

A view on intercity passenger rail in Canada

Key considerations for a successful High-Frequency Rail project

January 2020



Cover photo: hstiver/Getty Images

Executive Summary

Intercity passenger rail development in Canada is lagging relative to other developed countries predominantly due to limited financial commitment from the government and a high dependency on cargo host railways which favor their own activities. VIA Rail's High-Frequency Rail (HFR) project with its own dedicated track could unlock growth for intercity passenger travel in the Corridor if planned and executed appropriately. Based on our extensive experience in Europe and Asia, we see four major conditions for success:

- 1 Design a competitive offer to maximize modal shift towards the HFR.
- 2 Ensure interconnectivity with the mobility ecosystem to create an attractive door-to-door customer journey.
- 3 Optimize the financing and governance structure to secure the viability of the project.
- 4 Carefully plan and execute this transformative project to materialize the ambition set at the beginning of the project.

Public funding is essential to support large mobility infrastructure projects such as the HFR. When deciding on their capital allocation, governments will seek projects with significant socio-economic and environmental benefits. VIA Rail must bring forth the major attractive aspects of the HFR project from the stimulation of economic activity in the Corridor to the eco-friendly mobility offer.



Context of the passenger rail business in Canada

Intercity passenger rail in Canada is lagging relative to other developed countries

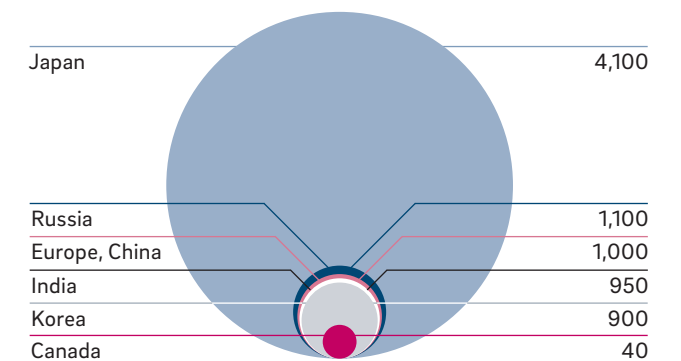
An efficient transportation system is vital to the economy of a large developed country such as Canada. The free movement of natural resources, manufactured goods and people over great distances, both domestically and internationally, is a major driver of economic productivity.

Historically, rail transportation has played a central role in the development of Canada. The emergence of steam-powered railways in the 19th century accelerated the expansion and the industrialization of the Canadian Confederation. For more than a century, rail was a key option to link populations, open new markets and support the extraction of natural resources. Over recent decades, rail freight transport has continued to grow and generate profits while intercity passenger rail has faced challenges hindering its expansion. The decline of passenger rail was triggered by the development of road and air transportation in the middle of the 20th century. Since then, Canada has been losing significant ground relative to other developed countries regarding passenger rail. Not only does Canada significantly lag behind in passenger activity per capita, but investments to improve rail infrastructure are much lower relative to other developed countries. → **A**

One could assume that Canada's low population density is the main factor which explains the lower adoption of intercity passenger rail today. Although it is true that Canada has a low population density, this is not a decisive factor with regards to the low adoption rate of rail when examining the data more extensively. Approximately 8 million people live in the Montréal-Toronto corridor (approx. 500 km). This population density is higher than other developed rail corridors such as the Lyon-Marseilles corridor in France (approx.

A: Passenger activity

(passengers – kilometers per capita, 2016)

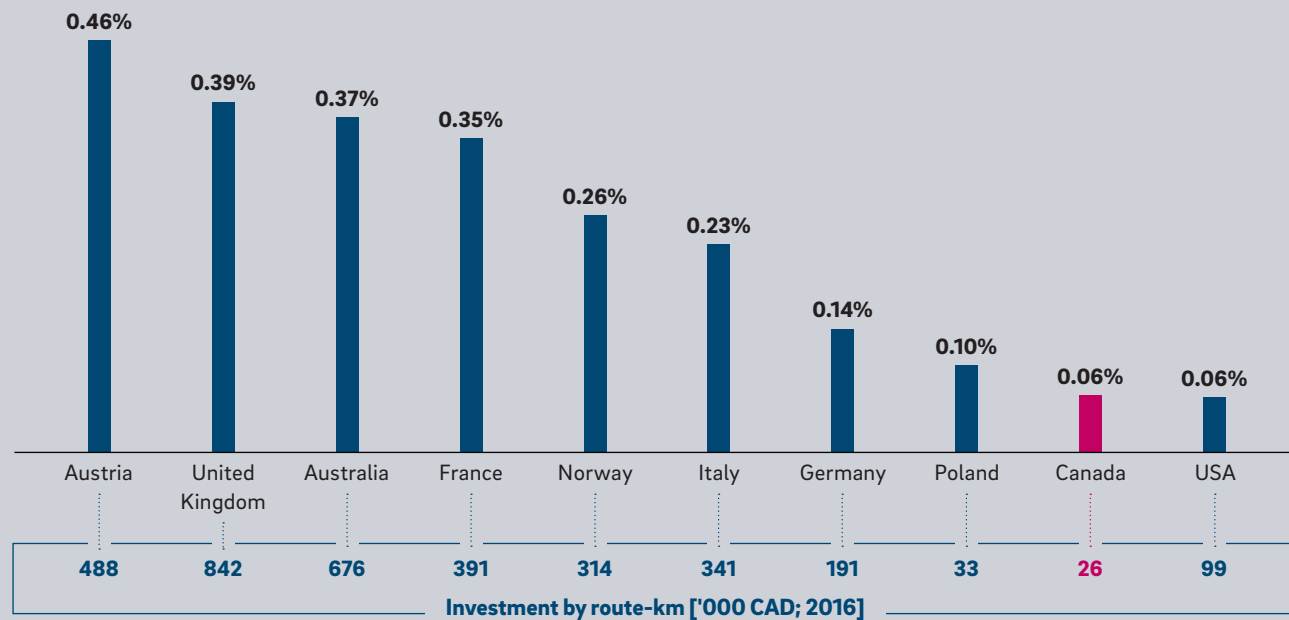


3 m people over 300 km) where a High-Speed Rail (HSR) is in operation. Hence, there are other factors present that explain the relatively poor adoption of passenger rail in Canada, such as limited investment. → **B**

