



2020

Evaluation of the Impact of INFC
Programs in the Vancouver Area

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List of Acronyms

ALRT	:	Advanced Light Rail Transit
BIF	:	Border Infrastructure Fund
CC	:	Communities Fund
CC-Top-Up	:	Communities Component Top-up
CCPI	:	Canadian core public infrastructure
CMA	:	Census Metropolitan Area
CSIF	:	Canada Strategic Infrastructure Fund
CWWF	:	Clean Water and Wastewater Fund
DMAF	:	Disaster Mitigation and Adaptation Fund
DRF	:	Departmental Results Framework
GDP	:	Gross Domestic Product
GHG	:	Greenhouse gas
ICIP	:	Investing in Canada Infrastructure Program
IICP	:	Investing in Canada plan
INFEA	:	Infrastructure Economic Account
INFC	:	Infrastructure Canada
ISF	:	Infrastructure Stimulus Fund
MAMP	:	Municipal Asset Management Program
MCIP	:	Municipalities for Climate Innovation Program
MIC	:	Major Infrastructure Component
NRP	:	National and Regional Projects
MRIF	:	Municipal Rural Infrastructure Fund
NRT	:	National Recreation Trail
PTIF	:	Public Transit Infrastructure Fund
SCC	:	Smart Cities Challenge
SCF	:	Small Communities Fund
StatCan	:	Statistics Canada

1.0 Executive Summary

Programs Overview

Infrastructure Canada (INFC) paid claims of \$2.1 billion on 378 projects across 19 programs in the Vancouver area for projects between April 1, 2009 and March 31, 2019. The programs cover the Investing in Canada plan programs, including legacy programs and the Gas Tax Fund.

Evaluation Objective and Scope

The objective of this evaluation is to provide a neutral assessment of the impact of INFC's programs in the Vancouver area during the period from April 1, 2009 to March 31, 2019. While program objectives varied over this time, all were intended to achieve similar results. As such, the impacts selected for assessment were chosen out of the Departmental Results Framework (DRF), effective November 1, 2017, as follows:

- Contribute to increasing the economic growth in an inclusive and sustainable way;
- Improve urban mobility in Canadian communities;
- Improve environmental quality, reduce greenhouse gas (GHG) emissions and increase resilience of communities; and
- Build inclusive and accessible communities.

This evaluation assessed the impact of INFC funding programs in the Vancouver area against the 2018-2019 departmental targets, when those could reasonably be scaled to the regional level.

This was a place-based evaluation, meaning that it assessed INFC impacts in a given place or region. The Vancouver area was selected as representative of a large city in Canada given its population, the quality of information available, the diversity and quantity of programs and projects funded and its inclusion in a variety of international studies.

Key Findings, Conclusions and Recommendations

Relevance

INFC programs aligned with Government of Canada priorities: job creation and economic growth and prosperity. Most programs also refer to three other objectives: accessibility, environmental quality improvements, and mobility in communities.

Vancouver area recipients have documented needs for funding to help with infrastructure construction and replacement, as well as for adapting to climate change and the related increasing severity of environmental events. INFC funded projects in all of these categories.

Impact

The \$2.1 billion in INFC claims paid over the period covered by the evaluation had an economic impact in the Vancouver area, specifically on the Gross Domestic Product (GDP) of British Columbia with an estimated increase between \$1.1 billion and \$1.4 billion, and on the national GDP, with an estimated increase between \$1.5 billion and \$2.0 billion. This level of economic impact is considered appropriate for infrastructure spending.

The majority of funding provided in the Vancouver area (80%) was directed to public transit projects, including electric rapid transit train lines, and bus fleet replacement for cleaner emissions alternatives. The ridership on public transit increased faster than the area's population did. This contributed to lower emissions per passenger on public transit, and fewer vehicles on the road than there would have been without the new and expanded transit lines. The impact on the environment was noticeable as a reduction in four monitored air pollutants was observed.

To a lesser extent, there were funds attributed to active transportation projects (cycling and walking). Many sidewalks and cycling lanes were added as roads were widened and rehabilitated. This resulted in an increase of the active modal share¹ from 8.0% to 9.8% between 2006 and 2016, thanks to the concerted efforts of many municipalities, the regional transit authority, and federal funding.

INFC supported 46 projects in public transit that were completed and are accessible. INFC supported 62 projects in community, cultural and recreational facilities that were built or enhanced and are accessible. All these projects contributed to making the Vancouver area more accessible to its residents.

INFC's funded projects supporting the development and improvement of cultural spaces, recreational spaces and public transit increased social inclusion in the Vancouver area. Public transit largely contributed by reducing physical barriers, becoming more available, and increasing the perception of security in its use. Stakeholders have also made efforts to include multiple, diverse communities in the design of facilities related to cultural projects.

An observation arising from this evaluation is that there are a large number of INFC programs available that share similar objectives (see Annex C), but have different application and reporting requirements. This caused

¹ Active modal share: the proportion of Canadians that uses an active transportation mode (walk or bike) for their daily commute.

challenges for applicants in selecting the most appropriate program to match their needs. In the period covered by the evaluation, Vancouver area applicants could select from between 6 and 11 active programs at any given time, each with their own requirements.

The impact of roads and bridges projects was not assessed as no associated results were identified the DRF.

INFC programs had a positive impact in the Vancouver area in the areas of economic growth, urban mobility, environmental quality, and inclusivity and accessibility. Departmental results targets are at the national level and could not always be scaled to the regional level. When they could, the results were positive.

Recommendations

Considering the findings above, in the spirit of continuous improvement, we are recommending the following:

- It is recommended that the Corporate Services Branch, in collaboration with the Policy and Results and Program Operations Branches, establish DRF results, indicators, baselines and targets that are meaningful, at a national and provincial/regional level, so that the Department can measure and report on progress towards meeting objectives. Care should be taken to ensure that indicators remain as stable as possible, for results to be compared over time.
- In the future, when creating new programs, it is recommended that INFC consider making use of existing program frameworks, including application and reporting requirements where appropriate.
- It is recommended that the Program Operations Branch improve its external communications related to program criteria, category eligibility and application assessment.

2.0 Evaluation Context

The objective of this evaluation is to provide a neutral assessment of the impact of INFC's programs in the Vancouver area during the period from April 1, 2009 to March 31, 2019. While program objectives varied over this time, all were intended to achieve similar results. As such, the impacts selected for assessment were from the DRF, effective November 1, 2017, as follows:

1. Fund and support infrastructure projects;
2. Manage public infrastructure in a more sustainable way;
3. Contribute to increasing the economic growth in an inclusive and sustainable way;
4. Improve urban mobility in Canadian communities;
5. Improve environmental quality, reduce GHG emissions and increase resilience of communities; and
6. Build inclusive and accessible communities.

This evaluation looked at impact for results 3, 4, 5, and 6 above.

This was a place-based evaluation, meaning that it assessed INFC impacts in a given place or region. The Vancouver area was selected as representative of a large city in Canada given its population, the quality of information available, the diversity and quantity of programs and projects funded and its inclusion in a variety of international studies.

Region of Focus

This evaluation will focus on the impact of INFC funding in the Vancouver area, as defined below.

The Census Metropolitan Area (CMA) of Vancouver as defined by Statistics Canada is composed of 39 municipalities, and is home to 2,463,431 residents as per the 2016 Census. This makes it the 3rd largest CMA in Canada, after Toronto and Montreal. Table 1 presents the largest municipal entities in the CMA:

Table 1: List of Largest Municipalities and their Populations within Vancouver CMA

Municipal entity	Population	Municipal entity	Population
Vancouver	631,486	Coquitlam	139,284
Surrey	517,887	Township of Langley	117,285
Burnaby	232,755	Delta	102,238
Richmond	198,309	32 other municipalities in Vancouver CMA <100K residents	524,187
Total for Vancouver CMA ²			2,463,431

Metro Vancouver is a Regional District recognized by the province to regroup common services in the geographical area of Vancouver:

Metro Vancouver is a federation of 21 municipalities, one Electoral Area and one Treaty First Nation that collaboratively plans for and delivers regional-scale services. Its core services are drinking water, wastewater treatment and solid waste management. Metro Vancouver also regulates air quality, plans for urban growth, manages a regional parks system and provides affordable housing. The regional district is governed by a Board of Directors of elected officials from each local authority.³

The population covered by the Metro Vancouver regional administration and its 23 members (mostly municipalities) represents 99.7% of the Vancouver CMA population. Metro Vancouver manages common services and infrastructure of high interest (water, wastewater, regional roads) to this evaluation. Depending on the availability of data, Metro Vancouver information was used in this evaluation when Vancouver CMA data was not available. Evaluators refer to the “Vancouver area” generally through this report.

TransLink is the authority responsible for the regional transportation network of Metro Vancouver, including public transport and major roads and bridges. Public transport includes the bus, SkyTrain, SeaBus and HandyDART networks.

² Statistics Canada. 2017. Focus on Geography Series, 2016 Census. Statistics Canada Catalogue no. 98-404-X2016001. Ottawa, Ontario. Data products, 2016 Census.

³ Cited from <http://www.metrovancouver.org/about/Pages/default.aspx> on April 10th, 2019

Overview: Infrastructure Needs in Vancouver

According to municipal representatives interviewed, Vancouver has challenges and issues common to large cities: homelessness, congestion, infrastructure replacement requirements for older developed areas, and emerging infrastructure needs to accommodate population growth. The Vancouver region also has specific issues related to being earthquake prone, and a coastal city subject to sea level rise.

3.0 Programs Overview

INFC paid \$2.1 billion in claims on approved projects in the Vancouver area between April 1, 2009 and March 31, 2019, and has additional financial commitments of close to \$2.1 billion remaining for the projects not completed as of March 31, 2019. The total cost of these projects is \$9.8 billion, with the vast majority of the balance being financed by the British Columbia government and the Vancouver area municipalities.

INFC manages the Gas Tax Fund, the Investing in Canada plan (IICP) programs initiated under Budget 2016 and Budget 2017 in addition to a large number of funding programs initiated over the past 15 years and referred to as legacy programs. This evaluation considered all programs listed in Table 2.

Table 2: INFC Funding in Vancouver Area by Program

Program	Number of projects	Program Contribution (\$ million)	Claims Paid as of Mar 2019 (\$ million)	Total Project Costs (\$ million)
Gas Tax Fund	128	639	639	639
IICP Programs				
Public Transit Infrastructure Fund (PTIF)	16	362	140	724
Clean Water and Wastewater Fund (CWWF)	14	36	11	72
Smart Cities Challenge (SCC)	2	1	1	1
Municipalities for Climate Innovation Program (MCIP)	11	2	0	2
Municipal Asset Management Program (MAMP)	1	0	0	0
Public Transit Infrastructure Stream (PTIS)	2	1,372	0	3,430
Legacy programs				
Major Infrastructure Component (MIC)	15	486	467	1,373
Canada Strategic Infrastructure Fund (CSIF)	2	458	458	1,369
Infrastructure Stimulus Fund (ISF)	112	225	225	588
Border Infrastructure Fund (BIF)	2	90	90	180

New Building Canada Fund-National Infrastructure Component (NIC)	1	82	0	216
New Building Canada Fund-National and Regional Projects (NRP)	13	395	62	1,072
Communities Component Top-Up (CC Top-Up)	17	17	17	53
Communities Component (CC)	16	16	16	51
Municipal Rural Infrastructure Fund (MRIF)	11	13	13	41
New Building Canada Fund-Small Communities Fund (SCF)	10	14	5	42
National Recreational Trails Program (NRT)	4	0	0	1
Research Knowledge and Outreach Program (RKO)	1	0	0	1
Total	378	4,206	2,144	9,854

Program objectives evolved over time as new programs were introduced. This evaluation strives to answer, among other questions, whether all programs' objectives are still relevant today and have achieved the intended outcomes.

4.0 Methodology

The evaluation used a mix of qualitative and quantitative lines of evidence, as described below. Information collected was triangulated (validated across multiple lines of evidence) to ensure accuracy and to minimize potential bias.

