***$5,590***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix D.b.iii Economic Impacts of Total P3 Project Value

Total P3 project value of infrastructure P3 projects in British Columbia include both capital and maintenance/operations costs. Combined, these expenditures contribute significantly to the province's various sectors.[78] The highest total P3 project value in the province over the study

[78] Results are based on total P3 project value of 23 projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

period is seen in the transportation sector, with approximately $5.2 billion in total spending. Consequently, the transportation sector supports the largest amount of employment province-wide and contributes the highest amount of GDP to the province.[79] The economic impact of total infrastructure P3 project value in B.C.'s transportation sector provides *direct* employment of 29,710 FTE jobs, earning $1.8 billion in *direct* income/wages and benefits, and contributes $2.3 billion in *direct* GDP. **Table D-6** outlines the total economic impact of the total P3 project value of infrastructure P3 projects in B.C. by sector from 2003-2012.

Table D-6: Total Economic Impacts, by Sector, of the Total P3 Project Value of P3 Projects in British Columbia, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Environmental	Direct	480	$30	$40	$70
	Indirect	230	$10	$20	$40
	Induced	150	$10	$10	$30
	Total	***860***	***$50***	***$70***	***$140***
Hospitals & Healthcare	Direct	19,320	$1,160	$1,440	$2,890
	Indirect	7,900	$500	$700	$1,230
	Induced	5,930	$290	$680	$1,050
	Total	***33,150***	***$1,950***	***$2,820***	***$5,170***
Justice/ Corrections	Direct	6,320	$340	$830	$1,150
	Indirect	2,810	$160	$250	$420
	Induced	1,900	$90	$220	$330
	Total	***11,030***	***$590***	***$1,300***	***$1,900***
Real Estate (Housing & Facilities)	Direct	1,310	$80	$100	$200
	Indirect	540	$40	$40	$80

[79] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Induced	390	$20	$40	$70
	Total	***2,240***	***$140***	***$180***	***$350***
Transportation	Direct	29,710	$1,800	$2,320	$5,190
	Indirect	14,730	$950	$1,330	$2,400
	Induced	9,880	$480	$1,140	$1,750
	Total	***54,320***	***$3,230***	***$4,790***	***$9,340***
All Sectors	Direct	57,150	$3,410	$4,720	$9,500
	Indirect	26,210	$1,640	$2,330	$4,170
	Induced	18,250	$890	$2,100	$3,220
	Total	***101,610***	***$5,940***	***$9,150***	***$16,890***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix D.c Estimated Tax Impacts of Infrastructure P3 Projects in British Columbia

Infrastructure P3 projects in B.C. generate tax revenue contributions to federal and provincial levels of government, estimated to be in the order of $1.3 billion from 2003-2012.[80] Over the study period, tax revenues from the infrastructure P3 projects received by the federal and provincial governments amount to $950 million (74% of the total) and $330 million (26% of the total), respectively.[81] A complete summary of tax impacts by infrastructure P3 projects at the provincial level is provided in **Figure D-1**.

Figure D-1: Government Revenue Impacts of Infrastructure P3 Projects in British Columbia, 2003-2012

SUMMARY OF TAX CONTRIBUTIONS OF PPP PROJECTS (2003-2012) - BC

	Federal		Provincial		All Gov'ts
	Tax	Amount ($m)	Tax	Amount ($m)	Amount ($m)
Paid by Employers or Employees	Personal Income Tax	449	Personal Income Tax	162	
	Corporate Income Tax	103	Corporate Income Tax	40	
	EI - Employer	67	WCB	83	
	EI - Employee	48	MSP	44	
	CPP - Employer	142			
	CPP- Employee	142			
	Total	**952**	**Total**	**329**	**1,281**
	Grand Total	**952**	**Grand Total**	**329**	**1,281**

Notes:

* Results are based on total P3 project value of 23 projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data. Results are based on 2012 tax rates and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

[80] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

[81] Results are based on total P3 project value of 23 projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

Appendix E: Economic Impact of Infrastructure P3 Projects in Manitoba

The following appendix provides a summary of the economic impacts and tax impacts from infrastructure P3 projects in Manitoba during the 2003-2012 study period. The P3 infrastructure projects throughout Manitoba generate direct employment province-wide and contribute significantly to the economy of the province.

Appendix E.a Economic Impact of Infrastructure P3 Projects in Manitoba

Appendix E.a.i Economic Impacts of Capital Costs

Capital costs of infrastructure P3 projects include the expenditures on construction, materials, labour and machinery. Every component of the capital cost contributes to the provincial economy. Infrastructure P3 projects in Manitoba over the study period have a capital expenditure of $350 million.[82]

Capital costs from infrastructure P3 projects in Manitoba support *direct* employment of 1,690 FTE jobs, with a *direct* income/wages and benefits of $100 million, from 2003-2012. Additionally, capital costs of infrastructure P3 projects in the province contribute $120 million in *direct* GDP to Manitoba's economy.[83] A summary of the economic impact of the capital cost of infrastructure P3 projects in Manitoba is provided in **Table E-1**.

Table E-1: Total Economic Impacts of the Capital Cost of Infrastructure P3 Projects in Manitoba, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	1,690	$100	$120	$350
Indirect	720	$40	$60	$120
Induced	400	$20	$40	$70
Total MB	***2,810***	***$160***	***$220***	***$540***

Notes:

[82] Results are based on capital cost of three projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[83] Results are expressed in 2013 dollars.

* Results are based on capital cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix E.a.ii Economic Impacts of Maintenance/Operations Costs

On top of construction costs needed to develop infrastructure P3 projects in Manitoba, expenditures are also necessary to sustain the maintenance/operations of the project, if there is a maintenance/operations component in the P3 project agreement contract. In the case of Manitoba, approximately $60 million in expenditures are attributed to the maintenance/operations of the infrastructure P3 project over the study period.[84]

The labour and expenditure required for the maintenance and operations of the infrastructure P3 project generates significant contributions to the province. **Table E-2** provides a summary of the economic impact of the maintenance/operations cost of infrastructure P3 projects in Manitoba from 2003-2012. The P3 projects support *direct* employment of 410 FTE jobs in the province, earning $20 million in *direct* income/wages and benefits. In addition, approximately $30 million in *direct* GDP is contributed to the provincial economy.[85]

Table E-2: Total Economic Impacts of the Maintenance/Operations Cost of Infrastructure P3 Projects in Manitoba, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	410	$20	$30	$60
Indirect	90	$5	$10	$10
Induced	80	$4	$10	$10
Total MB	***580***	***$30***	***$50***	***$80***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

[84] Results are based on maintenance/operations cost of three projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[85] Results are presented in 2013 dollars.