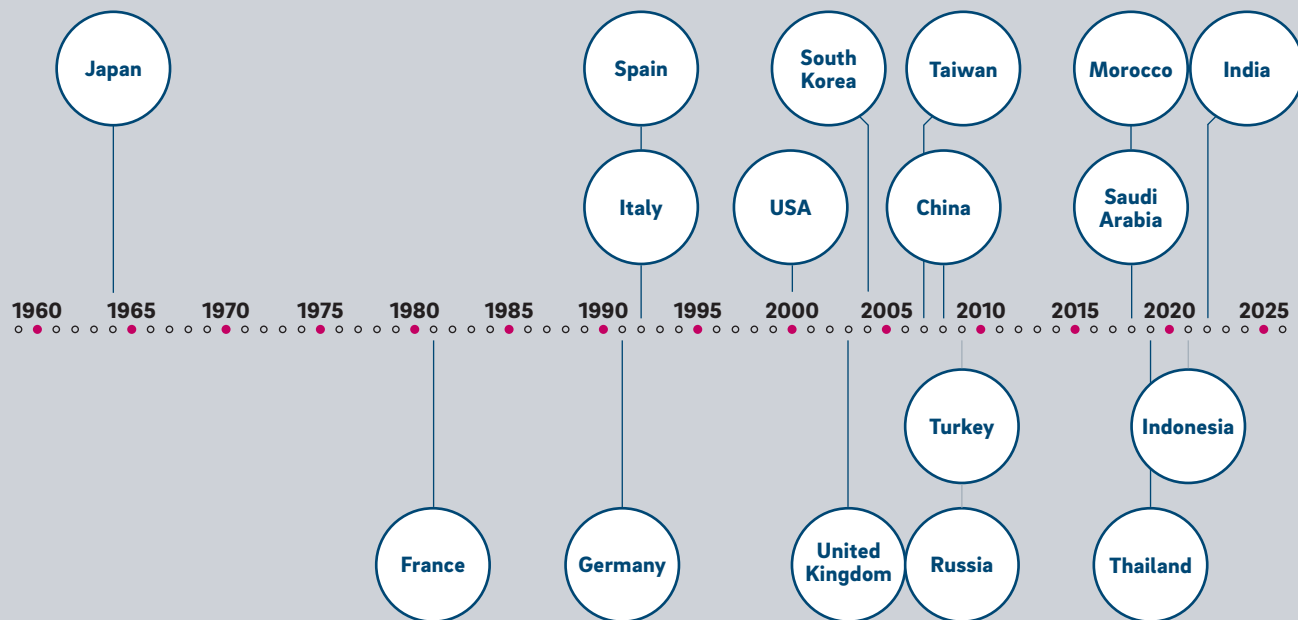
For good reasons, governments have prioritized investments in other mobility infrastructure such as commuter trains. Investments in performing rail technologies are essential to maintaining its competitiveness against other transportation options as the attractiveness and accessibility of road and air transportation increase. Almost all G20 countries, other than Canada, have invested in HSR over the last 50 years. → **C**

Intercity passenger rail could be expanded, at least in some regions in Canada, provided a stronger willingness from governments. As described in the section on major benefits of the HFR in this document, intercity passenger rail development could not only bring significant socio-economic benefits, but also support the fight against climate change.

B: Investment in railroad infrastructure [% of GDP; 2010-2016]



C: Entry in service of the first high-speed train for selected countries



Dependency on infrastructure owner prevents VIA Rail from improving their service

Beyond the underinvestment, another fundamental factor restricting the expansion of intercity passenger rail in Canada is VIA Rail's limited ability to negotiate access to rail infrastructure.

In Canada (and in the United States), the rail industry is concentrated among a relatively small pool of railway companies (mostly cargo players) which both own and manage the rail infrastructure. Unlike in Europe, infrastructure managers are not governed by a regulatory body to ensure fair access to infrastructure (e.g. tracks and train stations) by third parties. As VIA Rail operates mostly on other railway companies' infrastructure and its operations are minor in comparison to the host railway's operations, VIA Rail is in an unfavorable position to negotiate fair access.

VIA Rail is especially dependent on the Canadian Network Railway (CN) network to provide its services. In fact, VIA Rail operated 83% of its train-km on CN infrastructure and only 3% on its own tracks in 2018. VIA Rail has an agreement for track access with CN, but has very low bargaining power. The total track access fees paid by VIA Rail represents less than 0.5% of CN's revenue and there is no real obligation for CN to grant better access than the historical agreement. For instance, VIA Rail is granted 7 round trips between Montréal and Toronto on CN tracks. The current track access agreement expires at the end of 2021. Unless VIA Rail is allowed to invest to expand CN's capacity in the corridor between Montréal and Toronto, the next agreement will grant the same number of frequencies. Beyond the capacity allocation, the nature of CN's freight business is different and the passenger business generates numerous conflicting situations in day-to-day operations, including different track quality requirements, train operating speeds, seasonality, on-time performance criteria and maintenance planning, to name a few. With the increase of cargo traffic in recent decades and CN focusing on its own business, VIA Rail's

Canadian National Railway

CAD 14 bn
revenues

± 0.5%
of total revenue generated by Via Rail track access fees

Via Rail

CAD 0.4 bn
revenues

83%
of operations rely on CN infrastructure

on-time performance has hovered below 75% over the past ten years – in stark contrast to best-in-class performers which can top 95%.

Operations become further complicated when a train operates on infrastructure owned by different entities for the same journey. For instance, between Montréal and Toronto, VIA Rail's trains use RTM, CN and Metrolinx infrastructure. From modifying the train schedule to reacting to daily operational hiccups, VIA Rail must coordinate interactions with multiple infrastructure owners with conflicting priorities for a single journey.

Several jurisdictions in Europe and Asia have developed best practices to ensure a separation between the infrastructure manager and railway operators. The infrastructure manager is forced to follow a set of rules safeguarding transparency, fairness and timeliness of response in the capacity allocation process (e.g. track access) and daily operations. The obligations of both infrastructure managers and train operators are defined to ensure clear rules and fair treatment (e.g. priority rules, track quality, rolling stock requirements). This best practice is unlikely to be adopted in Canada even on a long-term horizon. VIA Rail must therefore identify growth projects that will reduce its dependency on infrastructure owners to improve its position in the Canadian rail ecosystem, with the High-Frequency Rail (HFR) project in the Corridor being a prime example.

The Corridor is critical to VIA Rail's operations

The Corridor provides transportation between downtown areas in major urban centers, suburbs and communities between Québec City and Windsor. It includes the Corridor East between Québec City and Toronto, where the current HFR project is anticipated to take shape, and the South Western Ontario service between Toronto and Windsor. In 2018, there were 3.4 m passenger trips in the Corridor East (72% of all trips) representing 64% of VIA Rail's revenue. Montréal and Toronto's main train stations correspond to 50% of arrivals and departures of VIA Rail's passengers.

In mid-2014, VIA Rail implemented a customer centric strategy which led to added frequencies and increased capacity. Consequently, VIA Rail's ridership has grown significantly in the last five years in the Corridor (3.6 m to 4.5 m from 2014 to 2018). More specifically, seat miles in the Corridor increased by 35% and passengers between Ottawa and Toronto increased by 52%. In 2018, yearly passenger volume increased by 8.6% and revenue grew by 25.4% in the Corridor East. However, as the number of frequencies is capped in the contract with CN, further performance and financial growth within the current business environment is very limited.