For more information related to the evaluation matrix, including the evaluation questions, indicators and methods of data collection used, please refer to Annex C.

Document Review

The document review examined INFC documents to understand the program design and delivery models and the context in which the programs were delivered. This included reviewing documents such as speeches from the throne, the 2015 ministerial mandate letter, departmental plans, funded project documentation, outcomes reports, agreements, newspaper articles, municipal capital and financial plans, among other sources.

Program and Project Data Review

Internal program files were used including project monitoring records, end of project reports, approval records, and other administrative information.

INFC did not consistently gather or retain performance measurement information on projects. Availability of project level performance/results information was an issue throughout the evaluation. INFC did not document the achievement of results beyond those that were immediate. This information was not required to be documented before 2016-17. Most projects in the Vancouver area over the period covered by the evaluation did not require any reporting on outcomes beyond the confirmation that projects were completed as approved.

In order to overcome those limitations, published information on funded project outcomes, and additional documents on project results were reviewed when available. This led to success in identifying information on results.

Economic Analysis

Statistics Canada services were sought to produce an economic impact analysis using the value of INFC claims paid on funded projects during the period being evaluated using the Statistics Canada Interprovincial Input-Output (IO) Model. IO models are used to simulate the economic impacts of an expenditure on the output of one or several industries. The simulation results from a “shock” (in this case, INFC funding) to an IO model that will show the direct, indirect and induced impacts on Gross Domestic Product (GDP), the number of jobs created, and estimates of indirect taxes and subsidies generated. The model also includes an estimate of the impact on interprovincial trade flows. A selection of the results of this analysis is presented in Finding 3: Economic impact of the INFC funding in the Vancouver area.

The results from the Interprovincial Input-Output Model were compared to the results of the Infrastructure Economic Account (INFEA) model to validate the reasonability of the results because, as with the use of any economic model, results can vary based on the assumptions and methodologies used. For more information on the economic models used as part of this evaluation, please refer to Annex D.

Limitations of economic models include wide ranging opinions on the use of assumptions when it comes to direct, indirect and induced impacts of spending in the economy. Effort has been made to consult with specialists and seek their input and opinions on the use of the models to ensure reasonability of results presented. Furthermore, a range of impact is presented to reflect the inherent variability of results in the use of economic models.

Interviews

A total of 32 key informant interviews were conducted to gather information on: needs; factors that affected impact; the programs’ relevance and effectiveness; and the satisfaction with the roles, processes and

products related to both the programs and projects. Interviewees included federal delivery partners, provincial representatives, municipal representatives, INFC staff, and TransLink officials.

Interviews can result in miscommunication of information. To avoid this, key informants were given the opportunity to validate their response to ensure accuracy. Site visits were conducted of the Museum of Surrey, the Surrey City Centre Library, the Como Lake playground, and the Expo Line TransLink train line in order to validate interview responses.

Surveys

Surveys were used to reach two respondent groups: (1) members of the general population of the Vancouver area who used infrastructure built with INFC support; and (2) business owners that were affected by infrastructure built with INFC support, particularly with respect to public transit projects.

For the general population survey, targeted sampling efforts were used to ensure representation from the different municipalities of the Vancouver area, with a screening to identify residents that actively use projects of interest, particularly public transit, roads and cultural/community centres supported by INFC funding. Demographic information was collected with respect to gender, income, age, and accessibility requirements in order to analyze whether those factors had an influence on the use of or satisfaction with the funded projects. For more information on the surveys, please refer to Annex E.

The business owners' survey targeted respondents within the Vancouver area who own businesses located near, or potentially impacted by, an INFC funded infrastructure project. Questions were asked about perceived employee and customer behaviour changes due to improvements to transit and other INFC-funded projects in the Vancouver area, and the impact of those on the businesses.

The survey was conducted electronically; as such, respondents required access to a compatible device and to the internet, which could be a barrier to homeless and lower-income populations in the Vancouver area responding. This is especially an issue when considering social inclusion. To overcome this limitation, the evaluation team collected information on the social inclusion impact from key informant interviews and site visits.

Literature Review

A literature review was conducted to determine whether other approaches could be used to achieve INFC's expected results more efficiently or economically. A literature search was conducted using the following theme: Best infrastructure spending to generate economic growth.

The literature review explored these themes in the following areas:

- Relation between public transit and GHG emissions reduction; and
- Ability to improve inclusion through improved public transit.

The literature consulted was comprehensive, but may not have been exhaustive. The evaluation team consulted with program experts and funding recipients who could further inform the evaluation questions and identify key resources to mitigate this potential limitation.

Other Limitations

INFC's DRF was put in effect as of November 1, 2017. It does not currently include results and targets for roads and bridges projects. Departmental results targets are at the national level and could not always be scaled to the regional level.

5.0 Findings

The following section presents the evaluation findings related to the impact of INFC programs in the Vancouver area.

5.1 Relevance

This section outlines the extent to which INFC programs are aligned with INFC and Government of Canada priorities as well as how this funding met the needs of the Vancouver area.

Finding 1: INFC programs are aligned with Government of Canada priorities.

Each program was aligned with Government of Canada priorities at the time it was created. The programs that are still active are aligned with current Government of Canada priorities.

The 2015 Speech from the Throne stated: “[...] public investment is needed to create and support economic growth, job creation and economic prosperity, the Government will make significant new investments in public transit, green infrastructure, and social infrastructure”. This was reinforced in the ministerial mandate letter which specified that the Minister was to “increase trade and economic growth” through making “significant new investments in public transit, green infrastructure, and social infrastructure”. All this clearly signalled the direction of the Government of Canada in investing in infrastructure to support economic growth.

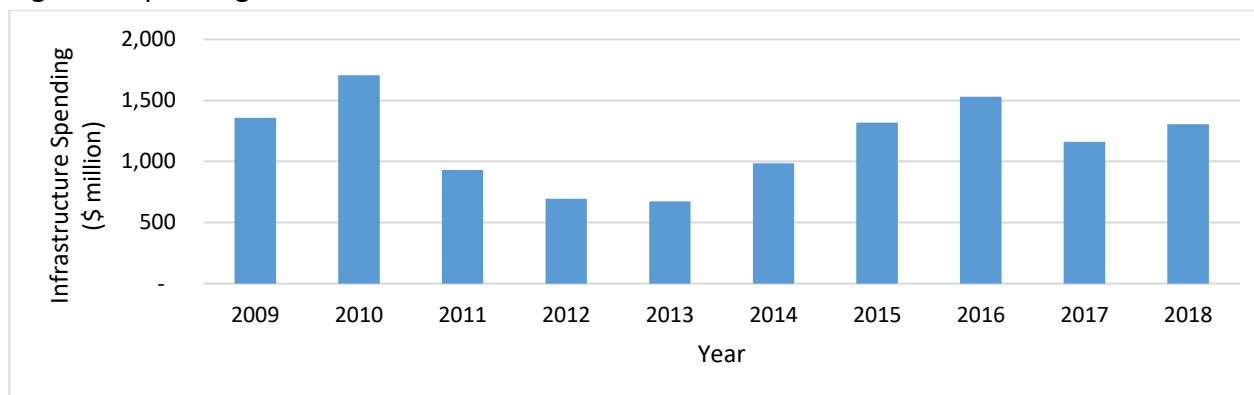
Comparing those priorities with the objectives of INFC programs in the Vancouver area (19 programs in total), all had contribution to economic growth as an objective. Six of these programs aligned with all DRF results; all remaining programs aligned with at least three of the DRF results. A table outlining detailed program objectives can be found at Annex C. We can conclude that the INFC programs in use in the Vancouver area were well aligned with Government of Canada priorities.

Finding 2: There is a need for federal infrastructure funding in the Vancouver area.

Municipalities have infrastructure needs that exceed their ability to be funded solely through property taxes and other sources of revenue. Municipalities’ needs cover a wide range of infrastructure asset categories (transportation, utilities such as water and wastewater, and cultural/recreational), and INFC programs respond to those needs. All municipalities’ representatives interviewed expressed the use of a robust planning approach and noted their long-term needs exceed their revenues, particularly when it comes to municipal infrastructure expenditure planning.

Analysis of the cities' financial budgets and financial statements revealed that the seven largest municipalities, Metro Vancouver and TransLink spent a combined \$11.6 billion on capital infrastructure during the period from 2009 to 2018, or an average of \$1.2 billion per year. Figure 1 presents the sum of infrastructure spending by these major organizations within the Vancouver area:

Figure 1: Spending in Infrastructure in the Vancouver Area*



*Note: Figure 1 presents infrastructure spending of Metro Vancouver, TransLink, and the seven largest Vancouver area municipalities.

Interviewees from the six largest municipalities in the Vancouver area (representing 75% of the area's population) reported having used asset management practices to identify their infrastructure needs, and expressed that project prioritization stemmed from their asset management plans and long-term planning. All municipalities reported having project lists that exceeded their available funding. Furthermore, they stated that they have limited powers to increase their revenue base to increase spending on capital assets.

It was noted that each dollar of federal funding to local projects allows an acceleration of infrastructure spending, allowing the municipalities to access provincial funds and better distribute over a number of years their infrastructure projects.

INFC Programs are Responding to the Needs Expressed by Vancouver Area Municipalities

Vancouver area needs can be categorized in three main categories:

- Growth needs;
- Aging infrastructure replacement; and,
- Climate change adaptation.

As an example of documented needs, the cities of Vancouver, Surrey and Burnaby, and TransLink have identified their long-term needs in terms of growth and include elements such as affordable housing, parks and recreation, transportation, and utilities in Vancouver; public transit, water utilities, sewage and drainage,

and climate change adaptation measures in Surrey; and a performance and event centre, a community centre, a linear public park, an arena, and a fire station in Burnaby.

TransLink also requires funding to replace ageing equipment such as rail cars and buses. The Gas Tax Fund has provided funding for these replacement purposes.

Overall, the municipalities interviewed all had projects on their priority lists that were eligible for INFC program funding. The Gas Tax Fund was singled out by interviewees as being very helpful in meeting needs as it covered a wide range of project categories, did not require co-funding and its amount of funding was predictable.

INFC programs provided funding for a total of 378 infrastructure projects in the Vancouver area in the period covered by this evaluation. Table 3 provides a summary of funding approved or completed during this time, grouped by asset category:

Table 3: Distribution of INFC Funding by Asset Category, April 1, 2009 to March 31, 2019

Asset Category	INFC Claims Paid (\$ million)	Total Approved INFC Contributions (\$ million)	Total Eligible Project Costs (\$ million)
Public Transit	1,669	3,266	7,355
Highways and Roads	113	291	706
Border Infrastructure	90	90	180
Marine	53	71	159
Wastewater	39	266	775
GTF (multiple categories, other than Public Transit)	39	39	39
Culture	36	45	163
Recreation	30	34	182
Drinking Water	17	31	89
Other (including 12 other asset categories)	58	72	206
Total	2,144 (51% of total approved INFC contributions)	4,206 (INFC contribution is 43% of total project costs, balance is paid by province or municipalities)	9,854

5.2 Impact

To assess the impact of INFC programs in the Vancouver area, multiple lines of evidence were used to examine achievement of the expected results outlined in the INFC DRF.

Finding 3: INFC program funding positively contributed to the Vancouver and Canadian economies.

The first DRF expected result covered by this evaluation is the rate at which economic growth is increased.

To assess INFC's impact on economic growth in the Vancouver area, Statistics Canada collaborated on an economic impact analysis. Table 4 presents the key results of this analysis to estimate the economic impact of INFC's funding in the Vancouver area. Upper and lower limits are provided depending on which economic impacts are being considered: the lower limit considers direct and indirect impacts and the upper limit adds induced impact⁴.