Appendix E.a.iii Economic Impacts of Total P3 Project Value

The total P3 project value equate to the total cost of an infrastructure P3 project. This includes capital cost, as well as any maintenance/operations cost, if such a component exists. Both the labour and expenditure required for construction and maintenance/operations of the project are considered. Over the last 10 years, infrastructure P3 projects in Manitoba have a total P3 project value of more than $410 million.[86]

The total P3 project value, which includes capital costs and maintenance/operations costs, contribute directly to the province's labour force and economy. The economic impact of the total P3 project value in Manitoba is shown in **Table E-3**. The total P3 project value of infrastructure P3 projects in Manitoba from 2003-2012 supports *direct* employment of 2,100 FTE jobs, earning $120 million in *direct* income/wages and benefits. Furthermore, total P3 project value of these projects contributes $150 million in *direct* GDP to the economy of the province.[87]

Table E-3: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in Manitoba, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	2,100	$120	$150	$410
Indirect	810	$50	$70	$130
Induced	480	$20	$50	$80
Total MB	***3,390***	***$190***	***$270***	***$620***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[86] Results are based on total P3 project value of three projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[87] Results are presented in 2013 dollars.

Appendix E.b Economic Impact of Infrastructure P3 Projects in Manitoba by Sector

The following section of the appendix reviews the economic impact of infrastructure P3 projects in Manitoba on a sector-by-sector basis. During the study time frame, the infrastructure P3 projects in Manitoba are projects within the transportation and environmental sectors.

Appendix E.b.i Economic Impacts of Capital Costs

Manitoba's transportation sector supports the largest amount of capital spending with $330 million over the study period.[88] **Table E-4** presents the economic impact of the capital cost of all sectors of infrastructure P3 projects in Manitoba. The transportation infrastructure P3 projects in Manitoba from 2003-2012, supports *direct* employment of 1,580 FTE jobs province-wide, earning $90 million in *direct* income/wages and benefits, based on capital costs. Furthermore, the capital cost of the infrastructure P3 project in transportation contributes $110 million in *direct* GDP to the province's economy.[89]

Table E- 4: Total Economic Impacts, by Sector, of the Capital Cost of Infrastructure P3 Projects in Manitoba, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Environmental	Direct	110	$10	$10	$20
	Indirect	50	$0	$0	$10
	Induced	30	$0	$0	$0
	Total	***190***	***$10***	***$10***	***$30***
Transportation	Direct	1,580	$90	$110	$330
	Indirect	680	$40	$60	$110
	Induced	370	$20	$40	$60
	Total	***2,630***	***$150***	***$210***	***$500***

[88] Results are based on capital cost of three projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[89] Results are presented in 2013 dollars.

All Sectors	Direct	1,690	$100	$120	$350
	Indirect	720	$40	$60	$120
	Induced	400	$20	$40	$70
	Total	***2,810***	***$160***	***$220***	***$540***

Notes:

* Results are based on capital cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix E.b.ii Economic Impacts of Maintenance/Operations Costs

The maintenance/operations component of an infrastructure P3 project contributes to the province through labour and other expenditures used to maintain/operate the P3 infrastructure. Maintenance/operations costs of infrastructure P3 projects in the province from 2003-2012 totals over $60 million for all sectors.[90] The economic impact of these expenditures is highlighted in **Table E-5**, including employment, income/wages and benefits and GDP contributions**.** The maintenance/operations expenditures generated by the infrastructure P3 projects in the province are driven by the transportation sector, which supports *direct* employment of 370 years FTE jobs in Manitoba, with $20 million in *direct* income/wages and benefits earned. Additionally, through the maintenance/operations cost of the infrastructure P3 project in the transportation sector, $20 million in *direct* GDP is contributed to the provincial economy.[91]

Table E- 5: Total Economic Impacts, by Sector, of the Maintenance/Operations Cost of Infrastructure P3 Projects in Manitoba, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Environmental	Direct	40	$0	$0	$10
	Indirect	20	$0	$0	$0
	Induced	10	$0	$0	$0

[90] Results are based on maintenance/operations cost of three projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[91] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Total	***70***	***$0***	***$0***	***$10***
Transportation	Direct	370	$20	$20	$50
	Indirect	70	$0	$10	$10
	Induced	70	$0	$10	$10
	Total	***510***	***$20***	***$40***	***$70***
All Sectors	Direct	410	$20	$30	$60
	Indirect	90	$5	$10	$10
	Induced	80	$4	$10	$10
	Total	***580***	***$30***	***$50***	***$80***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix E.b.iii Economic Impacts of Total P3 Project Value

The total P3 project value of infrastructure P3 projects in Manitoba includes both the capital costs and maintenance/operations costs. Combined, these two components have a significant impact on the employment and economic growth of the province.[92] **Table E-6** provides a summary of the economic impact of the total P3 project value in Manitoba's transportation and environmental sector from 2003-2012. Transportation is the largest sector, and its *direct* employment is equivalent to 1,950 FTE jobs, generating *direct* income/wages and benefits estimated at $110 million. Furthermore, based on total P3 project value, total infrastructure P3 project value in the transportation sector contributes $130 million in *direct* GDP to the province. Economic output in this sector totals an estimated $380 million.[93]

[92] Results are based on total P3 project value of three projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data.

[93] Results are presented in 2013 dollars.

Table E-6: Total Economic Impacts, by Sector, of the Total P3 Project Value of Infrastructure P3 Projects in Manitoba, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Environmental	Direct	150	$10	$10	$30
	Indirect	70	$0	$0	$10
	Induced	40	$0	$0	$0
	Total	***260***	***$10***	***$10***	***$40***
Transportation	Direct	1,950	$110	$130	$380
	Indirect	750	$40	$70	$120
	Induced	440	$20	$50	$70
	Total	***3,140***	***$170***	***$250***	***$570***
All Sectors	Direct	2,100	$120	$150	$410
	Indirect	810	$50	$70	$130
	Induced	480	$20	$50	$80
	Total	***3,390***	***$190***	***$270***	***$620***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix E.c Estimated Tax Impacts of Infrastructure P3 Projects in Manitoba

Infrastructure P3 projects in Manitoba generate tax revenue contributions to federal and provincial levels of government, estimated to be in the order of $40 million from 2003-2012.[94] The federal government is the largest recipient of tax revenue over the study period, receiving $30 million (66% of the total).[95] The provincial government also receives tax revenues from infrastructure P3 projects, amounting to $10 million (34% of the total). A complete summary of tax impacts by infrastructure P3 projects at the provincial level is provided in **Figure E-1**.

