



# 2023 Report on Climate-related Risks and Opportunities

Reporting further to the recommendations  
of the Task Force on Climate-related  
Financial Disclosures





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Photo MATHEW KREISER

# 2023 Report on Climate-related Risks and Opportunities



## Table of content

<b>1. Introduction</b>	<b>4</b>
1.1 About VIA Rail	4
<b>2. From Risk to Resilience</b>	<b>6</b>
2.1 Climate Scenario Analysis	8
2.1.1 Climate Scenario Analysis Approach	8
2.1.2 Risks and Opportunities by Scenario	8
2.2 Potential impacts from climate-related risks and opportunities	9
2.2.1 Climate-related physical risks	10
2.2.2 Climate-related transition risks	14
2.2.3 Climate-related transition opportunities	15
2.3 Enhancing Resilience	16
<b>3. Decarbonizing our Operations</b>	<b>18</b>
3.1 GHG profile	19
3.2 Transition Plan	21
3.3 GHG emissions reduction case studies	18
3.3.1 Reducing the global warming potential of structural reinforced concrete	22
3.3.2 Integrating sustainability and decarbonization in fleet procurement	22
<b>4. Governance and Risk Management</b>	<b>23</b>
4.1 Board and Management Oversight	24
4.1.1 Board of Directors	24
4.1.2 Executive Committee	25
4.2 Risk Management	25
4.2.1 How We Identify and Evaluate Climate-related Risks	27
<b>5. Moving Forward</b>	<b>28</b>



# 1. Introduction

## 1.1 About VIA Rail

VIA Rail operates Canada’s national passenger rail service on behalf of the Government of Canada, offering intercity rail services and ensuring rail transportation services to regional and remote communities. With an objective to provide a safe, accessible, efficient, reliable, sustainable, and environmentally friendly passenger rail service, VIA Rail is an independent Crown corporation and connects more than 400 communities, covering a 12,500-kilometre network.

At VIA Rail, we are committed to sustainability and to the communities we serve. Our 2021-2025 sustainability plan is based on six priorities with the goal of embedding environmental, social and governance performance in all our operations, being prepared for challenges ahead and being more resilient.

We recognize the important responsibility we have to reduce the environmental impacts of our own operations and ensure the resilience of our buildings and infrastructure to climate change. This is why one key priority of our sustainability plan focuses on Climate Action and it is supported by three strategies:

1. Upgrade greenhouse gas (GHG) emissions reduction targets to support Canada’s 2050 net zero emissions ambition.

### Environmental

#### Climate Action

Mitigate impact on climate change and ensure readiness to adapt

#### Environmental Management

Minimize waste in our operations and drive circularity

### Social

#### Employee Mobilization

Support employees to become sustainability ambassadors

#### Community Engagement

Further engage with community partners to extend our reach

### Governance

#### Responsible Sourcing

Leverage sourcing as a key driver of sustainable practices

#### Credibility and Recognition

Demonstrate excellence in sustainability

2. Improve fuel and energy efficiency in all operations.
3. Complete a review of climate change risks and implement an action plan.

Section 3 of the present report provides an overview of the actions taken to support the first two strategies. As outlined in our sustainability plan, we are also actively increasing our understanding of climate risks and opportunities and are working on better integrating climate-related questions into our governance and internal processes.

As such, this report intends to better inform our stakeholders on climate-related risks and opportunities affecting VIA Rail's operations and how the Corporation is responding. It supports our commitment to provide stakeholders with meaningful and transparent information related to our sustainability performance. This report also meets the Canadian government's requirement for Crown corporations to demonstrate climate leadership by reporting on their risks and opportunities related to climate change, in line with the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). We are publishing our second edition, which includes the work we pursued last year to deepen our understanding of climate-related risks and opportunities and integrate them into critical governance and decision mechanisms.

## 2023 main highlights

- Undertook climate scenario analysis looking at two scenarios (high-emissions and low-emissions) and time horizons to further refine our understanding of our main climate risks and opportunities and their potential impact on VIA Rail.
- Delivered a climate change awareness session to key leaders at VIA Rail.
- Consolidated business responses to map out how VIA Rail is prepared to face climate risks and opportunities.
- Integrated our material categories of scope 3 GHG emissions (all other indirect emissions) into our GHG emissions inventory, following the identification and quantification work completed in 2022.
- Completed several actions, including the implementation of specific operational and communication protocols with passengers, local authorities, emergency services and host railway, to enhance our climate resilience following the December 2022 winter storm.