Table 4: Impact of INFC Funding in the Vancouver Area as per Interprovincial Input-Output Model

	British Columbia		Ontario		Canada	
	lower	upper	lower	upper	lower	upper
GDP Impact (\$ million)	1,078	1,403	228	327	1,469	1,968
Total Output (\$ million)	2,473	2,978	508	689	3,331	4,161
Number of Jobs	10,290	13,154	2,129	3,098	13,599	18,133
Number of Full Time Equivalents (FTEs)	8,922	10,989	1,882	2,619	11,839	15,169

As per the results of the Interprovincial Input-Output Model, the \$2.1 billion in claims paid by INFC during this period generated a total output⁵ between approximately \$2.5 and \$3 billion in British Columbia, and between \$3.3 and \$4.2 billion in the Canadian economy. In the table above, the economic impact in Ontario is also presented to demonstrate that INFC funding in the Vancouver area impacted other provinces' output as well (with the impact in Ontario being highest of all provinces outside of British Columbia). Between approximately 12,000 and 15,000 full-time equivalents⁶ were also supported by this funding across Canada.

⁴ For more details on what is meant by direct, indirect and induced impacts, see Annex D.

⁵ Total output is a measure of the total value of all sales/purchases of goods and services in a given period.

⁶ A Full-time equivalent (FTE) is a standardized unit of measurement for employment. It represents a person employed full-time, for a period of one year. The number of jobs is higher given that there are seasonal or part-time jobs that are equivalent to less than 1 FTE.

The INFC funding in Vancouver had an impact on British Columbia GDP⁷ of between \$1.1 and \$1.4 billion, and an impact on Canada’s GDP of between \$1.5 and \$2.0 billion. When put within the context of a GDP of \$138 billion in the Vancouver CMA for 2016, the average annual claims paid by INFC represent 0.15% of the Vancouver CMA GDP.

To validate the Interprovincial Input-Output Model, economic impact was also calculated using the Infrastructure Economic Account (INFEA) multipliers prepared within INFC. Results of this analysis are presented in Table 5.

Table 5: Results using Infrastructure Economic Account for Infrastructure Spending in the Vancouver Area

	Canada		
	Direct Impact	Indirect Impact	Total
GDP Impact (\$ million)	769	756	1,525
Number of Jobs	6,792	6,816	13,608

The INFEA results can be compared to the lower end of the range of the Interprovincial Input-Output Model (IO Model) presented in Table 4. The number of jobs maintained is 13,608 using INFEA analysis compared to 13,599 using the IO model, while the estimated GDP impact is \$1.525 billion and \$1.469 billion. Given that these measures are relatively close to each, their reliability is reinforced.

Budget 2016 documentation revealed that the expected multiplier for impact to investment is 0.9, meaning that for every investment of \$1 in infrastructure, there is an expected impact of \$0.90.⁸ The impact value for this multiplier includes direct, indirect and induced impacts. Using this multiplier, the expected impact of \$2.1 billion in infrastructure funding is \$1.9 billion. The IO Model results show an impact of this magnitude.

Table 6: DRF Indicator Related to the Rate of Economic Growth Result

DRF Indicator	Cumulative Result, 2009-2019	National Target
Change in real GDP attributable to federal investments in infrastructure	Between \$1.5 and \$2.0 billion	The 2018-2019 Departmental Plan did not provide a target.

These results are in line with what is generally expected for effective infrastructure spending.

⁷GDP measures the “unduplicated” value of production in the economy or the value added which therefore excludes the cost of intermediate goods and services in order to avoid double counting.

⁸ In Budget 2016 documentation, an impact less than 1 is attributed to leakages to saving and imports

Additional Impacts of INFC Funding in the Vancouver Area on Economic Growth

Business owners who responded to the survey confirmed a positive impact on their economic activity. Nearly half of respondents (49%) claimed that their business was more profitable as a result of upgraded roadways, with 39% reporting no change in profitability. A large proportion (42%) reported that their business was more profitable as a result of upgraded public transit, with 45% reporting no change in business profitability. This is attributed to it being easier for consumers to access the businesses surveyed, and more consumers visiting the businesses, as indicated by over 80% of respondents. Municipal interviewees also confirmed that additional and improved roads and public transit opened up areas of their municipalities to new residential and commercial developments, which led to economic growth within the area. TransLink representatives indicated that new transit line development leads to land use changes, i.e. construction of residential and commercial properties is intensified around transit stations. This evaluation collected anecdotal evidence to this effect, but has not been able to quantify this effect.

Economic models demonstrate that INFC-funded projects contributed to the British Columbia and Canada GDP by virtue of the construction efforts undertaken. In addition, a significant proportion of business owners have recognized the positive impacts that improved roads and public transit had on their businesses. Land use has been modified following the construction of new infrastructure such as train lines and roads, intensifying the property development in these areas.

All of these constitute positive impacts to economic growth of both the Vancouver area and the country.

Finding 4: INFC funding contributed to positive environmental outcomes in the Vancouver area.

The second DRF expected result covered by this evaluation is that positive environmental outcomes are achieved: environmental quality is improved, greenhouse gas (GHG) emissions are reduced and the resilience of communities is increased. This section looks at each element of this expected result.

Environmental Quality is Improved

The Gas Tax Fund supported 20 fleet replacement projects (bus, train, and SeaBus) for TransLink worth \$322 million. These projects resulted in cleaner emissions equipment being purchased, such as vehicles powered by electricity (34), alternative fuel (109), hybrid technology (75), and battery (4), as well as the construction of a compressed natural gas facility. Between 2014 and 2016, TransLink reported a decrease in its diesel consumption by 6.9 million litres, which was replaced by gasoline and compressed natural gas due to the new fleet composition. This reduction of diesel consumption contributed to positive health impacts for the region considering that diesel particulate matter was responsible for 67% of lifetime cancer risks due to toxic air pollution in Metro Vancouver, according to a study commissioned by Metro Vancouver and British Columbia

Ministry of Environment⁹. Heavy duty diesel vehicles are a significant source of diesel particulate matter in the Canadian Lower Fraser Valley.¹⁰

The 2016 Lower Fraser Valley Air Quality Monitoring Report presented long-term Vancouver area levels of average concentrations of Criteria Air Contaminants (CAC), including nitrogen dioxide (NO₂), sulphur dioxide (SO₂) carbon monoxide (CO) and fine particulate matter (PM_{2.5}).¹¹ NO₂, SO₂ and CO levels have decreased respectively around 4%, 80% and 36% from 2009 to 2016, while the PM_{2.5} levels have decreased 17% from 2009 to 2012 and another 27% between 2013 and 2016. From 2009 to 2016, the population of the Vancouver area increased by 12% which could have easily increased emissions of all of these pollutants. While causality cannot be established between INFC funding and these regional trends, the sum of all measures taken in the region, including projects funded by INFC, has had a positive impact on the air quality in the Vancouver area.

GHG Emissions are Reduced

INFC's funding in major transit projects, such as rapid transit train lines across the Vancouver area including the Canada Line, Expo Line and Evergreen Line, contributed to the reduction of TransLink's GHG emissions by 14% per boarded passenger between 2014 and 2018.

Resilience of Communities is Increased

Some projects funded by INFC were directly intended to address the resilience of Vancouver area communities to the impacts of climate change. It is expected that the sea level along the Vancouver area coast will rise by up to one metre by the year 2100¹². For example, the West Langley Dike Upgrade project protects 26 residential and farm properties and 24 industrial properties from Fraser River flooding or other vulnerabilities resulting from extreme natural events. The Boundary Bay Dike Foreshore Protection project upgraded approximately 450 metres of dike along Boundary Bay in East Delta and approximately 50 metres of dike along Boundary Bay north of Beach Grove which resulted in increased resilience from extreme natural events for that area in Delta.

⁹ Heavy Duty Diesel Vehicle Policy Options Evaluation Study, Final Report, SNC-Lavalin, John Lindner, M. Sc., December 31, 2013, P.ii

¹⁰ Metro Vancouver, "2010 Lower Fraser Valley Air Emissions Inventory and Forecast and Backcast,"

[http://www.metrovancouver.org/services/air-](http://www.metrovancouver.org/services/air-quality/AirQualityPublications/2010LowerFraserValleyAirEmissionsInventoryandForecastandBackcast.pdf)

[quality/AirQualityPublications/2010LowerFraserValleyAirEmissionsInventoryandForecastandBackcast.pdf](http://www.metrovancouver.org/services/air-quality/AirQualityPublications/2010LowerFraserValleyAirEmissionsInventoryandForecastandBackcast.pdf), September 2013

¹¹ Lower Fraser Valley Air Quality Monitoring Report, 2016, Metro Vancouver, Air Quality and Climate Change Division, S3-S4.

¹² Projected Sea Level Changes for British Columbia in the 21st Century, 2008, Bornhold, Brian D, p.8

Water and Wastewater Impacts

In terms of water and wastewater management, INFC's funding enabled many municipalities to build or enhance their drinking water and wastewater systems. Various infrastructure replacement or modernization projects have been implemented in the Vancouver area, including in Anmore Village, Belcarra Village, Bowen Island, Lions Bay, Port Moody, Tsawwassen First Nation and White Rock.



A green roof at the Surrey City Centre Library

Unintended Environmental Benefits

Some INFC-funded projects with transportation, cultural or recreational objectives included energy-efficient features and, therefore, had unintended positive environmental impacts. For example:

- A green roof on the Surrey City Centre Library reduces cooling energy in summer and strain on storm water systems by delaying and reducing runoffs; and,
- Rainwater collected from the arena roof and waterpark structures at the Aldergrove Credit Union Community Centre in the Township of Langley is used in the facility's washrooms, while solar panels on the arena are used to support the building heating system.

INFC funding has contributed to positive environmental outcomes in the Vancouver area in all three DRF indicators related to drinking water systems, wastewater systems and GHG emissions presented in Table 7.

Table 7: DRF Indicators Related to Environmental Impact Results

DRF Indicator	Cumulative Result, 2009-2019	National Target
Percentage of municipalities that built or enhanced their drinking water system as a result of INFC funding.	23% of municipalities, or 9 municipalities representing 50% of the area's population in the Vancouver Area.	5.8%
Percentage of municipalities that built or enhanced their wastewater system as a result of INFC funding.	33% of municipalities, or 13 municipalities representing 82% of the area's population in the Vancouver Area.	4.75%
Percentage of municipalities that reduced their GHG emissions as a result of INFC funding.	28% of municipalities, or 11 municipalities representing 68% of the area's population in the Vancouver Area.	5.3%

Finding 5: INFC funding contributed to improved mobility in the Vancouver area.

The third DRF expected result is that INFC is contributing to improving urban mobility in Canadian communities. This is measured by the percentage of Canadians living within 400 metres of a transit station or stop, and by the modal share¹³ of public transit and active transportation use¹⁴.

¹³ Modal share of public transit use and active transportation: the proportion of Canadians that use public transit or an active transportation mode for their daily commute.