Figure E-1: Government Revenue Impacts of Infrastructure P3 Projects in Manitoba, 2003-2012

SUMMARY OF TAX CONTRIBUTIONS OF PPP PROJECTS (2003-2012) - MB

	Federal		Provincial		All Gov'ts
	Tax	Amount ($m)	Tax	Amount ($m)	Amount ($m)
Paid by Employers or Employees	Personal Income Tax	12	Personal Income Tax	10	
	Corporate Income Tax	4	Corporate Income Tax	1	
	EI - Employer	2	WCB	4	
	EI - Employee	2	Health Care	-	
	CPP - Employer	5			
	CPP- Employee	5			
	Total	**29**	**Total**	**15**	**44**
	Grand Total	**29**	**Grand Total**	**15**	**44**

Notes:

* Results are based on total P3 project value of three projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data. Results are based on 2012 tax rates and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

[94] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

[95] Results are based on total P3 project value of three projects and are presented in 2013 dollars. Estimates were developed for two projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

Appendix F: Economic Impact of Infrastructure P3 Projects in New Brunswick

The following section provides a summary of the economic impacts and tax impacts from infrastructure P3 projects in New Brunswick during the 2003-2012 study period. The infrastructure P3 projects throughout New Brunswick generate direct employment province-wide and contribute significantly to the economy of the province.

Appendix F.a Economic Impact of Infrastructure P3 Projects in New Brunswick

Appendix F.a.i Economic Impacts of Capital Costs

Capital costs associated with the development of infrastructure P3 projects in New Brunswick involve significant amounts of labour, material and machinery. These costs combine to support employment, provide income/wages and benefits and contribute GDP the provincial economy. The infrastructure P3 projects in New Brunswick during the study period have a total capital cost of $1.4 billion.[96]

From 2003-2012, capital costs from infrastructure P3 projects in New Brunswick support *direct* employment of 9,910 FTE jobs, earning a *direct* income/wages and benefits of $500 million. In addition, infrastructure P3 projects in New Brunswick contribute $590 million in *direct* GDP to the province's economy.[97] A summary of the economic impact of the capital cost of infrastructure P3 projects in New Brunswick is provided in **Table F-1**.

Table F-1: Total Economic Impacts of the Capital Cost of Infrastructure P3 Projects in New Brunswick, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	9,910	$500	$590	$1,420
Indirect	2,820	$140	$210	$440
Induced	1,960	$80	$190	$320
Total NB	***14,690***	***$720***	***$990***	***$2,180***

Notes:

[96] Results are based on capital cost of five projects and are presented in 2013 dollars.

[97] Results are presented in 2013 dollars.

* Results are based on capital cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix F.a.ii Economic Impacts of Maintenance/Operations Costs

On top of the capital cost component of infrastructure P3 projects, a maintenance/operations component also exists, but only when the maintenance/operations component is part of the total P3 project agreement. In New Brunswick, total maintenance/operations costs associated with the study projects total $880 million.[98]

Maintenance/operations costs of infrastructure P3 projects in New Brunswick support employment and generate further contributions to the provincial economy. The economic impact of the maintenance/operations cost of infrastructure P3 projects in New Brunswick from 2003-2012 is summarised in **Table F-2**. These projects support *direct* employment of 4,820 FTE jobs, with *direct* income/wages and benefits estimated to be $220 million. Furthermore, also contributed to the province's economy is $260 million in *direct* GDP.[99]

Table F-2: Total Economic Impacts of the Maintenance/Operations Cost of Infrastructure P3 Projects in New Brunswick, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	4,820	$220	$260	$880
Indirect	3,290	$160	$250	$390
Induced	1,210	$50	$120	$190
Total NB	***9,320***	***$430***	***$630***	***$1,460***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[98] Results are based on maintenance/operations cost of five projects and are presented in 2013 dollars.

[99] Results are presented in 2013 dollars.

Appendix F.a.iii Economic Impacts of Total P3 Project Value

Total P3 project value includes the two components of capital cost and maintenance/operations cost, when a maintenance/operations component exists. The summation of these two elements equates to the project agreement cost, or the total project value of a P3 infrastructure project. Total P3 project value of infrastructure P3 projects in the province of New Brunswick amount to approximately $2.3 billion from 2003-2012.[100]

In New Brunswick, the total infrastructure P3 project value contributes significantly to the province. **Table F-3** highlights the economic impact results for New Brunswick. The total P3 project value from infrastructure P3 projects in New Brunswick over the study period support *direct* employment of 14,730 FTE jobs, earning $720 million in *direct* income/wages and benefits. Additionally, these projects contribute $850 million in *direct* GDP to the province's economy.[101]

Table F- 3: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in New Brunswick, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	14,730	$720	$850	$2,300
Indirect	6,110	$300	$460	$830
Induced	3,170	$130	$310	$510
Total NB	***24,010***	***$1,150***	***$1,620***	***$3,640***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[100] Results are based on total P3 project value of five projects and are presented in 2013 dollars.

[101] Results are presented in 2013 dollars.

Appendix F.b Economic Impact of Infrastructure P3 Projects in New Brunswick by Sector

The following section of the appendix provides a summary of the economic impact of infrastructure P3 projects in New Brunswick on a sector-by-sector basis. Several sectors, including education, hospitals and healthcare, justice/corrections and transportation are considered in the analysis during the study time frame.

Appendix F.b.i Economic Impacts of Capital Costs

In New Brunswick, capital costs for infrastructure P3 projects, across all sectors, total $1.4 billion from 2003-2012.[102] **Table F-4** summarises the economic impact of capital cost of infrastructure P3 projects in New Brunswick, by sector. For this province, capital expenditures of infrastructure P3 projects are highest in the transportation sector, over the study period, with a total of approximately $1.2 billion. This sector supports *direct* employment of 8,320 FTE jobs, earning $420 million in *direct* income/wages and benefits. The transportation sector also contributes $490 million in *direct* GDP to the province.[103]

Table F- 4: Total Economic Impacts, by Sector, of the Capital Cost of Infrastructure P3 Projects in New Brunswick, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Education	Direct	300	$20	$20	$40
	Indirect	90	$4	$10	$10
	Induced	60	$2	$10	$10
	Total	***450***	***$30***	***$40***	***$60***
Hospitals & Healthcare	Direct	890	$40	$50	$130
	Indirect	250	$10	$20	$40
	Induced	170	$10	$20	$30
	Total	***1,310***	***$60***	***$90***	***$200***
Justice/	Direct	410	$20	$20	$60

[102] Results are based on capital cost of five projects and are presented in 2013 dollars.