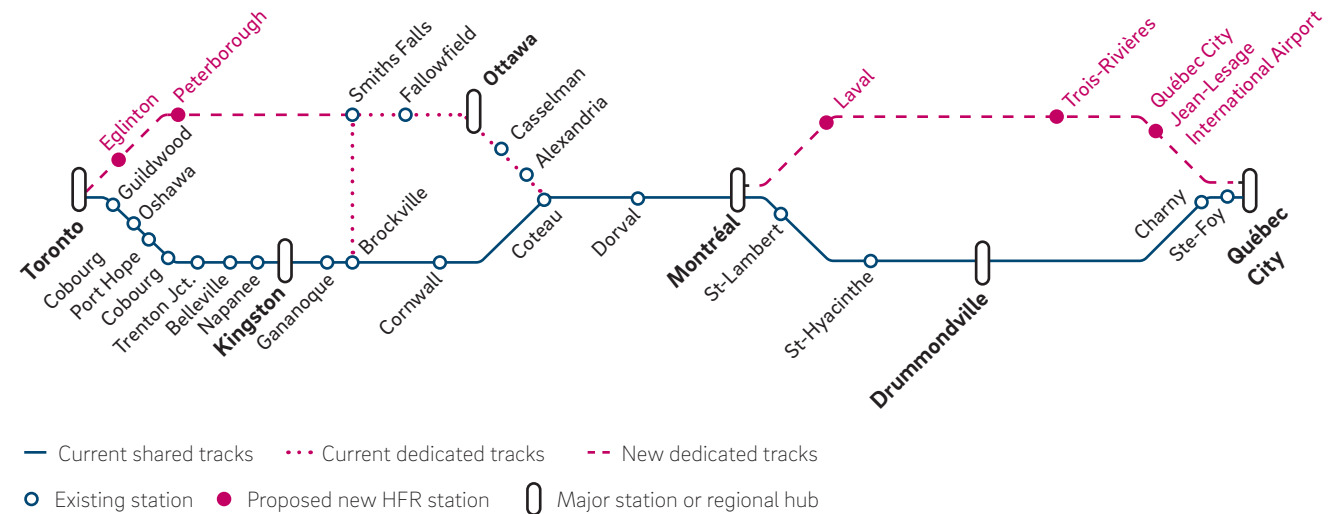
HFR reduces dependency on infrastructure owners in the Corridor and offers new growth opportunities

VIA Rail can reduce dependency on infrastructure owners and develop new levers to enhance service offerings with the HFR. Based on preliminary studies, by increasing capacity, as well as convenience (e.g. frequency) and reliability through control over rail infrastructure, ridership and revenue would increase significantly. The Corridor East has the most potential for the HFR project according to Via Rail's preliminary study. The constant increase in ridership since 2014 indicates that there is a strong demand for rail transport. Improved reliability and convenience will encourage current customers to take the train more frequently. As

15 m Canadians live in the Québec City–Montréal–Ottawa–Toronto area, the HFR can attract a significant pool of travelers currently using other means of transportation. VIA Rail currently captures less than 5% of the travel market in the Toronto-Ottawa-Montréal corridor, but attracts a very diverse clientele with different needs (students, seniors, tourists and business travelers). With the assumption of 15 frequencies per day for the HFR, VIA Rail projects to serve up to 9.9 m passengers per year by 2030 in the Corridor, more than doubling the 4.5 m passengers carried in 2018.

Nevertheless, a detailed project definition and business case maximizing the probability of success is needed to support such a significant investment. Based on our experience in Europe and Asia, we see four main conditions for a successful HFR project: design a competitive offer, ensure integration with the mobility ecosystem, optimize the funding and governance structure and carefully plan and execute the transformative project.

D: The proposed HFR network





Key conditions to ensure the success of a large mobility infrastructure project

Roland Berger has comprehensive experience with large infrastructure and transportation projects based on various mandates in Europe and Asia, from market share projections to performance improvement roadmaps for large transformation projects. More specifically, we have developed extensive knowledge of the passenger rail industry through delivering numerous projects such as a mobility innovation strategy for a passenger rail company and a national strategy for the development of a high-speed train network. Our expertise enables us to outline four main conditions for a successful HFR project.



1 Design a competitive offer

Owning its dedicated tracks would enable VIA Rail to control its infrastructure and improve its service. The HFR project would contribute to bridging gaps with other modes of transportation in terms of convenience (frequency), reliability and trip time, creating a greater competitive edge, particularly over cars. Beyond infrastructure, the competitiveness of the HFR project also relies on providing an easy, comfortable and enjoyable customer experience through various direct and ancillary services.

2 Ensure integration with the mobility ecosystem

As part of improving the customer experience, the HFR project is an ideal opportunity to integrate the transportation ecosystem. Combining multimodal transport options in one connected mobility network using a single online interface would allow customers to identify the fastest, most affordable and most convenient door-to-door journey in real time.

3 Optimize the funding and governance structure

The Canadian infrastructure investment landscape has supported infrastructure and transportation projects similar to the HFR. VIA Rail must be methodical in defining the optimal financing structure, the legal and regulatory framework as well as the governance model.

4 Carefully plan and execute the transformative project

The HFR would be one of VIA Rail's largest projects to date and requires rigorous and careful planning for successful execution. Doubling the number of passenger trips by 2030 in the Corridor will be transformative for VIA Rail's business. It will impact its main operations regarding rail infrastructure, rolling stock, rail stations and stops, customer touchpoints and support functions.

1

Design a competitive offer

Bringing forth a competitive offer in comparison to VIA Rail's current service and to other means of transportation would allow the HFR to capture more market share and convert new travelers. The project must contribute to bridging the gaps with other means of transportation with respect to three of the most important transport selection criteria: convenience (frequency), reliability and trip time. The current HFR scenario (as of fall 2019) can take market share from car travel (especially solo travel), which currently holds 90% of the market in the Québec City-Windsor corridor.

Although the HFR positions rail as a more attractive mode of transport, increased reliability and frequency does not create a strong competitive edge over air travel, as trip time is a more important factor. According to the Future of Rail report from the International Energy

Agency (IEA), for selected intercity corridors, a high-speed train can reduce aviation activity in passenger-km from 20% to 80% within a short timeframe of becoming operational for distances under 1,000 km. For instance, the Seoul-Busan 325 km high-speed train enabled rail market share to increase from 27% to 60%, decreasing car, plane and coach shares by 3%, 21% and 9% respectively. While the HFR is not a High-Speed train, the reduced trip time should support a rise in market share against cars and coach buses. The trade-off between the level of investment and competitiveness of trip time must be carefully evaluated to develop an offer that meets customers' expectations at the best possible cost.