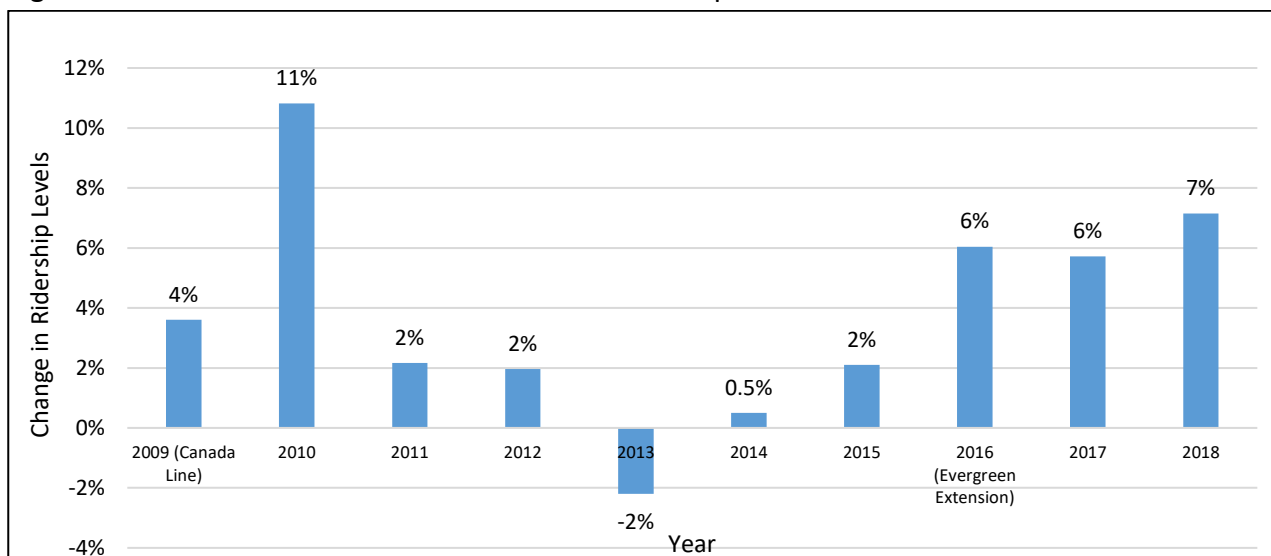
¹⁴ According to Statistics Canada, public transit and active transportation (walking or cycling) are considered as sustainable transportation as they are modes of transportation that have a smaller net impact on the environment or transportation infrastructure than cars and heavy trucks, or a near-zero net impact.

Public Transit Modal Share is Increased

Literature related to urban transportation has shown that strategic spending in major infrastructure such as public transit, accompanied by local actions to improve walking, cycling and transit use, is a pillar of sustainable urban transportation¹⁵.

INFC contributed to the funding of 69 public transit projects for a sum of \$1.7 billion in claims paid during the period covered by this evaluation. These projects include the Canada Line for \$450 million, the Evergreen Line Extension for \$350 million, the Millennium Line for \$28 million, and upgrades to the West Coast Express for \$8 million. TransLink reported that overall public transit ridership increased in the Vancouver area following the openings of the Canada Line in December 2009 and of the Evergreen Extension in 2016, as shown in Figure 2. Between 2006 and 2016, public transit ridership increased by 36% in the Vancouver area, while the population increased by 16%.

Figure 2: TransLink Year-over-Year Increase in Ridership



Source: [TransLink-Ridership Trend](#)

Note: the 2% decrease in 2013 is attributed to fare increases that year

A survey of public transit users conducted as part of the evaluation revealed that respondents use the train more often than they used to because of expansions and/or improvements supported by INFC funding (between 45% and 70% depending on the line used) and are better able to access the train than previously (between 83% and 89% depending on the line). Table 8 presents more examples of the rates at which respondents agree to the statements related to the upgrades to the Millennium Line, West Coast Express and Canada Line.

¹⁵ "The Four Pillars of Sustainable Urban Transportation" (Kennedy et al., Department of Civil Engineering of University of Toronto, 2005)

Table 8: Rates at which Respondents Agreed with the Following Statements

	Millenium Line	West Coast Express	Canada Line
The new trains are easy to access.	89%	83%	83%
The routes make it easier to access places I couldn't before.	79%	82%	70%
I save time on my commute by taking the train.	77%	75%	75%
I save money by taking the trains more often than I used to.	52%	71%	62%
The price for the train is fair.	58%	66%	59%
I use the trains more often than I used to because of the expansion/improvements.	65%	70%	54%
The trains come more often.	66%	66%	66%
The trains are on time more often.	70%	76%	71%

As per the results from the 2006 and 2016 Census Journey to Work reports, Statistics Canada reported an increase in the public transit use modal share from 16.5% in 2006 to 21.4% in 2016 for the Vancouver area.

Active Transportation Modal Share is Increased

INFC funded nine active transportation projects totalling \$5.5 million in claims paid during the period. Additionally, numerous road and highway projects representing \$113 million in claims paid during the period, included sidewalk and bike lane improvements. Active transportation projects were noted by interviewees as having positive impacts. For instance, in the City of Richmond, one INFC-funded project created a direct road link between the heavily trafficked Richmond Olympic Oval and Number 3 Road. The new link enhanced transportation network connectivity and access to major destinations by improving pedestrian and cycling access.

Based on Statistics Canada Census data from 2006 and 2016, the proportion of workers cycling and walking to work was 1.2% and 2.8% for Richmond in 2006. In 2016 (after completion of the project), the cycling mode increased to 1.3% while walking increased to 4.3%.

As shown in Table 9¹⁶, Statistics Canada reported an increase of the modal share of active transportation from 2006 to 2016.

¹⁶ Data from Statistics Canada for 2006 and 2016 were used as a proxy for the evaluation period as data from 2009 and 2019 are not reported.

Table 9: DRF Indicators Related to Modal Share of Public Transit and Active Transportation Results

DRF Indicator	Cumulative Result, 2009-2019	National Target
Percentage of Canadians living within 400 metres of a transit station or stop.	<p>A report by the Institute for Transportation and Development Policy states that 90% of residents of the City of Vancouver are within a 10-minute walking or cycling distance from a frequent transit stop¹⁷.</p> <p>Through interviews, Burnaby reported that 95% of the municipality's population lives within 400 metres of a bus stop or rapid transit station.</p> <p>Information related to this indicator was not available for other Vancouver area municipalities.</p>	Not available
Modal share of public transit and active transportation.	<p>Modal share of public transit use increased from 16.5% in 2006 to 21.4% in 2016 for the Vancouver area.</p> <p>Modal share of active transportation increased during the period from 2006 to 2016 from 6.3% to 7.3% (walking) and from 1.7% to 2.5% (cycling) for the Vancouver area.</p> <p>This represents a total modal share of 31.2% in 2016, compared to 24.5% in 2006.</p>	24.2%

Overall, INFC funded projects contributed to Vancouver area residents making increased use of public transit, and encouraged active transportation by improving the available infrastructure, including sidewalks and bike lanes.

Finding 6: INFC-funded projects did not noticeably reduce congestion in the Vancouver area.

INFC funded 90 highways and roads projects, paying claims of \$120 million in the Vancouver area during the period covered by the evaluation. Table 10 provides a breakdown of this spending by program type.

¹⁷Vancouver Urbanized, January 16, 2019

Table 10: INFC Funding of Highways and Roads in the Vancouver Area

	Claims paid (\$ million)	Contribution (\$ million)	Total eligible cost (\$ million)	Number of Projects
Gas Tax Fund	7.3	7.3	7.3	27
IICP Programs	0	81.6	216.2	1
Legacy Programs	113.1	209.3	489.6	62
Total	120.4	298.2	713.1	90

Road work was focused on improvements, sidewalks and cycling infrastructure, overpass and bridges, which were meant to improve traffic flow and mobility.

Many roads and highways were improved in the Vancouver area between April 1, 2009 and March 31, 2019. The three largest projects are presented in Table 11:

Table 11: Examples of Improved Highways and Roads

Projects	INFC funding (\$ million)	Immediate Outputs
The Surrey- 96 th Avenue Improvement Project	8.0	Widening of roadway to four lanes, building of left-turn lanes at intersections
Port Coquitlam Broadway Street Reconstruction	3.8	Widening from two lanes to five on approximately 1.3 km of Broadway Street
Maple Ridge Downtown Core Road & Utility Rehabilitation Project	1.8	Expansion to support density increases in both residential and commercial sectors

In addition to the projects listed above, INFC contributed to rehabilitate or replace six bridges in the Vancouver area during the period covered by the evaluation. An additional project on Highway 17 in Delta permitted the rehabilitation of the Highway 17 overpass at 28th Avenue.

Survey results indicated that INFC investments in road systems were perceived to be less successful than investments in transit. Survey respondents mostly disagreed that congestion was reduced on or around the routes identified, except for the 203rd Street Bridge and Roundabout, where 59% of respondents believed traffic was reduced as a result of the project.

Survey respondents between the ages of 18-29 reported a relatively strong satisfaction rate in terms of driving across the Vancouver area as a result of the road improvements generally.

While these highways and roads projects align with governmental priorities, the INFC DRF does not include results or indicators for this kind of project.

Finding 7: INFC funding contributed to improved accessibility in the Vancouver area.

The fourth DRF result is that INFC is contributing to improving accessibility. A number of accessible public transit, cultural, recreational and community facilities that were enhanced or built as a result of INFC funding.

It is a requirement of INFC funding contribution agreements that projects meet the highest accessibility standard in their jurisdiction. Given this requirement, the evaluation was conducted with an accessibility lens that went above and beyond these requirements.

For this evaluation, accessibility is defined as the removal of barriers that prevent the equitable participation of all persons in social, economic, cultural and political life. This evaluation therefore assessed the extent to which priority populations and those with accessibility needs can access infrastructure benefitting from INFC funding. As such, interviewees were asked to provide comments on the accessibility of respective infrastructure and survey respondents, in turn, were questioned about their level of satisfaction with their access to infrastructure.

A Gender Based Analysis Plus (GBA+) lens was then applied to survey responses. Gender-based Analysis Plus (GBA+) is defined by the Government of Canada “as a process of analysis by which a policy, program, initiative or service is assessed for its impacts on various groups of women, men and non-binary people, taking into



SOURCE: Inclusion Matters, World Bank, 2013

account various identity factors, including gender, race, ethnicity, religion, age, mental or physical disability.”¹⁸

As reported in Table 12, 62 cultural facilities projects and 46 public transit projects were completed in the Vancouver area and contributed to achieving INFC’s expected results in terms of accessibility.

Table 12: DRF Indicators Related to Accessibility Results

DRF Indicator	Cumulative Result, 2009-2019	National Target
Number of public transit systems that were built or enhanced as a result of INFC funding, and are accessible.	46 completed and accessible public transit projects in 14 municipalities which represent 88% of the Vancouver area population.	190 systems
Number of community, cultural and recreational facilities that were built or enhanced as a result of INFC funding, and are accessible	62 completed and accessible projects in 9 municipalities which represent 65% of the Vancouver area population.	78 facilities

Public Transit is Accessible

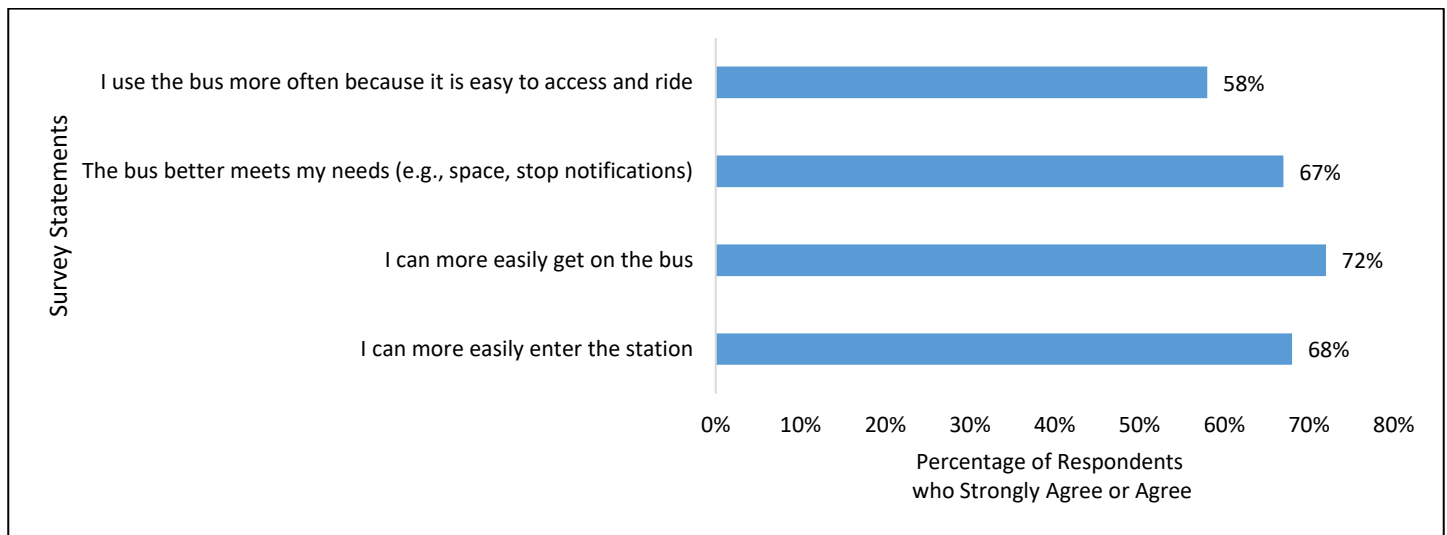
It was found that public transit projects funded by INFC are accessible. All new construction by TransLink met locally required accessibility features and the evaluation found that efforts have been made to build public transit infrastructure that is more accessible than required. For instance, an elevator was built with INFC funding through the Building Canada Fund at the Scott Road Station, the last SkyTrain station where the train platform was not yet accessible to wheelchairs from the street level. In addition, as part of the Advanced Light Rail Transit (ALRT) faregates project, there was special consideration given to allow autonomous access to users who are physically unable to tap their card and could not previously access the SkyTrain stations on their own.