[103] Results are presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Corrections	Indirect	120	$10	$10	$20
	Induced	80	$0	$10	$10
	Total	***610***	***$30***	***$40***	***$90***
Transportation	Direct	8,320	$420	$490	$1,190
	Indirect	2,370	$120	$170	$370
	Induced	1,640	$70	$160	$270
	Total	***12,330***	***$610***	***$820***	***$1,830***
All Sectors	Direct	9,910	$500	$590	$1,420
	Indirect	2,820	$140	$210	$440
	Induced	1,960	$80	$190	$320
	Total	***14,690***	***$720***	***$990***	***$2,180***

Notes:

* Results are based on capital cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix F.b.ii Economic Impacts of Maintenance/Operations Costs

Maintenance/operations cost data for infrastructure projects in New Brunswick are only available for the transportation sector.[104] The transportation infrastructure P3 projects with maintenance/operations data combine for a total of approximately $880 million during the study period. These expenditures contribute employment, income/wages and benefits and GDP to the province through the use of labour necessary to maintain/operate a P3 project through its contract.

Table F-5 provides a summary of the economic impact of maintenance/operations cost of infrastructure P3 projects in New Brunswick, by sector from 2003-2012. As the P3 transportation infrastructure is the only infrastructure with such costs during the study period, all estimated impacts can be observed through this sector. These two projects support *direct* employment of

[104] Results are based on maintenance/operations cost of five projects and are presented in 2013 dollars.

4,820 FTE jobs, earning $220 million of *direct* income/wages and benefits. Furthermore, approximately $260 million of *direct* GDP is contributed to the province.[105]

Table F- 5: Total Economic Impacts, by Sector, of the Maintenance/Operations Cost of Infrastructure P3 Projects in New Brunswick, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Education	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Hospitals & Healthcare	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Justice/ Corrections	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Transportation	Direct	4,820	$220	$260	$880
	Indirect	3,290	$160	$250	$390
	Induced	1,210	$50	$120	$190
	Total	***9,320***	***$430***	***$630***	***$1,460***
All Sectors	Direct	4,820	$220	$260	$880
	Indirect	3,290	$160	$250	$390

[105] Results presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Induced	1,210	$50	$120	$190
	Total	***9,320***	***$430***	***$630***	***$1,460***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix F.b.iii Economic Impacts of Total P3 Project Value

The total P3 project value includes the total of capital costs and maintenance/operations costs. Combined, these expenditures contribute significantly to the province's various sectors.[106] A breakdown by sector of these combined costs over the study period is summarised **Table F-6**. The transportation sector's project expenditures are the largest of all sectors amounting to just under $2.1 billion in expenditures. The economic impact of the total P3 project value in this sector, for New Brunswick, supports *direct* employment of 13,140 FTE jobs, earning $640 million in *direct* income/wages and benefits. The *direct* GDP contribution of this sector is estimated to be $750 million.[107]

Table F- 6: Total Economic Impacts of the Total P3 Project Value of P3 Projects in New Brunswick, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Education	Direct	300	$20	$20	$40
	Indirect	90	$4	$10	$10
	Induced	60	$2	$10	$10
	Total	***450***	***$30***	***$40***	***$60***

[106] Results are based on total P3 project value of five projects and are presented in 2013 dollars.

[107] Results presented in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Hospitals & Healthcare	Direct	890	$40	$50	$130
	Indirect	250	$10	$20	$40
	Induced	170	$10	$20	$30
	Total	***1,310***	***$60***	***$90***	***$200***
Justice/ Corrections	Direct	410	$20	$20	$60
	Indirect	120	$10	$10	$20
	Induced	80	$0	$10	$10
	Total	***610***	***$30***	***$40***	***$90***
Transportation	Direct	13,140	$640	$750	$2,070
	Indirect	5,660	$280	$420	$760
	Induced	2,850	$120	$280	$460
	Total	***21,650***	***$1,040***	***$1,450***	***$3,290***
All Sectors	Direct	14,730	$720	$850	$2,300
	Indirect	6,110	$300	$460	$830
	Induced	3,170	$130	$310	$510
	Total	***24,010***	***$1,150***	***$1,620***	***$3,640***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix F.c Estimated Tax Impacts of Infrastructure P3 Projects in New Brunswick

Infrastructure P3 projects in New Brunswick generate tax revenue contributions to federal and provincial levels of government, estimated to be in the order of $280 million from 2003-2012.[108] Tax revenues from the infrastructure P3 projects received by the federal and provincial governments over the study period amount to $200 million (71% of the total) and $80 million (29% of the total), respectively.[109] A complete summary of tax impacts by infrastructure P3 projects at the provincial level is provided in **Figure F-1**.

Figure F-1: Government Revenue Impacts of Infrastructure P3 Projects in New Brunswick, 2003-2012

SUMMARY OF TAX CONTRIBUTIONS OF PPP PROJECTS (2003-2012) - NB

	Federal		Provincial		All Gov'ts
	Tax	Amount ($m)	Tax	Amount ($m)	Amount ($m)
Paid by Employers or Employees	Personal Income Tax	74	Personal Income Tax	50	
	Corporate Income Tax	27	Corporate Income Tax	10	
	EI - Employer	17	WCB	21	
	EI - Employee	12	Health Care	-	
	CPP - Employer	36			
	CPP- Employee	36			
	Total	**202**	**Total**	**81**	**283**
	Grand Total	**202**	**Grand Total**	**81**	**283**

Notes:

* Results are based on total P3 project value of five projects and are presented in 2013 dollars. Results are based on 2012 tax rates and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

[108] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

[109] Results are based on total P3 project value of five projects and are presented in 2013 dollars. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

Appendix G: Economic Impact of Infrastructure P3 Projects in Ontario

The following appendix provides a summary of the economic impact and tax impact results from infrastructure P3 projects in Ontario during the 2003-2012 study period. The P3 infrastructure projects in the province support direct employment in Ontario's labour force and contribute significantly to the economy of Ontario.

Appendix G.a Economic Impact of Infrastructure P3 Projects in Ontario

Appendix G.a.i Economic Impacts of Capital Costs

The capital costs of infrastructure P3 projects in Ontario generate direct employment province-wide and facilitate economic growth in the province. These projects require a labour and materials needed to develop the public infrastructure. Infrastructure P3 projects in Ontario accounts for $17.1 billion in capital costs over the 10 year study time frame.[110]

Capital costs from infrastructure P3 projects in Ontario from 2003-2012 support *direct* employment of 99,800 FTE jobs, earning an estimated $6.3 billion in *direct* income/wages and benefits. Additionally, these projects contribute $8.0 billion in *direct* GDP to the provincial economy.[111] **Table G-1** provides a summary of the economic impact of the capital cost of infrastructure P3 projects in Ontario.

Table G-1: Total Economic Impacts of the Capital Cost of Infrastructure P3 Projects in Ontario, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	99,800	$6,260	$8,040	$17,140
Indirect	44,420	$2,840	$4,190	$8,150
Induced	31,240	$1,660	$3,470	$5,850
Total ON	***175,460***	***$10,760***	***$15,700***	***$31,140***

Notes:

[110] Results are based on capital cost of 65 projects and are presented in 2013 dollars. Estimates were developed for nine projects with incomplete project cost data.