A woman in a green top and blue jeans is stepping onto a train platform. She is holding a yellow bag. Another woman in a black suit is standing on the platform, looking towards the first woman. The train is white with yellow accents. The scene is set during sunset or sunrise, with a warm, golden light. The train tracks and platform are visible in the foreground.

## 2. From Risk to Resilience



# 2. From Risk to Resilience

Our climate is changing rapidly, and impacts caused by climate change are broad and systemic. VIA Rail is anticipating increasingly challenging climate conditions for which we need to prepare, as well as changes to society and to our business environment as Canada transitions to a low-carbon economy.

Following guidance from the TCFD, VIA Rail is considering climate-related risks and opportunities from two angles:

1. physical risks resulting from climate change that can be acute (event-driven) or chronic (long-term); and
2. transition risks and opportunities that arise from the needed transition to a low-carbon economy.

In 2023, VIA Rail explored previously identified key climate-related risks and opportunities in greater detail across two climate scenarios and time horizons.

Climate-related risks and opportunities explored		
<b>Physical risks</b>	Acute (extreme weather events)	<ul style="list-style-type: none"> <li>• Increase in severity of very hot days</li> <li>• Increased frequency and severity of wildfires</li> <li>• Increased frequency and intensity of rainfall and flooding</li> <li>• Increased frequency and severity of storms</li> <li>• Change in severity of snowstorms</li> <li>• Change in extreme cold event patterns</li> </ul>
	Chronic (weather variability)	<ul style="list-style-type: none"> <li>• Increase in number of very hot days</li> <li>• Change in snowfall and snowstorm patterns</li> <li>• Change in frequency and severity of freeze-thaw cycles</li> <li>• Sea level rise</li> </ul>
<b>Transition risks</b>	Fossil-fuel pricing	<ul style="list-style-type: none"> <li>• Increased carbon pricing</li> </ul>
	Energy efficiency and availability	<ul style="list-style-type: none"> <li>• New regulations prescribing increased electrification of fleet and use of low-carbon fuels</li> <li>• Competition for new sources of energy</li> </ul>
	Transitioning rolling stock	<ul style="list-style-type: none"> <li>• Complexity of transitioning rolling stock to lower carbon technology</li> </ul>
<b>Transition opportunities</b>	Energy efficiency and availability	<ul style="list-style-type: none"> <li>• Implementation of energy efficiency and fuel substitution measures</li> </ul>
	Transitioning rolling stock	<ul style="list-style-type: none"> <li>• Replacement of rolling stock on long distance, regional and remote routes</li> </ul>
	Demand for low-carbon transportation	<ul style="list-style-type: none"> <li>• Demand for low-carbon and efficient transportation solution</li> </ul>

## 2.1 Climate Scenario Analysis

### 2.1.1 Climate Scenario Analysis Approach

In 2023, VIA Rail analyzed how climate-related risks and opportunities might evolve over time and impact our operations across two climate scenarios and time horizons (2030 and 2050). Through workshops with representatives from key departments, we mapped the potential categories of financial impact from these risks and opportunities. This exercise also helped VIA Rail consolidate business responses currently in place or planned, as well as identify additional measures VIA Rail could consider to enhance its resilience to climate-related risks and opportunities.

Scenario analysis is the preferred technique to develop insight and enable organizations to prepare for various outcomes facing high degrees of uncertainty. It is a useful tool for testing extremes and identifying where business resilience needs to be built up. The scenario narratives hold inherent uncertainty. As such, they are not intended to represent a full description of the future, nor intended to be a forecast or prediction. Finally, we do not posit on the probability of each scenario occurring, recognizing that the future could very well play out in any combination of the selected scenarios.

VIA Rail explored the following two climate scenarios:

- **Deep Decarbonization:** A low-emissions scenario that sets out a pathway to transition to a low-carbon economy with the goal of net zero GHG emissions by 2050. This scenario limits global mean temperature rise to no more than 1.5°C by 2100 to avoid the worst effects of climate change. Under this scenario,

there is exponential growth in renewable energy, aggressive electrification, deployment of low-carbon technologies and significant behavioral changes. It generally produces higher transition risks and opportunities and lower physical risks.