¹⁸ “Gender Based Analysis,” Treasury Board Submissions, Government of Canada. <https://www.canada.ca/en/treasury-board-secretariat/services/treasury-board-submissions/gender-based-analysis-plus.html> (accessed 22 December 2019); Gender Based Analysis Plus, Status of Women Canada, Government of Canada. <https://cfc-swc.gc.ca/gba-acis/index-en.html>.

Under the Gas Tax Fund, INFC funded some accessibility-specific projects, such as HandyDART vehicle replacements, conventional bus replacements and community shuttle replacements. HandyDART vehicles are specially equipped and designed to carry passengers with physical or cognitive disabilities who are unable to use public transit without assistance.

Moreover, 72% of survey respondents who identified having accessibility needs reported that they were more easily able to get on the bus (referring to “new transit buses”) and enter the transit stations (68%) and that the bus better met their needs with respect to space and stop notifications (67%) as a result of INFC-supported public transit improvements, as shown in Figure 3.¹⁹

Figure 3: Perceived Improvements to Buses by Accessibility Needs



Even in terms of more specific demographics, it was found that when taking additional and intersecting GBA+ factors into consideration, public transit in the Vancouver area was accessible.

¹⁹ INFC survey report, 2019.

Cultural, Recreational and Community Facilities are Accessible

INFC funded projects in the culture and recreation category were designed and built with the required accessibility features. Site visits were conducted by the evaluation team of the Surrey Library, Surrey Museum, Como Lake playground, and Burnaby Central Park trail.

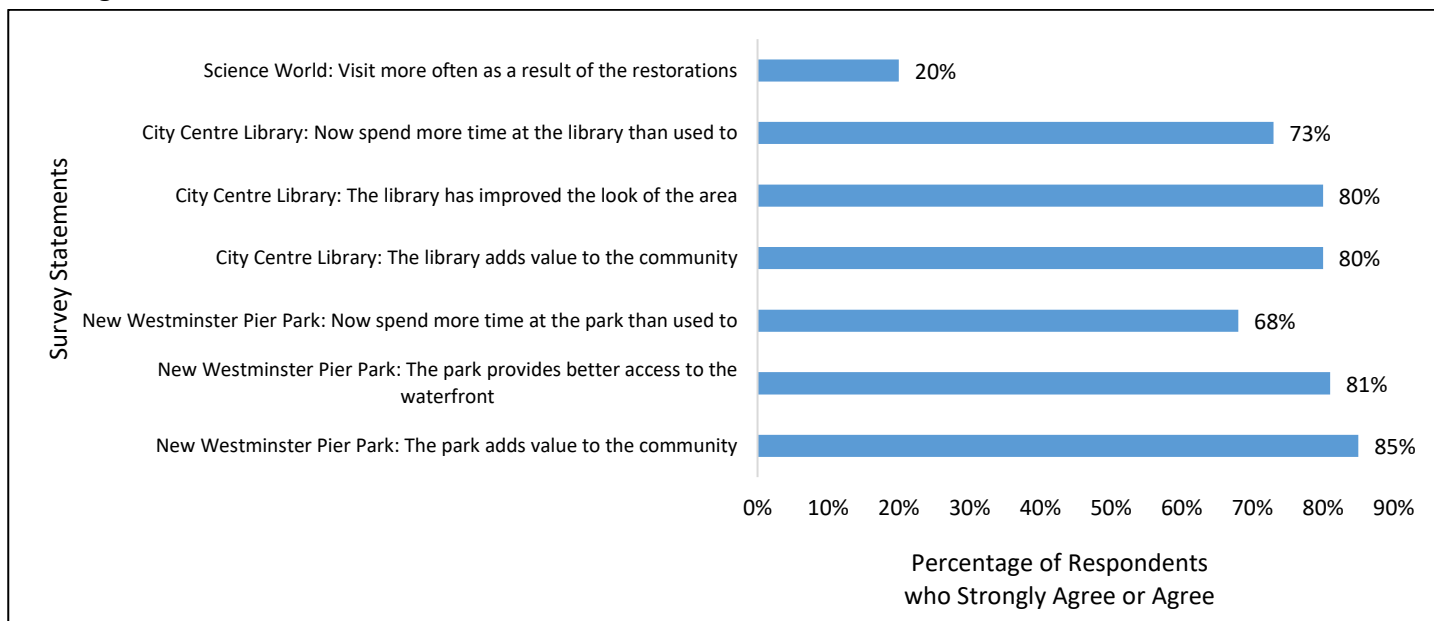
Of these sites, the playground and the trail incorporated a rubberized surface material to allow improved use by wheelchairs and strollers. In Coquitlam, the Como Lake playground project and all its tennis courts have been built to improve accessibility for people with mobility issues. Play options were designed for children of different abilities and the adults who are with them.



Photo of the Como Lake Playground, October 2019

Generally, survey respondents with accessibility needs agreed with the statements presented in Figure 4 for the various community and cultural spaces supported by INFC funding, except for the Science World space where only 20% of respondents indicated that they visit more often as result of the restorations. It also noted that residents surveyed who have accessibility needs reported higher satisfaction than the general population in the Surrey Centre library as a result of the new construction supported by INFC.

Figure 4: Satisfaction with Accessibility of Community Spaces in the Vancouver Area that Received INFC Funding



Additionally, survey respondents with accessibility needs were generally better able to take part in recreational activities (77%) and access cultural spaces and centres (77%) as a result of SkyTrain and station improvements supported by INFC funding.

Overall, INFC has helped TransLink and municipalities improve accessibility for residents by funding projects that encouraged accessibility measures.

Finding 8: INFC funding contributed to social inclusion in the Vancouver area.

The fifth result to be assessed under the DRF is that INFC has contributed to improving social inclusion²⁰ in the Vancouver area by funding infrastructure in community, cultural and recreational facilities, and public transit systems. This section presents the extent to which spending in these assets has achieved the results expected by INFC.

Community, Cultural and Recreational Facilities Positively Impacted Social Inclusion

Provincial and municipal interviewees reported that all INFC-supported projects undertaken in the municipalities during the period took into account community inclusivity. Indigenous groups, community groups, seniors, youth, young families, and other targeted segments of the population such as low income families and unemployed people were engaged in the planning of several projects.

The construction of the Surrey City Centre Library highlights effective consideration of inclusivity factors in infrastructure projects. To achieve inclusivity, the library considered a wide range of the population's interests (seniors, youth, low income, homeless, students, and the general population).

This new library now generates 600,000 walk-ins yearly, whereas the previous library generated 128,000 walk-ins. The majority of survey respondents increased their use of the library as a result of the new construction (67%) and indicated that it improved the look of the community (82%) and provided a nice community space (78%).

The construction of the Surrey Museum is another example that highlights how various targeted populations have been considered. For example, the museum:

- Introduced a sensory-friendly space designed to create a supportive environment for individuals who have autism spectrum disorder, anxiety or other sensory-processing needs.
- Offered space for a permanent Indigenous hall, where exhibits are fully designed by the three First Nations in Surrey.

²⁰ According to the World Bank Group, social inclusion is the process of improving the terms on which individuals and groups take part in society—improving the ability, opportunity, and dignity of those disadvantaged people on the basis of their identity.

-
- Offered space to various local cultural and ethnic communities for continually evolving programming that reflects Surrey residents.

The Aldergrove Credit Union Community Centre water park built in the Township of Langley with INFC funding is the largest community space in the vicinity. The municipal representative interviewed confirmed its design and construction considered the needs of a diverse range of people, including young people, families, persons with disabilities and lower-income residents.

Vancouver area municipalities prioritized a number of INFC-funded projects in low income neighborhoods. This is the case in Coquitlam where free/accessible recreational infrastructure within walking/public transit distance of targeted areas was prioritized. In Burnaby, free wireless internet access at City buildings easily accessible by public transit or walking was installed.

Public Transit Contributed to Social Inclusion

The public transit system also contributed to social inclusion in the Vancouver area. Reducing physical barriers, making public transit more available, and increasing the perception of security in public transit are solutions to facilitate social inclusion²¹. By supporting accessible public transit projects, INFC contributed to strengthening social inclusion in the Vancouver area.

The upgrades to the buses funded by INFC improved access to recreational activities. The survey results established that, as a result of new buses, respondents reported increased access to community spaces (71%), recreational activities (70%) and cultural spaces and centres (67%).

71% of respondents with income less than \$20,000 per year indicated that, as a result of improvements, the new buses allowed them to take part in recreational activities.

Men and women indicated being equally impacted positively by the results of the improvements to the SkyTrain network and stations. Younger respondents (19-29) were most positive about the impact on their quality of life. Respondents 66 years and older felt they were able to save money and time by taking the train. Respondents with a household income of less than \$40,000 annually were most positively impacted in terms of having better access to community spaces and recreational activities, visiting friends and family more often, and saving money and time by taking the train.

INFC's funded projects that support the development and improvement of cultural spaces, recreational spaces and public transit increased social inclusion in the Vancouver area. There are no indicators nor targets in the DRF that relate to inclusion.

²¹ Stanley and Stanley. University of Melbourne and University of Sydney "The Importance of Transport for Social Inclusion", 2017, p.110

5.3 Design and Delivery

The evaluation assessed the extent to which the various programs providing funding in the Vancouver area were well designed and contributed to reaching INFC's objectives.

Finding 9: Although the design and delivery of programs were responsive and effective to the advancement of INFC objectives, the high number of programs with similar objectives and different requirements was noted.

A total of 19 INFC programs funded projects in the Vancouver area in the period covered by the evaluation. This section presents some observations on specific programs and on the overall program suite.

Observations on Specific Programs

The MRIF and the Gas Tax Fund were the most liked programs according to municipal and provincial stakeholders, given their flexibility and wide range of project categories.

It was noted that ISF is a program that required short turnaround times for project completion, which created more demand for services than suppliers were able to handle and resulted in increased costs for the municipalities. These are unintended consequences of any stimulus program that requires a significant peak in industry production.

Some jurisdictions noted they would like more advance information on upcoming programs and their specific requirements and conditions; as well as longer application periods in order to better prepare projects and proposals and to more effectively prioritize projects in their municipalities.

Overall, provincial and municipal interviewees were satisfied with the administration of INFC programs and value their partnerships with INFC in spite of the short turnarounds required from time to time.

INFC Suite of Programs

Analysis of the 19 programs that funded projects in the Vancouver area in the period covered by the evaluation revealed that all funding programs have economic growth as an objective. They also share to varying degrees objectives related to improving accessibility, inclusiveness, mobility and environmental quality. Each program has specific eligible asset categories, conditions, and recipients. Some programs target small projects, while others target large municipalities or even projects at the provincial level. This high number of similar programs, with between 6 and 11 active programs in the Vancouver area at any given time in the period covered by the evaluation, created difficulty for some municipal representatives preparing submissions and identifying the most appropriate program(s) for those submissions.