[111] Results provided in 2013 dollars.

* Results are based on capital cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix G.a.ii Economic Impacts of Maintenance/Operations Costs

Maintenance/operations costs are incurred through the use of labour and other requirements. The maintenance/operations required for the infrastructure P3 project contribute employment and economic growth to the province. In Ontario, maintenance/operations costs for infrastructure P3 projects total just under $7 billion throughout the 10 year study period.[112]

Employment in the province and further economic contributions are generated by the maintenance/operations costs of infrastructure P3 projects in the province. **Table G-2** provides a summary of the economic impact of maintenance/operations cost of infrastructure P3 projects in Ontario. All infrastructure P3 projects in the province from 2003-2012 support *direct* employment of 44,200 FTE jobs, earning $3.5 billion in income/wages and benefits. In addition, a *direct* GDP contribution is made to the economy of Ontario, and is estimated to be $4.7 billion.[113]

Table G- 2: Total Economic Impacts of the Maintenance/Operations Cost of Infrastructure P3 Projects in Ontario, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	44,200	$3,530	$4,720	$6,960
Indirect	19,650	$1,150	$1,790	$3,160
Induced	16,730	$890	$1,860	$3,130
Total ON	***80,580***	***$5,570***	***$8,370***	***$13,250***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[112] Results are based on maintenance/operations cost of 65 projects and are presented in 2013 dollars. Estimates were developed for nine projects with incomplete project cost data.

[113] Results provided in 2013 dollars.

Appendix G.a.iii Economic Impacts of Total P3 Project Value

Total P3 project value for infrastructure P3 projects in Ontario include both the capital cost and maintenance/operations cost, when the maintenance/operations component exists. Total P3 project value includes the employment and expenditure associated with the construction of the project, as well as the labour and spending required to maintain and operate the project. Over the last 10 years, infrastructure P3 projects in Ontario have a total P3 project value of more than $24.1 billion.[114]

Total P3 project value of infrastructure P3 projects contribute directly to employment and the economy across the province. **Table G-3** summarises the economic impact of these expenditures in Ontario, which includes both capital and maintenance/operations costs. Infrastructure P3 projects in Ontario from 2003-2012 support *direct* employment of 144,000 FTE jobs province-wide, earning an income/wages and benefits of approximately $9.8 billion. Furthermore, an estimated $12.8 billion in *direct* GDP is contributed to the province's economy.[115]

Table G- 3: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in Ontario, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	144,000	$9,790	$12,760	$24,100
Indirect	64,070	$3,990	$5,980	$11,310
Induced	47,970	$2,550	$5,330	$8,980
Total ON	***256,040***	***$16,330***	***$24,070***	***$44,390***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[114] Results are based on total P3 project value of 65 projects and are presented in 2013 dollars. Estimates were developed for nine projects with incomplete project cost data.

[115] Results provided in 2013 dollars.

Appendix G.b Economic Impact of Infrastructure P3 Projects in Ontario by Sector

The following section provides a summary of the economic impact of infrastructure P3 projects in Ontario, by sector. The infrastructure P3 projects span a variety of sectors, and generate significant contributions to each.

Appendix G.b.i Economic Impacts of Capital Costs

Capital costs span across all sectors and account for the construction of infrastructure P3 projects in Ontario.[116] **Table G-4** summarises the economic impact of the capital cost of infrastructure P3 projects in Ontario by sector. A significant share for Ontario study infrastructure P3 projects based on capital costs are within the hospitals and healthcare sector, with nearly $9.9 billion in capital cost expenditures over the 10 year study time frame. The infrastructure P3 projects in the hospitals and healthcare sector support the largest amount of employment out of all sectors, with *direct* employment of 57,670 FTE jobs. Income/wages and benefits for infrastructure P3 projects in the same sector total $3.6 billion, whilst *direct* GDP contributions to the province amount to $4.6 billion.[117]

Table G-4: Total Economic Impacts, by Sector, of the Capital Cost of Infrastructure P3 Projects in Ontario, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Defence	Direct	3,670	$230	$300	$630
	Indirect	1,640	$100	$150	$300
	Induced	1,150	$60	$130	$220
	Total	***6,460***	***$390***	***$580***	***$1,150***
Environmental	Direct	10	$0	$0	$0
	Indirect	10	$0	$0	$0
	Induced	0	$0	$0	$0

[116] Results are based on capital cost of 65 projects and are presented in 2013 dollars. Estimates were developed for nine projects with incomplete project cost data.

[117] Results provided in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Total	***20***	***$0***	***$0***	***$0***
Government Services	Direct	660	$40	$50	$110
	Indirect	290	$20	$30	$50
	Induced	210	$10	$20	$40
	Total	***1,160***	***$70***	***$100***	***$200***
Hospitals & Healthcare	Direct	57,670	$3,620	$4,640	$9,900
	Indirect	25,670	$1,640	$2,420	$4,710
	Induced	18,050	$960	$2,000	$3,380
	Total	***101,390***	***$6,220***	***$9,060***	***$17,990***
Justice/ Corrections	Direct	12,880	$810	$1,040	$2,210
	Indirect	5,730	$370	$540	$1,050
	Induced	4,030	$210	$450	$750
	Total	***22,640***	***$1,390***	***$2,030***	***$4,010***
Real Estate (Housing & Facilities)	Direct	1,480	$90	$120	$250
	Indirect	660	$40	$60	$120
	Induced	460	$20	$50	$90
	Total	***2,600***	***$150***	***$230***	***$460***
Recreation & Culture	Direct	8,390	$530	$680	$1,440
	Indirect	3,730	$240	$350	$680
	Induced	2,620	$140	$290	$490
	Total	***14,740***	***$910***	***$1,320***	***$2,610***

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Transportation	Direct	15,030	$940	$1,210	$2,580
	Indirect	6,690	$430	$630	$1,230
	Induced	4,710	$250	$520	$880
	Total	***26,430***	***$1,620***	***$2,360***	***$4,690***
All Sectors	Direct	99,800	$6,260	$8,040	$17,140
	Indirect	44,420	$2,840	$4,190	$8,150
	Induced	31,240	$1,660	$3,470	$5,850
	Total	***175,460***	***$10,760***	***$15,700***	***$31,140***

Notes:

* Results are based on capital cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix G.b.ii Economic Impacts of Maintenance/Operations Costs

The maintenance/operations cost of infrastructure P3 projects in Ontario contribute employment and economic growth to a variety of sectors and the province as a whole.[118] **Table G-5** summarises the economic impact of maintenance/operations cost of infrastructure P3 projects in Ontario by sector from 2003-2012. Infrastructure P3 projects in the hospitals & healthcare sector record the largest expenditure on maintenance and/or operations with over $4.1 billion in total over the study period. The largest economic impact is provided by infrastructure P3 projects in the hospitals & healthcare sector, which supports *direct* employment of 30,640 FTE jobs, earning $2.6 billion in *direct* income/wages and benefits. Additionally, projects in the same sector contribute $2.9 billion in *direct* GDP to Ontario's economy.[119]

[118] Results are based on maintenance/operations cost of 65 projects and are presented in 2013 dollars. Estimates were developed for nine projects with incomplete project cost data.