Another important criterion in a customer's selection of their means of transportation is the overall enjoyment of the travel experience. Customer journeys nowadays are much more than a journey from point A to point B. Elements such as ease of access (simple ticketing interface, customer friendly online interface, station convenience and intermodal integration), comfort (service level, mobility access, amenities available, snacks, Wi-Fi) and the emotional experience (personalized service level, entertainment, loyalty programs) are elements that customers take into account when deciding on their means of transportation. There is also a growing trend of enhanced utilization of travel time for work or social purposes. Train services have the potential to offer many of these elements in an attempt to maximize the enjoyment of the experience. This is in stark contrast to planes or cars, where certain elements such as amenities and social interactions are either completely or somewhat limited. → **E**

Roland Berger experience

Projecting the number of passenger trips according to various project scenarios is a critical input in the HFR business case. Modal shifts in transport are not easily predicted. It is important to understand the customers' psychology and their decision making process, and how new technologies might change their preferences. Roland Berger has experience with conducting the financial and business analysis necessary to support the final investment decision on a project such as the HFR. For instance, Roland Berger successfully estimated the projected market of passenger rail and the potential share for a train operator that was seeking to extend its network to connect additional cities.

E: Improvements to the service offering made possible by HFR (based on the latest publicly available data)

Frequency increased to **15 trips per day** (vs. 7 trips per day between Montréal and Toronto)

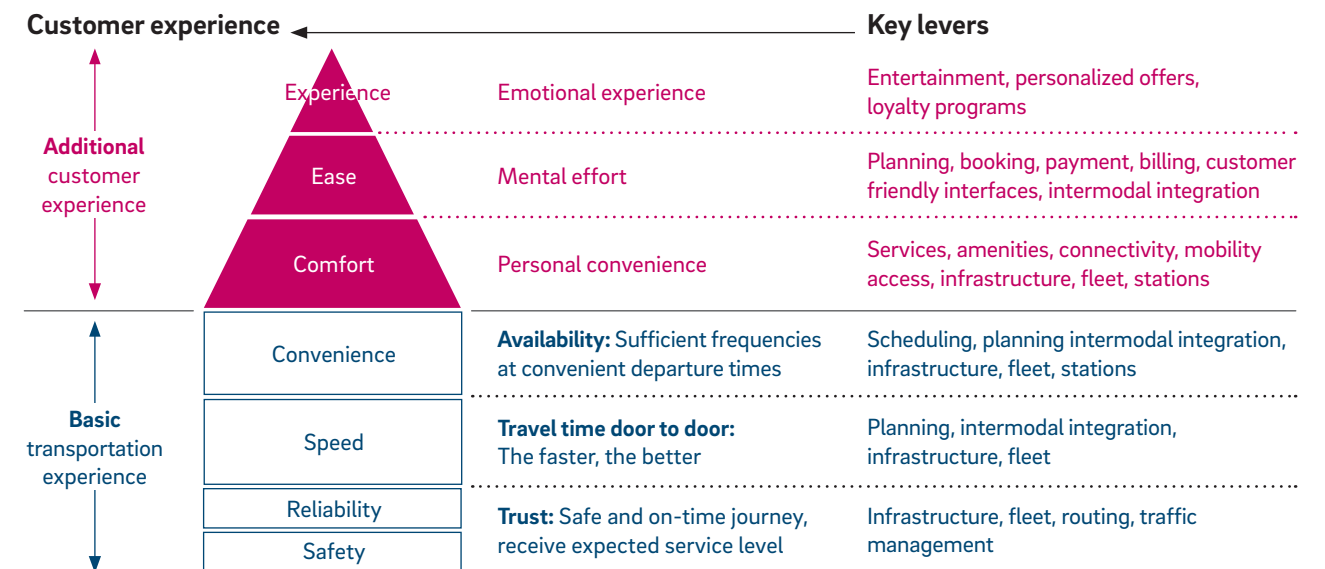
On-time performance of VIA Rail's trains increased to **95%** (in comparison to the overall punctuality of 71% in Q4-2018)

Trip time reduced by at least **40 minutes** between Montréal and Toronto compared to the current shortest trip

	CONVENIENCE (FREQUENCY)	RELIABILITY	TIME TORONTO-MONTREAL (NO TRAFFIC)	LOSS OF PRODUCTIVE TIME (H)	PRICE COMPETITIVENESS
Car	●	Depends on congestion, weather, etc.	5:30	5:00	●
Bus	●		7:15	0:00	●
Plane	●	Depends on airport congestion, weather, etc.	1:15	-2:00	●
Current VIA Rail offer	●	71%	5:08	0:00	●
HFR offer	●	95%	4:27	0:00	●

Price point for the HFR fares is assumed similar to the current Via Rail offer.

F: HFR: a compelling opportunity to improve the customer experience beyond the basic transportation offer



2

Ensure integration with the mobility ecosystem

The interconnectivity of the HFR project is an important consideration that requires careful planning. Ensuring the HFR is part of an integrated mobility network with other means of transportation and VIA Rail's current routes is an important factor in the success of the project.

In Canada, journeys that include more than one means of transportation are typically a fragmented sequence of individual actions due to the lack of interconnectivity between various mobility offerings. An integrated transportation network combines an ecosystem of multimodal transportation options to provide a smooth door-to-door travel experience. The ability to address the challenge of the "last-mile" (distance between a transportation hub and the final destination) is an important element of an integrated transportation network.

An integrated transportation ecosystem is a core topic of conversation for transportation leaders. Better integration of rail with conventional networks (particularly urban rail) to optimize door-to-door travel was identified as the second most important priority to shape the future of rail investment by 76% by railway experts in a Roland Berger survey. Interconnectivity plays a crucial role in increasing the competitiveness of rail and transit services. It is critical to attract travelers from road and air transportation and thus help rail capture a greater share of the modal split. Several players are making efforts to develop their services along this trend. For instance, Deutsche Bahn, the national operator that dominates German intercity rail travel, has integrated its services with other rail and bus lines. In California, the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of California called Connect SoCal, consists of significant investments to implement multimodal interconnectivity to improve passengers' rail journeys. Multiple similar initiatives are in action around the world with European

countries being a driving force. VIA Rail could look to benchmark international projects for inspiration of possible initiatives for implementation.

VIA Rail has improved their interconnectivity thus far through various intermodal partnerships (commuter trains, motor coaches, car rental companies, airport shuttle bus services, airlines and train station owners) to simplify the customer journey for its passengers. In fact, VIA Rail's passenger volume for intermodality has increased by 110% since 2012, with 122,861 passenger trips in 2018. Despite these efforts, there are still certain gaps to bridge. For example, better intermodal connectivity to reach other major transportation hubs such as the airports in Montreal and Toronto would be beneficial. In addition, the high projected volume of passengers from the HFR project further emphasizes the need for VIA Rail to not only maintain current partnerships, but to also continue expanding intermodal integrated services. Collaboration between operators of different means of transportation is essential to identify solutions that may not have been previously considered and could improve the convenience and speed of the customer journey. A project such as the HFR is an ideal moment to establish a long-term strategy for intermodal connectivity.