6.0 Conclusions and Recommendations

INFC programs were found to be aligned with Government of Canada priorities of job creation and economic growth and prosperity. Most programs also refer to three other objectives: accessibility, environmental quality improvements, and mobility in communities.

Vancouver area recipients have documented needs for funding to help with infrastructure construction and replacement, as well as for adapting to climate change and the related increasing severity of environmental events. INFC funded projects in all of these categories.

The \$2.1 billion in INFC claims paid over the period covered by the evaluation had an economic impact in the Vancouver area: on the GDP of British Columbia by between \$1.1 billion and \$1.4 billion and on the national GDP by between \$1.5 billion and \$2.0 billion. This level of economic impact is considered appropriate for infrastructure spending.

The majority of funding provided in the Vancouver area (80%) was directed to public transit projects, including electric rapid transit train lines, and bus fleet replacement for cleaner emissions alternatives. The ridership on public transit increased faster than the area's population did. This contributed to lower emissions per passenger on public transit, and fewer vehicles on the road than there would have been without the new and expanded transit lines. The impact on the environment was noticeable as a reduction in four monitored air pollutants was observed.

To a lesser extent, there were funds attributed to active transportation projects (cycling and walking). Many sidewalks and cycling lanes were added as roads were widened and rehabilitated. This resulted in an increase of the active modal share from 8.0% to 9.8% between 2006 and 2016. This is the result of the concerted efforts of many municipalities, and the regional transit authority.

INFC supported 46 projects in public transit that were completed and accessible. INFC supported 62 projects in community, cultural and recreational facilities that were built or enhanced and are accessible. All these projects contributed to making the Vancouver area more accessible to its residents.

INFC's funded projects supporting the development and improvement of cultural spaces, recreational spaces and public transit increased social inclusion in the Vancouver area. Public transit largely contributed by reducing physical barriers, becoming more available, and increasing the perception of related security. Those working on cultural projects have also gone to great lengths to ensure that multiple communities were included in the design of the facilities.

An observation of this evaluation is that there are a large number of INFC programs available that share similar objectives (see Annex C), but have different application and reporting requirements. This caused challenges for applicants in selecting the most appropriate program to match their needs. In the period covered by the evaluation, Vancouver area applicants selected from between 6 and 11 programs, each with its own requirements.

The impact of roads and bridges projects was not assessed as no associated results were identified the DRF.

INFC programs had a positive impact in the Vancouver area in the areas of economic growth, urban mobility, environmental quality, and inclusivity and accessibility. Departmental results targets are at the national level and could not always be scaled to the regional level. When they could, the results were positive.

Recommendations

Considering the findings above, in the spirit of continuous improvement, we are recommending the following:

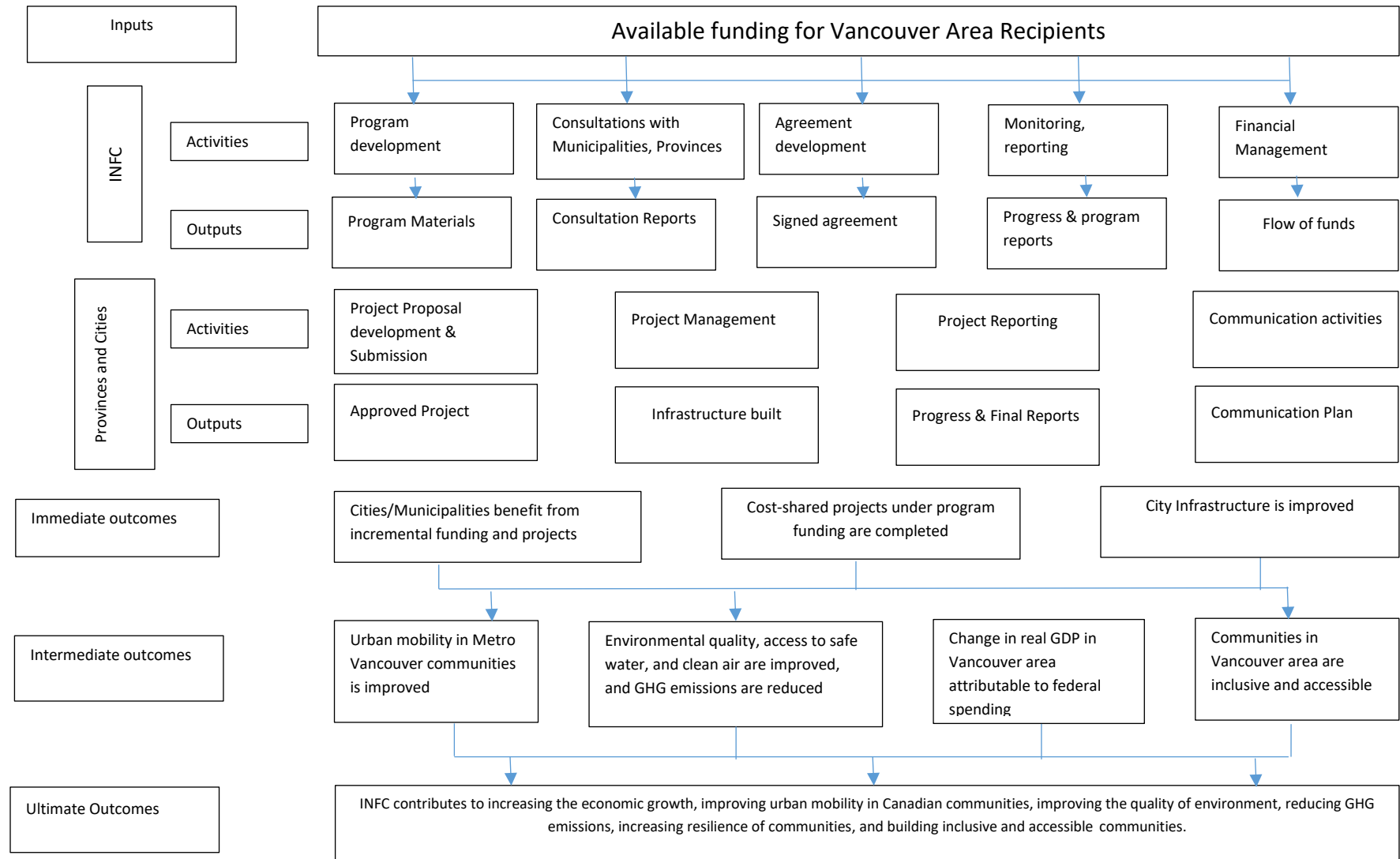
- It is recommended that the Corporate Services Branch, in collaboration with the Policy and Results and Program Operations Branches, establish DRF results, indicators, baselines and targets that are meaningful, at a national and provincial/regional level, so that the Department can measure and report on progress towards meeting objectives. Care should be taken to ensure that indicators remain as stable as possible, for results to be compared over time.
- In the future, when creating new programs, it is recommended that INFC consider making use of existing program frameworks, including application and reporting requirements where appropriate.
- It is recommended that the Program Operations Branch improve its external communications related to program criteria, category eligibility and application assessment.

7.0 Management Action Plan

	Recommendation	Management Action Plan	OPI and Due Date
1	It is recommended that the Corporate Services Branch, in collaboration with the Policy and Results and Program Operations Branches, establish DRF results, indicators, baselines and targets that are meaningful, at a national and provincial/regional level, so that the Department can measure and report on progress towards meeting objectives. Care should be taken to ensure that indicators remain as stable as possible, for results to be compared over time.	<p>Management agrees with this recommendation.</p> <p>The Corporate Services Branch has already started the process of revising its Departmental Results Framework for 2021—22. The following actions will be undertaken:</p> <ul style="list-style-type: none"> 1- Logic model development to inform revision of the DRF 2- Core Responsibilities review 3- Departmental Results and Indicators review 4- Program Inventory review 	<p>CSB – IRPP</p> <p>May 15, 2020</p> <p>Jun 30, 2020</p> <p>Jun 30, 2020</p> <p>Nov 1, 2020</p>
2	In the future, when creating new programs, it is recommended that INFC consider making use of existing program frameworks, including application and reporting requirements where appropriate.	Federal infrastructure programs are subject to change to align with current Federal priorities as they evolve. This said, INFC is committed to working with stakeholders to continuously improve and build on current program frameworks where appropriate. Lessons learned and successful program practices continue to inform current and future programs.	<p>POB</p> <p>Mar 31, 2022</p>
3	It is recommended that the Program Operations Branch improve its external communications related to program criteria, category eligibility and application assessment.	INFC is committed to continue improving its public communication around program and project eligibility parameters.	<p>POB</p> <p>Sep 30, 2020</p>

	Recommendation	Management Action Plan	OPI and Due Date
		<p>As part of our commitment to improving the transparency around the approval process, INFC will be tracking and publishing service standards for project approval.</p> <p>INFC is also implementing a range of communications approaches to improve external communications. Increased program information through our web presence, annual workshops with funding partners, webinars open to communities on topics such as the climate lens, on-line guides, increased transparency in terms of project review status and an information management system available to provinces and territories that provides a status of review as well as other tools to aid in the submission process are all key examples of how we are striving to continuously improve our outreach.</p>	

Annex A: Logic Model



Annex B: Evaluation Matrix

Evaluation of the Impact of INFC Programs in the Vancouver Area / Evaluation Matrix

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
Evaluation Question 1: To what extent are the programs: Relevant to Government of Canada priorities? Responsive to needs within the Vancouver area?	1.1 Relevance to Government of Canada and INFC priorities	-Speech from the Throne -INFC Mandate Letter -Federal Budgets		- INFC data and external data sources - Administrative and document review
	1.2 State of infrastructure in Vancouver area	-Canadian Core Public Infrastructure (CCPI)		- INFC data and external data sources
	1.3 Level of interest for INFC funded projects and funding programs in Vancouver area	-Municipal and provincial officials -TransLink officials -Perceptions from businesses, employers, users, taxpayers		- Interviews - Survey
	1.4 Alignment with Vancouver area needs	-British Columbia Throne Speech -Ministry of Transportation and Infrastructure Services -Provincial Budget -Municipal Plans		- Interviews - INFC data and external data sources

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
	<p>1.5 Alignment of funded project objectives to INFC program objectives and priorities to DRF results:</p> <ul style="list-style-type: none"> Increase economic growth Improve urban mobility in Canadian communities, Improve environmental quality, reduce GHG emissions and increase resilience of communities, and Build inclusive and accessible communities 	<ul style="list-style-type: none"> -Departmental Results Framework -Programs Terms & Conditions -Projects documents 	<p>R3</p> <p>R4</p> <p>R5</p> <p>R6</p>	<ul style="list-style-type: none"> - INFC data and external data sources - Administrative and document review
<p>Evaluation Question 2: To what extent was the design and delivery of departmental programs effective? Did program design support the achievement of intended objectives?</p>	<p>2.1 Perception of recipients (cities, province, transportation authority, etc.) re: design, delivery, federal/provincial programs</p>	<p>-Municipal and provincial representatives</p>		<ul style="list-style-type: none"> - Interviews - Survey
	<p>2.2 Preferences of specific design and delivery elements of specific programs</p>	<p>-Municipal and provincial representatives</p>		<ul style="list-style-type: none"> - Interviews

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
	2.3 Perception of program administrators and policy experts (POB + PR)	-POB and PR staff		- Interviews
	2.4 Alignment between project objectives and program objectives	-Terms & Conditions -Project documents		- Administrative and document review
Evaluation Question 3: What is the progress in terms of number and value of financed projects in the Vancouver area, by program, by asset category, by municipality?	3.1 Number of approved, started, completed projects by program, by asset category, by recipient	-Program documents and databases	R1	- Administrative and document review
	3.2 Funds allocated, and paid by fiscal year, by program, by project, by category, by recipient	-Program documents and databases, -Investing in Canada plan, Finance -Budgets and reports from municipalities	R1	- Administrative and document review
	3.3 Delays and reasons for such delays	-Program documents and databases -Municipal and provincial representatives	R1	- Interviews - Administrative and document review