[119] Results provided in 2013 dollars.

Table G-5: Total Economic Impacts, by Sector, of the Maintenance/Operations Cost of Infrastructure P3 Projects in Ontario, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Defence	Direct	1,440	$140	$180	$260
	Indirect	810	$40	$60	$120
	Induced	650	$30	$70	$120
	Total	***2,900***	***$210***	***$310***	***$500***
Environmental	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Government Services	Direct	100	$10	$10	$40
	Indirect	210	$10	$20	$30
	Induced	80	$0	$10	$10
	Total	***390***	***$20***	***$40***	***$80***
Hospitals & Healthcare	Direct	30,640	$2,590	$2,940	$4,060
	Indirect	10,540	$600	$920	$1,560
	Induced	11,270	$600	$1,250	$2,110
	Total	***52,450***	***$3,790***	***$5,110***	***$7,730***
Justice/ Corrections	Direct	6,210	$440	$1,140	$1,540
	Indirect	4,140	$240	$370	$650
	Induced	2,520	$130	$280	$470
	Total	***12,870***	***$810***	***$1,790***	***$2,660***

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Real Estate (Housing & Facilities)	Direct	350	$30	$40	$120
	Indirect	750	$50	$70	$110
	Induced	270	$10	$30	$50
	Total	***1,370***	***$90***	***$140***	***$280***
Recreation & Culture	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Transportation	Direct	5,470	$320	$400	$940
	Indirect	3,190	$200	$340	$690
	Induced	1,930	$100	$210	$360
	Total	***10,590***	***$620***	***$950***	***$1,990***
All Sectors	Direct	44,200	$3,530	$4,720	$6,960
	Indirect	19,650	$1,150	$1,790	$3,160
	Induced	16,730	$890	$1,860	$3,130
	Total	***80,580***	***$5,570***	***$8,370***	***$13,250***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix G.b.iii Economic Impacts of Total P3 Project Value

Total expenditures for infrastructure P3 projects in Ontario include both the capital cost and maintenance/operations cost, if a maintenance/operations component is included in the P3 contract.[120] **Table G-6** outlines the total economic impact of the total P3 project value of infrastructure P3 projects in B.C. by sector from 2003-2012. When broken down by sector, infrastructure P3 projects in the hospitals and healthcare sector has the highest total P3 project value and consequently, provides the most significant economic impact. The total P3 project value for projects in this sector, over the 10 year study time frame, totals just under $14 billion. The economic impact of total P3 project value in this sector supports *direct* employment of 88,310 FTE jobs across the province, earning an estimated *direct* income/wages and benefits of $6.2 billion. Additionally, approximately $7.6 billion in *direct* GDP is contributed to the provincial economy by infrastructure P3 projects in the hospitals and healthcare sector.[121]

Table G-6: Total Economic Impacts, by Sector, of the Total P3 Project Value of P3 Projects in Ontario, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Defence	Direct	5,110	$370	$480	$890
	Indirect	2,450	$140	$210	$420
	Induced	1,800	$90	$200	$340
	Total	***9,360***	***$600***	***$890***	***$1,650***
Environmental	Direct	10	$0	$0	$0
	Indirect	10	$0	$0	$0
	Induced	0	$0	$0	$0
	Total	***20***	***$0***	***$0***	***$0***
Government Services	Direct	760	$50	$60	$150
	Indirect	500	$30	$50	$80

[120] Results are based on total P3 project value of 65 projects and are presented in 2013 dollars. Estimates were developed for nine projects with incomplete project cost data.

[121] Results are provided in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Induced	290	$10	$30	$50
	Total	***1,550***	***$90***	***$140***	***$280***
Hospitals & Healthcare	Direct	88,310	$6,210	$7,580	$13,960
	Indirect	36,210	$2,240	$3,340	$6,270
	Induced	29,320	$1,560	$3,250	$5,490
	Total	***153,840***	***$10,010***	***$14,170***	***$25,720***
Justice/ Corrections	Direct	19,090	$1,250	$2,180	$3,750
	Indirect	9,870	$610	$910	$1,700
	Induced	6,550	$340	$730	$1,220
	Total	***35,510***	***$2,200***	***$3,820***	***$6,670***
Real Estate (Housing & Facilities)	Direct	1,830	$120	$160	$370
	Indirect	1,410	$90	$130	$230
	Induced	730	$30	$80	$140
	Total	***3,970***	***$240***	***$370***	***$740***
Recreation & Culture	Direct	8,390	$530	$680	$1,440
	Indirect	3,730	$240	$350	$680
	Induced	2,620	$140	$290	$490
	Total	***14,740***	***$910***	***$1,320***	***$2,610***
Transportation	Direct	20,500	$1,260	$1,610	$3,520
	Indirect	9,880	$630	$970	$1,920

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
	Induced	6,640	$350	$730	$1,240
	Total	***37,020***	***$2,240***	***$3,310***	***$6,680***
All Sectors	Direct	144,000	$9,790	$12,760	$24,100
	Indirect	64,070	$3,990	$5,980	$11,310
	Induced	47,970	$2,550	$5,330	$8,980
	Total	***256,040***	***$16,330***	***$24,070***	***$44,390***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix G.c Estimated Tax Impacts of Infrastructure P3 Projects in Ontario

Infrastructure P3 projects in Ontario generate tax revenue contributions to federal and provincial levels of government, estimated to be in the order of $3.9 billion from 2003-2012.[122] Tax revenues from the infrastructure P3 projects received by the federal and provincial governments over the study period amount to $2.7 billion (69% of the total) and $1.2 billion (31% of the total), respectively.[123] A complete summary of tax impacts by infrastructure P3 projects at the provincial level is provided in **Figure G-1**.