Importance of data in interconnectivity between means of transportation

Integrated transportation networks are optimized through "connected mobility", the use of Internet technologies in mobility management to optimize movements of people by leveraging data. It allows passengers to access real-time information at any given location to identify the fastest, most affordable and most convenient journey according to individual preferences. Mobility-as-a-service (MaaS), an online interface composed of an intermodal journey planner, a single payment portal and a booking system for entire end-to-end journeys, is a pillar of an interconnected mobility network.

Access to data from connected mobility enables operators to understand passengers' travel routes and to improve their services according to evolving needs. It also enables the network to fill the gaps for door-to-door travel.

Connected mobility involves several challenges that must be overcome, such as the definition of a technological framework, financial structure, organizational structure, legal framework and partnerships with other mobility players. In addition, the high number of stakeholders and the lack of a long-term common strategy related to these initiatives create significant hurdles to overcome. Navigating these challenges requires extensive experience and knowhow.

The HFR project is an opportunity for VIA Rail to build a connected mobility network through an online interface with current and new partners. For example, building partnerships with city transportation agencies to offer intermodal tickets would facilitate the door-to-door journey of travelers in the Corridor and increase rail's attractiveness. VIA Rail could seize the opportunity to fully understand passenger needs to improve its service level.

Roland Berger experience

Roland Berger created an innovative mobility strategy for a passenger rail company in Russia. The project included creation of a business plan and a roadmap for an integrated mobility platform including its first prototype to improve the customer experience and loyalty in the context of high competition with airlines. Following a thorough analysis of market potential based on passenger movements within Russia, Roland Berger identified and prioritized traveler segments based on the platform's probability of usage and the attractiveness for the transport operator. Building on this prioritization, Roland Berger developed the concept and vision for a new mobility platform based on existing intermodal platform models. For each key parameter (scope of integration, feature, monetization option, channel, brand), strategic decisions were recommended to design an integrated platform in line with the client's ambitions.

3

Optimize the funding and governance structure**Infrastructure funding originates from multiple sources**

The current global context is favorable for investments in infrastructure. There are three main drivers that stimulate investment. First, the current environment of low interest rates and low returns on traditional investments is pushing investors to look for alternative assets. Second, infrastructure investments provide stable cash flows and greater certainty over long-term revenue streams. Lastly, infrastructure assets are more resilient to economic downturns, which prevents investors from having to sell assets at depreciated prices.

The Canadian infrastructure investment landscape, which includes the federal government, the Canadian Investment Bank (CIB), provincial governments, and private and public pension funds, is also in favor of projects similar to the HFR. These players have previously invested in infrastructure projects and continue to show interest in these types of opportunities:

- Large projects are often funded by the federal government. The federal government initiated the Investing in Canada plan in 2016 and committed to invest CAD 180 bn over 12 years focused on five main infrastructure priorities: public transit, green, social, trade and transportation, as well as rural and northern communities. As of the 2018 budget, CAD 95 bn of funding was made available, including CAD 7.5 bn for the province of Québec and CAD 11.8 bn for Ontario.
- The Canadian Infrastructure Bank will invest its allocated CAD 35 bn (included in the Investing in Canada plan) in revenue-generating projects that are in the public interest and that attract private capital. The CIB is already involved in 6 projects and has invested CAD 4 bn, mainly in the Réseau Express Métropolitain (REM) and in GO Transit. As of July 2019, the CIB was

assessing 39 projects of an estimated total value of CAD 17 bn and 25 projects were under review or active due diligence.

- Provincial governments are increasingly investing in infrastructure. In fact, 98% of public infrastructure assets in Canada are owned by provinces and municipalities.
- Pension funds are also important potential investors. Canadian pension funds, who rank among the top infrastructure investors worldwide, are allocating a significant share of their portfolios to infrastructure. There is a current window of opportunity for pension funds resulting from a favorable demographic context. Roland Berger estimated that the total potential for infrastructure investments by sovereign wealth funds and pension funds corresponds to c.12 times the current infrastructure investments by public and private pension funds. The Canadian government has expressed its desire for pension funds to participate in investments for new infrastructure. Notably the Director of Infrastructure and Transport at the Treasury Board Secretariat stated that Federal support will be designed to be the minimum necessary to make each project financially viable. The intent is to attract new investors or players in the market through innovative financing arrangements and investment volume.

The financing and governance structure must be carefully chosen

The HFR project is likely to be funded through new alternative funding models, such as private-public partnerships (PPPs) or a private co-financing/government guaranteed model. New alternative funding models is a trend shaping the future of the passenger rail industry and the global mobility ecosystem. Selecting the right structure is important to maximize the probability of success. It can help to attract multiple participants and to reduce the cost of financing.

Roland Berger has supported multiple clients across the world with defining their optimal financing and governance structure. Given our experience with structuring the financing of rail projects, we have developed best practice methodologies.

To ensure success of PPP funding, developers should focus on 3 primary topics.

**1. How to best finance a rail project**

- Maintain a proper balance between private and public funding for PPPs.
- Consider bankability of the project (e.g. credit-worthiness, legal considerations, etc.).
- Demonstrate how private investors will recover normal returns throughout the project development and its implementation.
- Consult with banks to ensure adequate due diligence, project transparency and quality.

**2. How to set-up the right regulatory & legal framework**

- Transfer public sector responsibilities to the private sector to grant required security to developers.
- Create legal and regulatory frameworks which provide adequate legal protection for all parties.
- Ensure that the concession contract enables refinancing opportunities that are of interest for both the public and the private sector.

**3. How to set-up the right project model**

- Hire a project integrator to resolve challenges with the integration between public and private infrastructure, equipment, rolling stock and systems.
- Onboard an experienced transactional/financial and legal advisor to assist with developing tender documentation as well as marketing and financing of the project.
- Choose a private partner based on experience and financial strength (critically important when publicly funded debt is involved).
- Consider reliability of potential revenue streams to remunerate the private party.
- Ensure government commitment and financial support and determine the level of government involvement as a basis to attract private investors.
- Allocate risks to the party best able to manage and control them over the course of the project.
- Find the right balance between the higher cost of capital of the private investor and increased efficiency.