- **Climate Crisis:** A high-emissions scenario in which little additional progress is made in curbing global GHG emissions which continue to rise unabated, and global average warming exceeds 4°C by 2100. Such a rise in temperature results in severe climate impacts. It generally produces lower transition risks and opportunities and higher physical risks.

Refer to Section 4.2.1 *ESG and Climate-Related Risks* for a more detailed description of the process and sources used to explore the two scenarios.




### 2.1.2 Risks and Opportunities by Scenario

Through the climate scenario analysis, VIA Rail explored how specific climate risks and opportunities could potentially unfold across scenarios and how they might impact VIA Rail in the future. Physical risks are generally consolidated and presented in terms of chronic and acute throughout this report. However, the analysis considered more granular categories of physical risks such as, for example, the increase in number and severity of very hot days or the change in severity of snowstorms. The three case studies below illustrate a sample from the climate scenario analysis.



## 2.2 Potential impacts from climate-related risks and opportunities

VIA Rail has identified key climate-related risks and opportunities broken down by TCFD risk category, as well as the most relevant business and financial impacts for each external risk assessed. While physical risks are consolidated into chronic and acute types, more granular categories such as extreme heat or sea level rise were considered in the analysis. Four different categories of financial impacts have been identified as described below.

Potential financial impact legend	
	Negative impact
	Positive impact
	Either positive or negative

Financial impact category	Description
Operational costs (OpEx)	Ongoing costs related to running day-to-day operations such as energy consumption, employee salaries and regular maintenance and repairs.
Capital expenditure (CapEx)	Large investments made to acquire or upgrade physical assets such as property, infrastructure and equipment.
Revenues	Income generated through the sale of passenger tickets by operating train services.
Value of assets	Fair value of assets based on their future resale value or capacity to generate revenue.



2.2.1 Climate-related physical risks

Risk type and impact level	Risk	Risk description	Select potential business impacts to VIA Rail	Select potential financial impacts to VIA Rail
<p><b>Acute</b> High</p>	<ul style="list-style-type: none"> <li>• Increase in severity of very hot days</li> <li>• Increased frequency and severity of wildfires</li> <li>• Increased frequency and intensity of rainfall and flooding</li> <li>• Increased frequency and severity of storms</li> </ul>	<p>The risk that more frequent and more severe climate hazards such as strong winds with heavy rainfall (flooding), snowfall, wildfires, extreme heat, or others could cause track and bridge washouts, electrical equipment short-circuits, force closure, damage to infrastructure, delays in service and health and safety concerns for staff and passengers.</p> <p>The increase in severe weather events, such as winter storms and heavy winds causing falling debris can result in damaged rolling stock or track blockages and could also cause system failure and equipment malfunction.</p>	<ul style="list-style-type: none"> <li>• Reduced labor productivity and availability.</li> <li>• Increased frequency of maintenance, repairs and prevention work.</li> <li>• Increased delays or interruptions in operations and services.</li> <li>• Increased procurement delays and shortages.</li> <li>• Loss of railway routes and geographic markets due to permanent track closures.</li> </ul>	<ul style="list-style-type: none"> <li>↕ OpEx</li> <li>↑ CapEx</li> <li>↓ Revenues</li> </ul>
<p><b>Chronic</b> High</p>	<ul style="list-style-type: none"> <li>• Increase in number of very hot days</li> <li>• Change in snowfall and snowstorm patterns</li> <li>• Change in frequency and severity of freeze-thaw cycles</li> <li>• Sea level rise</li> </ul>	<p>The risk that increasingly variable weather patterns, such as a rise in temperature, freeze-thaw cycles and sea level rise could put additional stress on VIA Rail’s operations, facilities and infrastructure.</p> <p>The increase in the frequency of very hot days can also place passengers and personnel working outdoors at greater risk.</p>	<ul style="list-style-type: none"> <li>• Change in demand for heating and cooling.</li> <li>• Reduced labor productivity and availability.</li> <li>• Increased frequency of maintenance and repairs.</li> <li>• Increased delays or interruptions in operations and services.</li> </ul>	<ul style="list-style-type: none"> <li>↕ OpEx</li> <li>↑ Revenues</li> <li>↓ CapEx</li> </ul>



**Physical risk by scenario – Increase in number and severity of very hot days**

**Increase in number and severity of very hot days**

**Risk description**

- The risk that extreme heat causes discomfort inside buildings and trains, and places staff working outdoors and passengers waiting on open platforms at greater risk.
- The risk that extreme heat intensifies wear and tear, overheats electronic equipment, or leads to a reduction in average train speed.