[122] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

[123] Results are based on total P3 project value of 65 projects and are presented in 2013 dollars. Estimates were developed for nine projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

Figure G-1: Government Revenue Impacts of Infrastructure P3 Projects in Ontario, 2003-2012

SUMMARY OF TAX CONTRIBUTIONS OF PPP PROJECTS (2003-2012) - ON

	Federal		Provincial		All Gov'ts
	Tax	Amount ($m)	Tax	Amount ($m)	Amount ($m)
Paid by Employers or Employees	Personal Income Tax	1,401	Personal Income Tax	566	
	Corporate Income Tax	260	Corporate Income Tax	210	
	EI - Employer	169	WCB	326	
	EI - Employee	121	Health Care	86	
	CPP - Employer	357			
	CPP- Employee	357			
	Total	**2,665**	**Total**	**1,189**	**3,854**
	Grand Total	**2,665**	**Grand Total**	**1,189**	**3,854**

Notes:

* Results are based on total P3 project value of 65 projects and are presented in 2013 dollars. Estimates were developed for nine projects with incomplete project cost data. Results are based on 2012 tax rates and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix H: Economic Impact of Infrastructure P3 Projects in Québec

The following section provides a summary of the economic impact and tax impact results from infrastructure P3 projects in Québec during the 2003-2012 study period. The P3 infrastructure projects in the province support direct employment in Québec's labour force and contribute significantly to the economy of the Québec.

Appendix H.a Economic Impact of Infrastructure P3 Projects in Québec

Appendix H.a.i Economic Impacts of Capital Costs

Capital costs (or construction costs) of infrastructure P3 projects in Québec include expenditures on construction, labour, materials and machinery. Total capital expenditure on infrastructure P3 projects in Québec over the 10 year study period totals over $7.1 billion.[124] This in itself has a significant effect on the provincial economy in terms of employment and economic growth.

Table H- 1 summarises the economic impact of capital cost of infrastructure P3 projects in Québec from 2003-2012. It is estimated that the economic impact of these capital costs support *direct* employment of 37,330 FTE jobs and *direct* income/wages and benefits of $2.4 billion. In addition, *direct* GDP contributed to Québec associated with the capital costs is approximately $3.1 billion.[125]

Table H- 1: Total Economic Impacts of the Capital Cost of Infrastructure P3 Projects in Québec, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	37,330	$2,390	$3,060	$7,090
Indirect	20,230	$1,180	$1,810	$3,660
Induced	12,680	$570	$1,230	$2,060
Total QC	***70,240***	***$4,140***	***$6,100***	***$12,810***

Notes:

* Results are based on capital cost of projects and are presented in 2013 dollars.

[124] Results are based on capital cost of 13 projects and are presented in 2013 dollars. Estimates were developed for 11 projects with incomplete project cost data.

[125] Results provided in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix H.a.ii Economic Impacts of Maintenance/Operations Costs

The maintenance/operations component of an infrastructure P3 contract, when written into the P3 project agreement, can represent a significant expenditure of the entire P3 project agreement. In the case of Québec, these expenditures, over the 10 year study period, total nearly $700 million.[126]

Employment in the province and further economic contributions are generated by the maintenance/operations costs of infrastructure P3 projects in Québec. A summary of the economic impact of maintenance/operations cost of infrastructure P3 projects in Québec from 2003-2012 is provided in **Table H-2**. These maintenance/operations expenditures support *direct* employment of 4,550 FTE jobs, earning an estimated *direct* income/wages and benefits of $280 million. Furthermore, a *direct* contribution of GDP is made to the province's economy and is estimated to be $350 million.[127]

Table H-2: Total Economic Impacts of the Maintenance/Operations Cost of Infrastructure P3 Projects in Québec, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	4,550	$280	$350	$700
Indirect	2,130	$120	$210	$430
Induced	1,550	$70	$150	$250
Total QC	***8,230***	***$470***	***$710***	***$1,380***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

[126] Results are based on maintenance/operations cost of 13 projects and are presented in 2013 dollars. Estimates were developed for 11 projects with incomplete project cost data.

[127] Results provided in 2013 dollars.

Appendix H.a.iii Economic Impacts of Total P3 Project Value

Total infrastructure P3 project value includes both the capital cost and maintenance cost, when a maintenance cost component is written into the project agreement. Over the last 10 years, infrastructure P3 projects with available data have a total P3 project value of over $7.8 billion.[128]

Together the capital costs and maintenance/operations costs of infrastructure P3 projects contribute directly to employment and the economy across the province. **Table H-3** summarises the economic impact of total infrastructure P3 project value in Québec for all sectors from 2003-2012. These expenditures support *direct* employment of 41,880 FTE jobs, earning $2.7 billion in *direct* income/wages and benefits. The province of Québec benefits from a *direct* GDP contribution of approximately $3.4 billion to the provincial economy.

Table H- 3: Total Economic Impacts of the Total P3 Project Value of Infrastructure P3 Projects in Québec, All Sectors, 2003-2012

Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Direct	41,880	$2,670	$3,410	$7,790
Indirect	22,360	$1,300	$2,020	$4,090
Induced	14,230	$640	$1,380	$2,310
Total BC	***78,470***	***$4,610***	***$6,810***	***$14,190***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix H.b Economic Impact of Infrastructure P3 Projects in Québec by Sector

The following section provides a review of the economic impact of infrastructure P3 projects in Québec on a sector-by-sector basis. The three sectors included in this section are the hospitals and healthcare sector, recreation and culture, and the transportation sector.

[128] Results are based on total P3 project value of 13 projects and are presented in 2013 dollars. Estimates were developed for 11 projects with incomplete project cost data.

Appendix H.b.i Economic Impacts of Capital Costs

The capital cost will include the construction costs within this sector, as well as associated labour, machinery, materials and labour.[129] **Table H-4** provides a review of the economic impact of the capital cost of infrastructure P3 projects in Québec, by sector from 2003-2012.[130] Total capital cost is largest for infrastructure P3 projects in Québec's hospital & healthcare sector during the study period, equivalent to over $5.6 billion. Projects in this sector support *direct* employment of 29,400 FTE jobs, earning $1.9 billion in *direct* income/wages and benefits. Furthermore, the province receives an estimated $2.4 billion in *direct* GDP.[131]

Table H- 4: Total Economic Impacts, by Sector, of the Capital Cost of Infrastructure P3 Projects in Québec, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Hospitals & Healthcare	Direct	29,400	$1,880	$2,410	$5,580
	Indirect	15,930	$930	$1,420	$2,880
	Induced	9,990	$450	$970	$1,620
	Total	***55,320***	***$3,260***	***$4,800***	***$10,080***
Recreation & Culture	Direct	1,040	$70	$90	$200
	Indirect	560	$30	$50	$100
	Induced	350	$20	$30	$60
	Total	***1,950***	***$120***	***$170***	***$360***
Transportation	Direct	6,890	$440	$560	$1,310
	Indirect	3,730	$220	$330	$670
	Induced	2,340	$100	$230	$380

[129] Results are based on capital cost of 13 projects and are presented in 2013 dollars. Estimates were developed for 11 projects with incomplete project cost data.

[130] Projects in the transportation sector did not have a capital cost component in the project contract.

[131] Results provided in 2013 dollars.