4

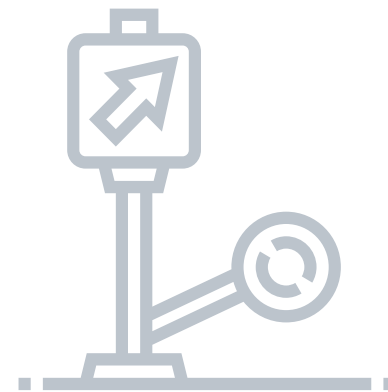
Carefully plan and execute the transformative project

Professional planning enables successful execution

The HFR is one of VIA Rail's largest projects to date and will disrupt VIA Rail's current business model. The HFR is a complex project and requires thorough planning to mitigate unforeseen circumstances. Roland Berger estimate that 90% of the multi-year, multi-billion, multi-stakeholders projects exceed the intended budget and timeline resulting from poor preparation and execution. In most cases, the root cause of infrastructure project failure is a consequence of applying "normal" project management approaches where they simply do not fit. Large infrastructure projects are inherently complex, unpredictable, dynamic by nature, and most importantly, they often lack precedent. This necessitates that successful project management solves a multidimensional puzzle in a constantly evolving context.

In our experience, successfully solving this puzzle requires strong governance and an experienced project management office.

Large infrastructure projects can be divided into four main phases: incubation, planning and de-risking, implementation and operations. The four phases break down into smaller steps which build upon each other, making earlier steps critical to the ultimate success of the new venture. → **G**



G: Large infrastructure projects have four main phases

INCUBATION			PLANNING AND DE-RISKING			IMPLEMENTATION		OPERATION	
ORIGINATION	COMMERCIAL VALIDATION	FEASIBILITY	FINANCING	FRONT-END ENGINEERING DESIGN	DE-RISKING	ENG. & PERMITTING	CONSTRUCTION	COMMISSIONING	OPERATION
Sector studies, investment roadmaps, policy alignment			Structuring/set-up of project entities			Execution, cost, time, and risk management		Asset efficiency	
Early stage project structuring			Stakeholder alignment (e.g. government, investors, developers)			Commissioning models		Digitization	
Feasibility studies business case validation			Project financing, PPP models			Project recovery in case of delay		Decommissioning	
			Negotiation of legal framework & permitting support						

In the planning phase, VIA Rail must consider the HFR as a transformation project

A large project such as the HFR is transformative for VIA Rail's business and operations. More than doubling the number of passenger trips by 2030 creates significant pressure on current operations. The project will impact most aspects of its business, especially in the Corridor. Some activities will grow in volume, some will be transformed, and some will be new. Below is a non-exhaustive list of business impacts from the HFR.

CATEGORY	BACKGROUND	ACTIONS FOR VIA RAIL [SELECTION]			
		STRUCTURE & ORGANIZATION	PROCESSES & TOOLS	TALENTS & CAPABILITIES	GOVERNANCE
Rail infrastructure	VIA Rail only owns 3% of the tracks on which it operates and currently only operates 12% of its train-miles on the portion it owns in the Corridor. With the HFR, VIA Rail would own significantly more dedicated tracks spread over a larger geographic area. A large electrified rail network would also be new for VIA Rail.	Adapt supply chain to new HFR requirements. Expand geographic coverage.	Build/adapt maintenance facility to support the additional rail infrastructure.	Increase infrastructure maintenance capabilities. Build capabilities for electrified rail (if required).	-
Rolling stock	VIA Rail already operates rolling stock and will be replacing its Québec City–Windsor corridor fleet with 32 new trainsets by 2022. The HFR would also increase its rolling stock fleet. The increased level of operations and maintenance will be significant as the train frequency would more than double in the Corridor. If the line is electrified, it will involve a new type of rolling stock.	Adapt supply chain to meet new rolling stock maintenance requirements.	Build/adapt rolling stock maintenance facility to support the additional rolling stock.	Scale up rolling stock maintenance capabilities. Build capabilities for electric rolling stock (if required).	-
Train stations and stops	VIA Rail has an extensive network of stations and stops that are owned or leased (95 stations, 16 shelters and 321 platforms). VIA Rail owns the Ottawa, Kingston, London, and Windsor stations, along with suburban stations, including Sainte-Foy, Dorval, Fallowfield, and Oshawa (jointly with Metrolinx). New HFR stations and stops will be in dense population areas, such as in Trois-Rivières and Québec City. Operating larger rail stations could represent new challenges and opportunities for VIA Rail.	Add new points of service for relevant in-station activities to current Via Rail portfolio.	-	Develop local capabilities to manage train stations and stops.	Review asset management strategy to include the new stations and stops.
Customer journey	VIA Rail has already established several customer touch-points, from online ticket purchasing to on-board service. The larger volume of passengers will increase the volume of customer touchpoints, but the project is also the perfect opportunity to bring the commercial approach to the next level. From a loyalty program to comprehensive intermodal connectivity with partners, VIA should rethink its interaction with customers to support the commercial ambition set with the HFR.	Enhance customer focus to meet new passenger needs and volume.	Enhance customer data analytics processes, including intermodal journey analysis.	Scale up customer data analytics capabilities.	Build stronger relationships with other players of the mobility ecosystem.
Support functions	Support functions will be impacted by the higher volume of activities generated by the higher volume of passengers. For instance, the HFR project will create new labor needs (volume and competency) impacting Human Resources. Similarly, the Procurement function will need to adapt to the level of business generated by the HFR.	Provide local support at new stations / maintenance facilities added with the HFR.	Identify and enhance legacy tools to support new activities (e.g. legacy IT systems).	Re-align recruitment to match new talent needs (volume & skills) Scale up support functions.	-



Benefits of funding the HFR

Capital allocation in mobility infrastructure

Large mobility infrastructure projects require significant investment and therefore entail crucial public funding. There are many ongoing transportation projects in Canada that have successfully received funding or are in the process of securing funding. As always, there is more infrastructure funding requested than investment available.

In this context, the HFR must be attractive relative to other major mobility infrastructure projects in order to be selected for public funding. Numerous variables are considered, but a project with a more positive impact for the population, the economy and the environment has a better chance at receiving public funding.

H: Selection of mobility infrastructure projects requiring public funding in Québec and Ontario

PROJECT	DESCRIPTION	CITY / PROVINCE	PROJECT VALUE [IN BN CAD]	PROJECT STATUS	TIMELINE (LASTEST PUBLICLY AVAILABLE INFORMATION)
VIA Rail's HFR	Intercity train	Québec and Ontario	4 to 6	Under study	NA
Eglinton Crosstown light-rail transit	Midtown connection between East and West Toronto	Toronto, Ontario	9.1	Under construction	2021
REM	Integrated network of 67 km and 26 stations linking downtown Montréal, South Shore, West Island, North Shore and the airport	Montréal, Quebec	6.3	Under construction	2021
Pink subway line	Subway line including 29 new stations	Montréal, Quebec	6.0	Under study	Unknown
Blue subway line extension	5 new accessible subway stations and 5.8 kilometers of tunnel	Montréal, Québec	3.9	Under design	2026
Ottawa light-rail transit	19 new stations and 30 kilometers of rail added to Ottawa's O-Train system	Ottawa, Ontario	3.6	Under construction	2023
Québec tramway	23 km of 38 stations of tramway and linked metrobus and trambus network	Québec City, Québec	3.3	Under study	2026
Third link between Québec and Lévis	Tunnel between Québec and Lévis	Québec City and Lévis, Québec	~4.0 (TBD)	Under study	unknown
Turcot Interchange	Repair of a major traffic hub connecting 3 highways and facilitating access to the Champlain Bridge	Montréal, Québec	3.7	Under construction	2021

Major benefits of the HFR

The socio-economic and environmental impacts of the HFR project will be crucial to its success. VIA Rail should undertake the necessary actions to optimize these impacts, while showcasing them to investors and Canadian citizens to secure funding and encourage ridership.