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
<p>Evaluation Question 4:</p> <p>To what extent do actual project results match expected results within the Vancouver area?</p> <p>To what extent do they match the overall objectives of the Department to increase economic growth, improve urban mobility in Canadian communities, improve environmental quality, reduce GHG emissions and increase resilience of communities, and build inclusive and accessible communities?</p> <p>Are there projects outside the Vancouver</p>	<p>4.1 Variance between expected and achieved results, by project</p>	<p>-Programs documents -Data from TransLink -other relevant studies -Project submissions and reports -Key personnel in province and municipalities</p>		<p>- Interviews - Literature - INFC data and external data sources - Administrative and document review - Survey</p>
	<p>4.2 Projects outside the Vancouver area that have had an impact within the Vancouver area</p>	<p>-Funding recipients -Literature review</p>		<p>- Interviews - Literature</p>
	<p>4.3 Value added to Vancouver area GDP attributable to INFC funding programs</p>	<p>-Statistics Canada -Other relevant studies -Conference Board of Canada studies -INFEA -Other economic data available through the economic accounts such as stock value and spending to provincial GDP</p>	<p>R3</p>	<p>- Interviews - INFC data and external data sources</p>

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
area that have an impact within the Vancouver area?	4.4 Job creation as a result of INFC participation in funded projects and funding programs in the Vancouver area	<ul style="list-style-type: none"> -Statistics Canada -Data from TransLink -other relevant studies -Businesses -Cities -INFEA 	R3	<ul style="list-style-type: none"> - Interviews - INFC data and external data sources - Administrative and document review
	4.5 Percentage of Canadians living within 400 metres of a transit station or stop	<ul style="list-style-type: none"> -Data from TransLink -Other relevant studies, -Statistics Canada (CCPI, Journey to work, sections of the Statistics Canada's National Household Survey.) 	R4	<ul style="list-style-type: none"> - INFC data and external data sources
	4.6 Increased usage of public transit	<ul style="list-style-type: none"> -TransLink -CUTA -Statistics Canada 		<ul style="list-style-type: none"> - INFC data and external data sources - Survey

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
	4.7 Modal share of public transit and active transportation	<ul style="list-style-type: none"> -Statistics Canada -TransLink -Users' survey -Future indicators under consideration are ridership and congestion to assess the impact on mobility more broadly 	R4	<ul style="list-style-type: none"> - INFC data and external data - Survey
	4.8 Percentage and number of municipalities that built or enhanced their capacity to reduce GHG emissions and adapt to climate change as a result of INFC funding programs (show examples)	<ul style="list-style-type: none"> -Programs documents -Data and reports from Vancouver area, -INFC Department Results Report, -CUTA databases -Bus CO₂ vs cars, POB + Policy 	R5	<ul style="list-style-type: none"> - Interviews - Administrative and document review
	4.9 Percentage and number of municipalities that built or enhanced their wastewater treatment system as a result of INFC funding programs.(show examples)	<ul style="list-style-type: none"> -Programs documents, -Data and reports from Vancouver area, -INFC Department Results Report, -Environment Canada, -CCPI 	R5	<ul style="list-style-type: none"> - INFC data and external data sources - Administrative and document review

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
	4.10 Decreased quantity of release of pollutants in the environment	-Air and soil pollutants studies (e.g. for soil waste diversion).	R5	<ul style="list-style-type: none"> - Literature - INFC data and external data - Administrative and document review
	4.11 Percentage and number of municipalities that built or enhanced their drinking water system as a result of INFC funding programs (show examples)	<ul style="list-style-type: none"> -Programs documents -Data and reports from Vancouver area -INFC Department Results report 	R5	<ul style="list-style-type: none"> - Administrative and document review
	4.12 User satisfaction rate regarding of new services and infrastructures	<ul style="list-style-type: none"> -Transit and city users -City officials 		<ul style="list-style-type: none"> - Interviews - Survey
	4.13 Increased citizen participation and appreciation of cultural, recreational and community spaces	<ul style="list-style-type: none"> -Programs documents, data and reports from recipients -INFC Department Results report -Media clippings 		<ul style="list-style-type: none"> - Interviews - Administrative and document review - Survey
Evaluation question 5 : To what extent do INFC funding programs take into account inclusiveness and accessibility?	5.1 Number of public transit systems that were enhanced or built as a result of INFC funding programs that are accessible	<ul style="list-style-type: none"> -Programs documents -Data and reports from recipients, TransLink -INFC Departmental Results report 	R6	<ul style="list-style-type: none"> - Interviews - Administrative and document review - Survey

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
	5.2 Number of community, cultural and recreational facilities that were enhanced or built as a result of INFC funding programs that are accessible (demonstrate with examples)	<ul style="list-style-type: none"> -Programs documents -Data and reports from recipients, TransLink -INFC Departmental Results report 	R6	<ul style="list-style-type: none"> - Administrative and document review - Survey
	5.3 Demographic profile of population (including priority populations) making use of public transit systems	<ul style="list-style-type: none"> -Translink -Users' survey 		<ul style="list-style-type: none"> - INFC data and external data - Survey
	5.4 Extent to which priority populations (based on GBA+ lens considerations: gender, age, geography, ethnicity, income, ability) have been impacted by infrastructure built or improved through INFC funding (affordability, relative use/satisfaction by priority populations)	<ul style="list-style-type: none"> -Users' survey 		<ul style="list-style-type: none"> - Survey

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
<p>Evaluation Question 6: What other approaches could achieve expected results more efficiently / economically?</p>	<p>6.1 Best practices at the national and international levels</p>	<ul style="list-style-type: none"> -Study reports from OECD -Publications on national and international comparisons of major cities -Studies from Conference Board of Canada -Data and studies from Vancouver Region Board of Trade -Other relevant studies, -City Maps -Chamber of Commerce 		<ul style="list-style-type: none"> - Interviews - Literature

Issues/Themes and Evaluation Questions (EQ # from ToR)	Indicators	Sources	Reference to DRF	Lines of evidence
	<p>6.2 National and international comparisons with other large cities</p> <p>In areas such as: Vancouver area's capacity to attract spending and population growth in comparison to competing cities; Factors that improve attraction power; Ability to reduce GHG emissions (CO₂ and equivalents, kilo tons); Ability to improve inclusion through improved public transit.</p>	<ul style="list-style-type: none"> -Study reports from OECD -Publications on national and international comparisons of major cities -Studies from Conference Board of Canada -Data and studies from Vancouver Region Board of Trade -Other relevant studies, City Maps, Chamber of Commerce 		<ul style="list-style-type: none"> - Interviews - Literature
	<p>6.3 Preferred design elements to exert intended impacts in an efficient manner</p>	<ul style="list-style-type: none"> -POB, PR, municipal and provincial representatives 		<ul style="list-style-type: none"> - Interviews

Annex C: Additional Data

Synopsis of Programs used in the Vancouver Area during the 2009-2019 period:

Border Infrastructure Fund (BIF)

The Border Infrastructure Fund was implemented to improve the flow of people and goods at border crossings. The fund covers up to 50 percent federal funding to support eligible projects for investments in physical infrastructure, transportation system infrastructure and improved analytical capacity at the largest surface border crossings between Canada and the United States, as well as several other crossing points in Canada. Transport Canada is the federal delivery partner for this program.

The Border Infrastructure Fund started in 2003-2004 and is scheduled to end in 2019-2020.

All funding available under this program has been committed.

Building Canada Fund – Communities Component Top-Up (CC Top Up)

In 2009, the Government of Canada expanded the Communities Component fund with a top-up of \$500 million as a short-term boost to the Canadian economy during a period of global recession. The funding was limited to infrastructure projects in communities with populations of less than 100,000. All Building Canada Fund-Communities Component funding had to be committed in order to access Top-Up funding.

The Building Canada Fund – Communities Component Top-Up was established in 2009 and was scheduled to end in 2011-12.

All funding available under this program has been committed.

Building Canada Fund – Communities Component (CC)

The Building Canada Fund – Communities Component supports infrastructure needs of smaller communities with populations of less than 100,000. The fund supports the construction, renewal, and enhancement of basic infrastructure such as potable water, wastewater treatment, local roads, and other infrastructure needs of small communities. Projects costs are shared with provincial, territorial and municipal governments, with each order of government generally contributing one-third of the eligible costs. The fund promotes a cleaner environment, a competitive economy and liveable small communities.

The Building Canada Fund – Communities Component started in 2007.

All funding available under this program has been committed.

Canada Strategic Infrastructure Fund (CSIF)

The Canada Strategic Infrastructure Fund supports projects that sustain economic growth and enhance the quality of life of Canadians.

Funding for projects is made in cooperation with the provinces, territories, municipalities, and the renewal and/or enhancement of public infrastructure. The Canada Strategic Infrastructure Fund leverages additional contributions from other partners by providing up to 50 percent funding for eligible projects.

The Canada Strategic Infrastructure Fund started in 2002-2003 and is scheduled to end in 2019-2020. All funding available under this program has been committed.

Clean Water and Wastewater Fund (CWWF)

The Clean Water and Wastewater Fund provides funding to projects that contribute to the rehabilitation of both water treatment and distribution infrastructure and existing wastewater and storm water treatment systems; collection and conveyance infrastructure; and initiatives that improve asset management, system optimization, and planning for future upgrades to water and wastewater systems.

The Clean Water and Wastewater Fund started in 2016-2017 and is scheduled to end in 2019-2020. As of March 31, 2018, no additional project proposals are being accepted under this program.

Infrastructure Stimulus Fund (ISF)

The Infrastructure Stimulus Fund supported projects as a short-term boost to the Canadian economy during a period of global recession. By providing up to 50 per cent in federal funding for projects, the fund was able to leverage funding from other partners such as provinces, territories, municipalities and not-for-profit organizations, resulting in a greater boost for the Canadian economy. The Infrastructure Stimulus Fund improved, renewed and rehabilitated existing infrastructure and new infrastructure projects in the following categories; water, wastewater, transit, roads, culture, parks and trails, and community services.

The Infrastructure Stimulus Fund started in 2009-2010 and ended in 2011-2012. All funding available under this program has been committed.

Gas Tax Fund (GTF)

The Gas Tax Fund provides municipalities with a permanent, predictable and indexed source of long-term funding, enabling construction and rehabilitation of core public infrastructure. It offers local communities the flexibility to make strategic investments across 18 different project categories, including roads and bridges, public transit, drinking water and wastewater infrastructure, and recreational facilities. The fund promotes investments in increased productivity and economic growth, a clean environment, and strong cities and communities.

The Gas Tax Fund started in 2005-2006 and is ongoing.

Municipal Asset Management Program (MAMP)

The Municipal Asset Management Program (MAMP) delivered by the Federation of Canadian Municipalities (FCM) is a five year, \$50 million program that will help Canadian municipalities make informed infrastructure investment decisions based on sound asset management practices.

The MAMP was launched in February 2017 and is scheduled to end in 2021-2022.

Municipalities for Climate Innovation Program (MCIP)

The Municipalities for Climate Innovation Program delivered by the Federation of Canadian Municipalities (FCM) is a five-year, \$75 million program that provides funding, training and resources to help Canadian municipalities adapt to the impacts of climate change and reduce greenhouse gas emissions.

The MCIP was launched in February 2017 and is scheduled to end in 2021-2022.

Building Canada Fund – Major Infrastructure Component (MIC)

The Building Canada Fund – Major Infrastructure Component targets larger infrastructure projects of national or regional significance. It increases overall investment in public infrastructure and contributes to broad federal objectives: economic growth, a cleaner environment and strong and prosperous communities. At least two-thirds of the funding is targeted to national priorities: water, wastewater, public transit, the core national highway system, and the green energy.

The Building Canada Fund – Major Infrastructure Component started in 2008-2009 and is scheduled to end in 2019-2020. All funding available under this program has been committed.