	Total	***12,960***	***$760***	***$1,120***	***$2,360***
All Sectors	Direct	37,330	$2,390	$3,060	$7,090
	Indirect	20,230	$1,180	$1,810	$3,660
	Induced	12,680	$570	$1,230	$2,060
	Total	***70,240***	***$4,140***	***$6,100***	***$12,810***

Notes:

* Results are based on capital cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix H.b.ii Economic Impacts of Maintenance/Operations Costs

Maintenance/operations costs, which only exist if they are included in the P3 contract, are only available for the transportation and hospitals and healthcare sector in Québec for the study period.[132] **Table H-5** summarises the economic impact of maintenance/operations expenditures of infrastructure P3 projects in Québec, by sector. Maintenance/operations costs of infrastructure P3 projects in the transportation sector was the highest in the province from 2003-2012, amounting to $580 million. Projects in this sector support *direct* employment of 3,180 FTE jobs, earning $190 million in *direct* income/wages and benefits. A *direct* GDP contribution is made to Québec's economy, which is estimated to be $250 million.[133]

Table H- 5: Total Economic Impacts, by Sector, of the Maintenance/Operations Cost of Infrastructure P3 Projects in Québec, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Hospitals & Healthcare	Direct	1,360	$90	$100	$120
	Indirect	230	$10	$20	$30
	Induced	400	$20	$40	$70
	Total	***1,990***	***$120***	***$160***	***$220***
Recreation & Culture	Direct	n/a	n/a	n/a	n/a
	Indirect	n/a	n/a	n/a	n/a
	Induced	n/a	n/a	n/a	n/a
	Total	***n/a***	***n/a***	***n/a***	***n/a***
Transportation	Direct	3,180	$190	$250	$580
	Indirect	1,890	$110	$190	$390
	Induced	1,150	$50	$110	$190
	Total	***6,220***	***$350***	***$550***	***$1,160***

[132] Results are based on maintenance/operations cost of 13 projects and are presented in 2013 dollars. Estimates were developed for 11 projects with incomplete project cost data.

[133] Results provided in 2013 dollars.

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
All Sectors	Direct	4,550	$280	$350	$700
	Indirect	2,130	$120	$210	$430
	Induced	1,550	$70	$150	$250
	Total	***8,230***	***$470***	***$710***	***$1,380***

Notes:

* Results are based on maintenance/operations cost of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix H.b.iii Economic Impacts of Total P3 Project Value

The total P3 project value include both the maintenance/operations cost and capital cost, when a maintenance/operations component is written into the P3 contract.[134] **Table H-6** summarises the economic impact of the total P3 project value in Québec, by sector, from 2003-2012. On a sector-by-sector basis, infrastructure P3 projects in the hospitals and healthcare sector have the largest total P3 expenditure with over $5.7 billion during the study period. Employment generated by projects in the hospitals & healthcare sector is equivalent to *direct* employment of 30,760 FTE jobs, earning $1.97 billion in *direct* income/wages and benefits. For the same sector, *direct* GDP is contributed to the province's economy and is estimated to be $2.5 billion.[135]

[134] Results are based on total P3 project value of 13 projects and are presented in 2013 dollars. Estimates were developed for 11 projects with incomplete project cost data.

[135] Results provided in 2013 dollars.

Table H- 6: Total Economic Impacts, by Sector, of the Total P3 Project Value of Infrastructure P3 Projects in Québec, 2003-2012

Sector	Type of Impact	Employment (Full-Time Equivalent Jobs)	Income/ Wages & Benefits ($ Millions)	GDP ($ Millions)	Economic Output ($ Millions)
Hospitals & Healthcare	Direct	30,760	$1,970	$2,510	$5,700
	Indirect	16,160	$940	$1,440	$2,910
	Induced	10,390	$470	$1,010	$1,690
	Total	***57,310***	***$3,380***	***$4,960***	***$10,300***
Recreation & Culture	Direct	1,040	$70	$90	$200
	Indirect	560	$30	$50	$100
	Induced	350	$20	$30	$60
	Total	***1,950***	***$120***	***$170***	***$360***
Transportation	Direct	10,070	$630	$810	$1,890
	Indirect	5,620	$330	$520	$1,060
	Induced	3,490	$150	$340	$570
	Total	***19,180***	***$1,110***	***$1,670***	***$3,520***
All Sectors	Direct	41,880	$2,670	$3,410	$7,790
	Indirect	22,360	$1,300	$2,020	$4,090
	Induced	14,230	$640	$1,380	$2,310
	Total	***78,470***	***$4,610***	***$6,810***	***$14,190***

Notes:

* Results are based on total P3 project value of projects and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

Appendix H.c Estimated Tax Impacts of Infrastructure P3 Projects in Québec

Infrastructure P3 projects in Québec generate tax revenue contributions to federal and provincial levels of government, estimated to be in the order of $1.2 billion from 2003-2012.[136] Tax revenues from the infrastructure P3 projects received by the federal and provincial governments over the study period amount to $740 million (61% of the total) and $470 million (39% of the total), respectively.[137] A complete summary of tax impacts by infrastructure P3 projects at the provincial level is provided in **Figure H-1**.

Figure H-1: Government Revenue Impacts of Infrastructure P3 Projects in Québec, 2003-2012

SUMMARY OF TAX CONTRIBUTIONS OF PPP PROJECTS (2003-2012) - QC

	Federal		Provincial		All Gov'ts
	Tax	Amount ($m)	Tax	Amount ($m)	Amount ($m)
Paid by Employers or Employees	Personal Income Tax	370	Personal Income Tax	347	
	Corporate Income Tax	76	Corporate Income Tax	44	
	EI - Employer	49	WCB	60	
	EI - Employee	35	Health Care	14	
	CPP - Employer	104			
	CPP- Employee	104			
	Total	**738**	**Total**	**465**	**1,203**
	Grand Total	**738**	**Grand Total**	**465**	**1,203**

Notes:

* Results are based on total P3 project value of 13 projects and are presented in 2013 dollars. Estimates were developed for 11 projects with incomplete project cost data. Results are based on 2012 tax rates and are presented in 2013 dollars. Totals may not add up due to rounding.

** Applies to projects with financial close dates between 2003 and 2012.

[136] Tax revenue contributions are also made to the municipal governments, such as property taxes and Payments-in-Lieu of Taxes (PILT). Tax revenue payments to the municipal governments are not included in the scope of this study as tax rates vary by municipality and by project type (e.g. property taxes are not applicable to some infrastructure P3 projects, such as upgrades to existing sections of a highway). Thus, the estimated tax impacts underestimate total tax impacts.

[137] Results are based on total P3 project value of 13 projects and are presented in 2013 dollars. Estimates were developed for 11 projects with incomplete project cost data. Taxation impacts are based on 2012 tax rates and are presented in 2013 dollars.

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