Positive socio-economic impacts

The level of ambition of the HFR project will determine the magnitude of its socio-economic impacts. As a public service, it would increase passenger rail capacity, service level and travel safety. In addition, the HFR would create jobs (throughout the execution of the project and once operational), encourage intercity business and tourism, reduce congestion and related costs, as well as reduce the financial dependency on the federal government.



→ Increased capacity and improved service level to better serve Canadians

VIA Rail's 4.7 m passenger trips in 2018 (3.4 m in the Corridor East) confirms the Crown Corporation's essential public service. The HFR is expected to significantly increase passenger rail capacity for Canadians. According to VIA Rail's projections, the HFR will enable its passenger rail service to offer up to 9.9 m passengers per year by 2030 in the Corridor East. Through more control over rail infrastructure, the project will allow increased frequency and improved reliability, providing a better service for Canadians and encouraging ridership.

DATA

The customer satisfaction level in the Corridor increased (net promoter score increased from 48 to 53 from 2016 to 2018) following Via Rail's implementation of customer-centric initiatives throughout the last 5 years. Further continuing this approach for the HFR would likely improve this score, especially with an expected on-time performance of more than 90%.

→ Job creation for Canadians throughout the project's realization and during the HFR's operations

The HFR project would create many temporary and permanent jobs for Canadians, in a context of a turbulent labour market resulting from the layoff of 1,600 employees at the Canadian National Railway (nearly 6% of its workforce).

DATA

50,000 person-years of work would be created from the construction of dedicated tracks and HFR infrastructure according to preliminary studies. 334,400 person-years of permanent employment across Canada is projected to be created over the next 30 years resulting from the HFR project.

→ Improved travel safety for Canadians

Rail transportation is safer than road travel, especially in hazardous winter conditions. The considerable decline in passenger rail accidents indicates VIA Rail's ability to ensure safe travel for Canadians. In addition, sharing rail infrastructure between freight and passenger trains involves risks of accidents, especially in the context of an increasing freight business. Although relatively stable for the last five years, dangerous goods shipments by rail have climbed by 60% since 2009. As dangerous goods are increasingly carried by rail, the HFR's dedicated passenger tracks would improve Canadians' safety.

DATA

Rail transportation is safer than road travel in developed countries. The average number of fatally injured car occupants for the years 2005 to 2014 was 3.4 per 1 bn passenger-kilometres traveled in the European Union. Canada performs slightly worse with 4.8 in 2017. The rail transportation is more than 20 times safer with an average of 0.14 fatalities per 1 bn passenger-kilometer traveled (data for Europe between 2005 to 2014).

→ Stimulation of economic activity, both intercity business and tourism

Increased frequency has been linked to increased ridership and therefore by extension a rise in business travel can be expected. The Corridor currently also serves tourists and the HFR project has the potential to attract a larger share of tourists by offering greater capacity, convenience and reliability.

DATA

Improvement of the urban transportation network leads to increased economic productivity, especially if investments are continuously made over a longer timeframe. According to the American Public Transportation Association, over a 20-year period, USD 3.7 bn per year of additional GDP would be generated per USD 1 bn invested annually.

→ Decrease of congestion and related costs

Increasing capacity and speed of travel through the HFR project would reduce congestion, and consequently, reduce collateral costs. Interconnected mobility would enhance this reduction of congestion and therefore, its socio-economic impact.

DATA

An Inrix survey indicated that Toronto drivers spend 164 hours in traffic yearly (20th most congested city in the World in 2018) and Montréal drivers spend 145 hours (ranked 34th). The Communauté métropolitaine de Montréal estimates the socio-economic costs associated with road congestion in Greater Montréal have doubled in the last ten years and reached CAD 4.2 bn in 2018 (including CAD 1.3 bn in Laval and the northern suburbs). Traffic congestion in the Toronto region costs Canada CAD 3.3 bn solely in lost productivity every year.

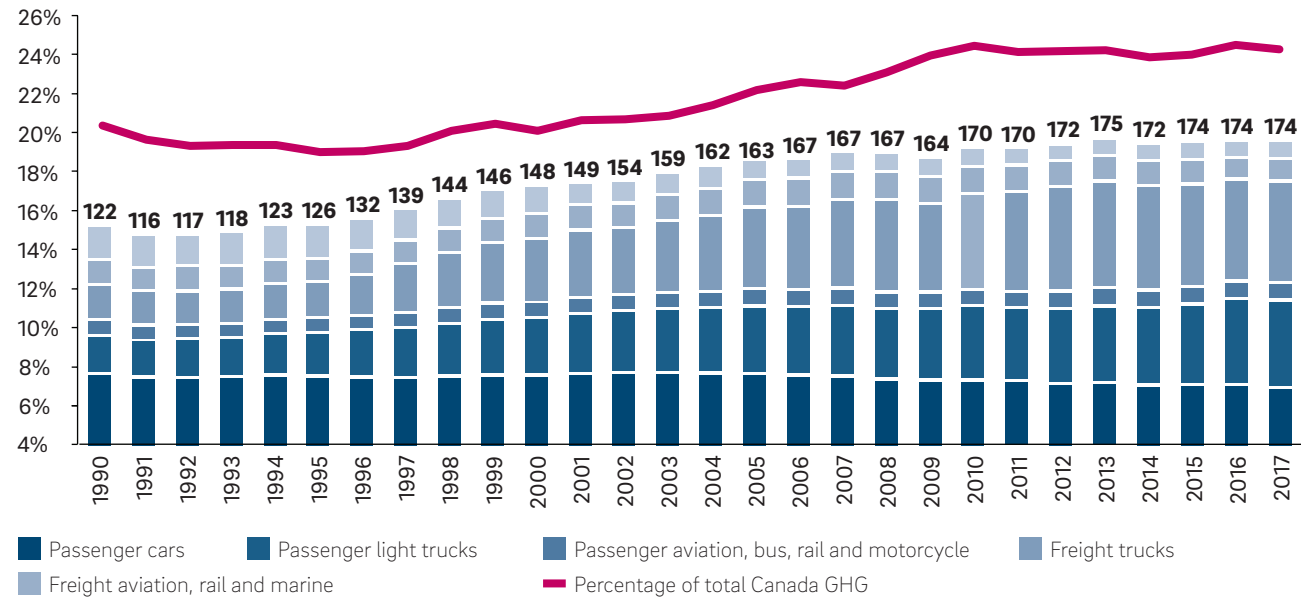
→ Reduced financial dependency on the federal government and less use of taxpayer money

If profitable, the HFR project could reduce the annual federal government subsidy provided to VIA Rail. Solely from an operations perspective and disregarding CAPEX investments that the HFR requires, VIA Rail's objective of doubling the number of trips by 2030 would enable an allocation of fixed costs over a higher volume.