Municipal-Rural Infrastructure Fund (MRIF)

The Municipal Rural Infrastructure Fund provided funding for smaller-scale municipal infrastructure projects such as water and wastewater treatment, and cultural and recreation projects, mainly for smaller and First Nations communities.

The Municipal Rural Infrastructure Fund started in 2004-2005 and ended in 2013-2014. All funding under this program was disbursed.

New Building Canada Fund – National Infrastructure Component (NIC)

The New Building Canada Fund – National Infrastructure Component supports projects of a national significance that have broad public benefits and that contribute to Canada's long-term economic growth and prosperity and reduce potential economic disruptions or foregone economic activity.

The NIC started in 2014-2015 and is schedule to end in 2023-2024. No additional project proposals are being accepted under this program.

New Building Canada Fund – Provincial-Territorial Infrastructure Component – National and Regional Projects (PTIC-NRP)

The New Building Canada Fund – Provincial-Territorial Infrastructure Component – National and Regional Projects provides funding to support infrastructure projects of national and regional significance that contribute to economic growth, a clean environment and stronger communities. The PTIC-NRP is an allocation-based program that recognizes and supports the important role that provinces, territories, and municipalities play in helping to build Canada's public infrastructure. Projects will allow people and goods to move more freely, increase the potential for innovation and economic development, and help to improve the environment and support stronger, safer communities.

The PTIC-NRP started in 2014-2015 and is scheduled to end in 2023-2024. No additional project proposals are being accepted under this program.

New Building Canada Fund – Provincial-Territorial Infrastructure Component – Small Communities Fund (PTIC-SCF)

The New Building Canada Fund – Provincial-Territorial Infrastructure Component – Small Communities Fund represents 10 percent of the overall Provincial-Territorial Infrastructure Component funding envelope. This Sub-Program provides contribution funding for infrastructure projects in small communities with populations of 100,000 or less. The PTIC-SCF supports projects of national, regional and local significance that contribute to economic growth, a clean environment and stronger communities. Projects will allow people and goods to move more freely, increase the potential for innovation and economic development, and help to improve the environment and support stronger, safer communities.

The PTIC-SCF started in 2014-2015 and is scheduled to end in 2023-2024. No additional project proposals are being accepted under this program.

National Recreational Trails Program (NRT)

The National Trails Coalition received funding to improve recreational trails across Canada. The federal government's contribution was matched by the Coalition and its partners and helped build and renew multi-purpose trails for walking, running, cross-country skiing, biking, all-terrain-vehicle and snowmobiles.

The National Recreational Trails Program was first established in 2009-2010 as a one year program but was renewed in 2014 for two additional years, ending in 2015-16. All funding under this program was disbursed.

Public Transit Infrastructure Fund (PTIF)

The Public Transit Infrastructure Fund provides short-term funding to help accelerate municipal investments to support the rehabilitation of transit systems, new capital projects, and planning and studies for future transit expansion to foster long-term transit plans. Eligible recipients include: provinces and territories; municipal or regional governments, established by provincial or territorial statute; or a transit agency or authority, established by a provincial, territorial, or local government. These investments will help to improve commutes, cut air pollution, strengthen communities and grow Canada's economy.

The Public Transit Infrastructure Fund started in 2016-2017 and is now scheduled to end in 2019-2020. As of March 31, 2018, no additional project proposals are being accepted under this program.

Research, Knowledge, and Outreach Program (RKO)

The Research, Knowledge and Outreach Program provided funding for infrastructure-related research between 2005 and 2010. This fund strengthened and mobilized Canada's community of research centres, academic, private sector and stakeholders to contribute more effectively to public policy debate on infrastructure issues. The projects were presented according to three main sections — policy, sectoral and community — and covered a wide range of themes, including competitiveness, productivity, growth, environment, transport, energy and municipal governance. The sharing of information allows researchers, end-users and all relevant stakeholders: to expand the body of research on infrastructure; harvest the latest innovations, technologies and best practices; and help address major knowledge gaps on the state and performance of Canada's core infrastructure.

The Research Fund ended in 2009-2010. All funding under this program was disbursed.

Smart Cities Challenge (SCC)

The Smart Cities Challenge is a pan-Canadian competition open to communities of all sizes, including municipalities, regional governments and Indigenous communities (First Nations, Métis and Inuit). The Challenge encourages communities to adopt a smart cities approach to improve the lives of their residents through innovation, data and connected technology.

The Challenge was launched in November 2017 and is scheduled to end in 2027.

Public Transit Infrastructure Stream (PTIS)

Budget 2017 introduced the Investing in Canada Infrastructure Program (ICIP), a long-term, stable infrastructure funding program, directed to infrastructure assets that provide a public benefit. The program supports both medium- and large-scale infrastructure priorities, as well as small rural and northern communities-based projects.

The Public Transit Infrastructure Stream provides up to \$18.9 billion primarily to build new urban transit networks and service extensions that will transform the way that Canadians live, move and work.

Synopsis Table

Alignment between program objectives and current departmental objectives as presented in the DRF

No	Program	Acronym	Purpose	Increase rate of economic growth in an inclusive and sustainable way	Improve urban mobility in Canadian communities	Improve environmental quality, reduce GHG emissions and increase resilience of communities	Build inclusive and accessible communities
1	Clean Water and Wastewater Fund	CWWF	Contribute to the rehabilitation of both water treatment and distribution infrastructure and existing wastewater and storm water treatment systems; collection and conveyance infrastructure; and initiatives that improve asset management, system optimization, and planning for future upgrades to water and wastewater systems	X		X	
2	Public Transit infrastructure Stream/PTIS	PTIS	Build new urban transit networks and service extensions that will transform the way that Canadians live, move and work	X	X	X	X
3	Public Transit Infrastructure Fund	PTIF	Help accelerate municipal spending to support the rehabilitation of transit systems, new capital projects, and planning and	X	X	X	X

			studies for future transit expansion to foster long-term transit plans				
4	Major Infrastructure Component	MIC	Water and wastewater treatment, and cultural and recreation projects, mainly for smaller and First Nations communities	X		X	X
5	National and Regional Projects	NRP	Economic growth, a clean environment and stronger communities	X		X	X
6	Small communities Fund	SCF	Economic growth, a clean environment and stronger communities	X		X	
7	Gas Tax Fund	GTF	Increase productivity and economic growth, a clean environment, and strong cities and communities	X	X	X	X
8	Smart Cities Challenge	SCC	Encourages communities to adopt a smart cities approach to improve the lives of their residents through innovation, data and connected technology	X			X
9	Communities Component	CC	Supports the construction, renewal, and enhancement of basic infrastructure such as potable water, wastewater treatment, local roads, and other	X	X	X	X

			infrastructure needs of small communities.				
10	Communities Component Top-UP	CC Top Up	Boost to the Canadian economy				
11	Canada Strategic Infrastructure Fund	CSIF	Economic growth and enhance the quality of life of Canadians	X	X	X	X
12	Infrastructure Stimulus Fund	ISF	Greater boost for the Canadian economy	X	X	X	
13	Municipal Rural Infrastructure Fund	MRIF	Water and wastewater treatment, and cultural and recreation projects, mainly for smaller and First Nations communities	X	X	X	X
14	National Infrastructure Component	NIC	Long-term economic growth and prosperity and reduce potential economic disruptions or foregone economic activity	X	X		
15	National Recreation Trail Program	NRT	Help build and renew multi-purpose trails for walking, running, cross-country skiing, biking, all-terrain-vehicle and snowmobiles	X	X		

16	Research, Knowledge, and Outreach Program	RKO	Competitiveness, productivity, growth, environment, transport, energy and municipal governance	X	X	X	
17	Municipal Asset Management Program (AMF)	MAMP	Inform infrastructure spending decisions based on sound asset management practices	X		X	
18	Municipalities for Climate Innovation Program (CBC3)	MCIP	Training and resources to help Canadian municipalities adapt to the impacts of climate change and reduce greenhouse gas emissions	X		X	
19	Border Infrastructure Fund	BIF	Improve the flow of people and goods at border crossings	X	X	X	

Annex D: Economic Analysis Concepts and Definitions

Economic Model

Two economic models were used to determine the value added to GDP from INFC spending from Apr 1, 2009 to Mar 31, 2019, as well as the number of direct, indirect and induced jobs supported by that spending:

1. Interprovincial Input-Output Model.
2. INFEA or Infrastructure economic account model.

Interprovincial Input-Output Model

The input-output model is an economic model developed by Statistics Canada, used to simulate the economic impacts of an expenditure on the output of one or several industries. The simulation results from a "shock" to an IO model that will show the direct, indirect and induced impacts on GDP, which industries benefit the most, the number of jobs created, estimates of indirect taxes and subsidies generated, etc. In this case, the shock was the INFC funding in the Vancouver area during the period covered by the evaluation.

INFEA Model

INFEA was developed by Statistics Canada and launched in September 2018 as part of a commitment made in Budget 2017 to support a more evidence and results based approach to public infrastructure policies, programs and investment decisions. The model provided limited information in comparison the IO Model above, as it did not consider induced impacts nor did it provide provincial distribution of impact. This model was used to validate the findings from the IO model.

Direct Impact

Direct impact measures the positive effect of the direct activity, for example, construction sector output. Associated with this change, there will also be direct impacts on GDP, jobs, and imports.

Indirect Impact

Indirect impact measures the changes due to inter-industry purchases as they respond to the new demands of the directly affected industries. This includes a chain reaction of outputs up the production stream, since each of the products purchased will require, in turn, the production of various other inputs.

Induced Impact

Induced impact measures the changes in the level of production of goods and services in response to consumer expenditures induced by households' incomes (i.e., wages) generated by the production of the direct and indirect requirements.

Annex E: Survey Methodology

To assess the impact of INFC funding programs on users and businesses in the Vancouver area, an external firm was hired to conduct two surveys: one with residents and the second one with business owners.

1 Resident Survey

To provide generalizable findings, targeted sampling efforts were used to ensure representation from the different areas of the Vancouver area. To achieve this, the Forward Sortation Areas (FSA)²² was identified for each potential respondent.

Respondents were selected from across the 15 municipalities with a population of more than 10,000 citizens in the Vancouver area. The respondents were selected to be representative of Statistics Canada population sizes for the Vancouver area. The fifteen municipalities surveyed are listed below:

1. Burnaby
2. City of Vancouver
3. Coquitlam
4. Delta
5. Langley
6. Maple Ridge
7. Mission
8. New Westminster
9. North Vancouver
10. Pitt Meadows
11. Port Moody
12. Richmond
13. Surrey
14. West Vancouver
15. White Rock

Respondents were also screened on whether they actively made use of infrastructure of interest (e.g. funded public transit, roads²³ and community centres²⁴) as needed within the context of this evaluation. Additionally, respondents ranged in age, gender, job status, ethnicity and whether they had accessibility needs such as: visual impairment, hearing impairment, mobility impairment, cognitive impairment, parent/guardian with a stroller, carrying heavy items (e.g. groceries), require heavy or large items for work (e.g. construction tools, wheeled briefcases, bags). In total **2,516 residents from the Vancouver area** completed the online survey.

²² The FSA is a geographical region in which all postal codes start with the same three characters.

²³ Accessed public transit and roads within the last 30 days

²⁴ Accessed community centres within the last year

A portion of respondents used one or more form of transportation (e.g. private car, truck or van) and public transit (e.g. SkyTrain, bus or SeaBus). To provide a robust analysis of impact of the infrastructure projects on key demographics, cross tabulations were conducted on the impact of the trains, buses, SeaBuses, roads and community spaces across key demographics (e.g. age, gender, income). Respondents' accessibility needs for demographic purposes was also tracked.

2 Business Owner Survey

To contextualize the impact of the infrastructure projects on local businesses, a survey was completed by **105 business owners** in the Vancouver area, whose businesses are located near and/or potentially impacted by an INFC-funded project.

Just over half (52%) of businesses surveyed were located close to bus routes, followed by the SkyTrain Canada Line (38%), Expo Line (32%), and Knight Street in Vancouver (33%).