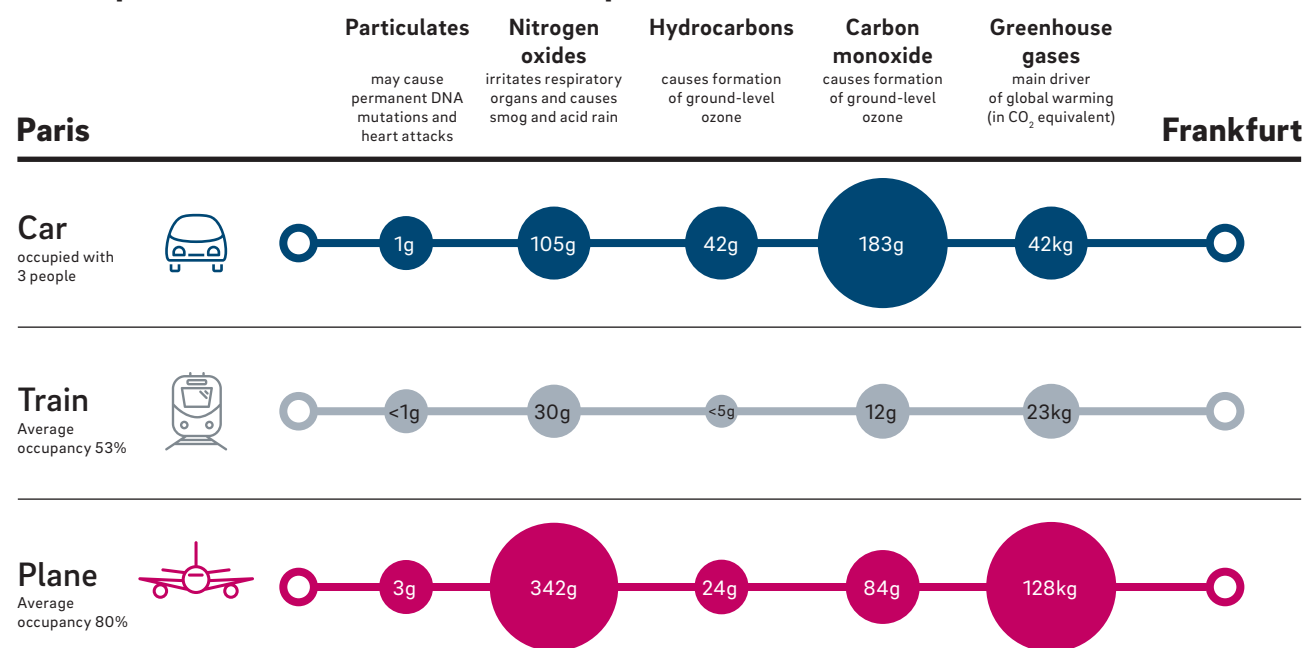
DATA

Since 2014, the Corridor subsidy decreased by 22% (from 21.2 cents per passenger-mile to 16.6 cents), notably because of the large increase in ridership. A successful HRF project would further decrease the subsidy required.

I: Transportation-related GHG emissions (in megatons of carbon dioxide equivalent) in Canada by means of transportation (2018)



J: Comparison of different means of transportation



Reduction of environmental impacts and greenhouse gas emissions

The worldwide transportation sector is responsible for nearly one-quarter of global carbon dioxide (CO₂) emissions from fuel combustion. Similarly, in Canada, transportation was the second largest greenhouse gas (GHG) emitting sector in 2017 closely preceded by oil & gas, representing 24% of emissions (vs 20% in 1990). Greenhouse gas emissions remain a primary point of concern for many Canadians with almost 8 m Canadians stating they are “extremely” worried about climate change. The environmental success of the HFR project can encourage Canadians to increase train ridership and increase the likelihood of substantial public funding. →!

Replacing road vehicle transport with rail can significantly contribute to reducing CO₂. The International Energy Agency estimates that if worldwide services currently using railways (passenger and freight) were performed by cars and trucks, the world’s transportation-related GHG emissions would increase by 12%. In Québec and Ontario, transportation-related emissions are currently the largest and fastest growing source of GHG emissions, with 44% and 35% respectively of GHGs coming from transportation. The greatest contributions to GHGs are privately driven cars and light trucks. Converting road travel into train travel is an important component in the nation-wide effort to combat global warming. Hence, the HFR project is of interest to increasingly environmentally-conscious Canadians as rail transport is more eco-friendly compared to road and air travel. →!

The environmental benefits of the project will play a large role in VIA Rail’s ability to attract public investments. The project is in line with several publicly stated Federal government strategies and targets aiming at reducing CO₂ emissions (i.e. Paris Agreement, Greening Government Strategy, Federal Sustainable Development Strategy for Canada, Pan-Canadian Framework on Clean Growth and Climate Change, Transportation 2030, etc.). The reduction of GHG emissions per dollar invested from public sources

is a measure of attractiveness when selecting mobility infrastructure projects to fund.

A project with significant positive environmental impacts can also attract parapublic and private investors. In fact, 40% of the global privately financed greenfield projects are in the transportation sector. Parapublic institutions such as the Public Sector Investment Board (PSP) and the Caisse de dépôt et placement du Québec (CDPQ) have communicated their intention to continuously encourage green investments. In addition, the 2018 Canadian Responsible Investment Trends Report from the Responsible Investment Association reveals that responsible investments are continuing to demonstrate rapid growth in Canada. According to the Investment Industry Association of Canada, “Canadian debt capital markets will embrace the green market sector as the increase in socially and environmentally related projects are funded by mainstream investors committed to sustainable projects.”

An important consideration of the project is the decision to use a diesel versus an electric propulsion system for the HFR. VIA Rail states in its 2018-2022 corporate plan that diesel HFR pollutes nearly five to six times less than road and air travel on a passenger-km basis. On a per-seat basis, a new diesel train has nearly one-fifth of the environmental impact of road transportation, while an electrical train has only 1/31th of the impact. Building an electrified HFR would strongly optimize the reduction in GHGs in comparison to diesel and would be in line with the federal and provincial strategy to electrify transportation. Electric transportation will become prominent in the coming decades. By 2050, on a global scale, 97% of passenger rail movements are expected to be on electrified railways and the share of electric vehicles is likely to exceed 50%.

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