**Climate indicator**

- **Hottest day** (highest maximum temperature of the year<sup>1</sup>): to focus on extreme temperatures that may affect the functioning of equipment.
- **Number of very hot days** (days when maximum daytime temperature is warmer than 32°C<sup>2</sup>): to focus on increased demand for cooling and the impact on staff and passengers.
- The analysis considered the results relative to the 1991-2020 reference period to assess the extent to which regions experience a change in the severity and frequency of very hot days in 2030 and 2050 across scenarios.

**Scenarios**

**Deep Decarbonization scenario**

**Climate Crisis scenario**

**How scenarios unfold**

- **Temperature increase:** Largely due to the time lag between emissions and their impacts, even the Deep Decarbonization scenario sees all regions experience an increase in highest maximum temperatures of at least 1°C and in the number of very hot days by at least 2 days by 2050.
- However, this increase is not happening homogenously across the country as certain regions see warming of as much as 2°C by 2050.
- **Temperature increase:** The increase in maximum temperatures and very hot days is more pronounced in the Climate Crisis scenario with all regions experiencing an increase of at least 3°C in maximum temperatures and at least 6 additional very hot days by 2050.

An increase in the number and severity of very hot days leads to an increased need for cooling inside VIA Rail’s trains and buildings and potential delays as trains must reduce speed in high temperatures. Regions most affected are:

**How might this affect VIA Rail?**

- Western Canada (Toronto-Vancouver route, Winnipeg-Churchill route, and Jasper-Prince Rupert route) is the region most affected by severe heat. In the Climate Crisis scenario in 2050, the maximum highest temperature exceeds 40°C in British Columbia, which is 3°C higher than the 1991-2020 reference period.
- The Québec City-Windsor corridor and especially the Alberta and Saskatchewan regions are most affected by an increase in very hot days. In the Climate Crisis scenario, the Alberta and Saskatchewan regions (Winnipeg-Edmonton) segment experience more than 19 days warmer than 32°C, an increase of 15 compared to the 2020 reference period.

1. Environment and Climate Change Canada (ECCC), the Computer Research Institute of Montréal (CRIM), CLIMAtlantic, Ouranos, the Pacific Climate Impacts Consortium (PCIC), the Prairie Climate Centre (PCC), and HabitatSeven: Climate Data Canada: Hottest Day variable.

2. Idem



**Transition risk by scenario – Carbon pricing**

<p><b>Risk description</b></p>	<p><b>Increased carbon pricing</b></p> <ul style="list-style-type: none"> <li>The risk that increased carbon pricing will adversely affect the cost of traction fuel, as well as other energy needs and supply chain costs in general (rolling stock, on-board food and beverage, etc).</li> </ul>	
<p><b>Climate indicator</b></p>	<ul style="list-style-type: none"> <li><b>Government energy-related policies and taxes</b> (such as carbon pricing projections<sup>3</sup>): to explore the effect of GHG emissions-related costs on the price of energy.</li> </ul>	
<p><b>Scenarios</b></p>	<p><b>Deep Decarbonization scenario</b></p> <p>In an effort to significantly curb emissions, the price of carbon rises aggressively, well-above the currently announced measures.</p> <ul style="list-style-type: none"> <li><b>Backstop carbon pricing:</b> Some provinces such as Québec already have carbon pricing mechanisms in place. Provinces without such mechanisms are subject to the backstop carbon pricing, a Federal Government fuel charge carbon pricing mechanism, rising from \$50/t CO<sub>2</sub>e in 2022 to \$170/t CO<sub>2</sub>e by 2030.</li> <li><b>Aggregate cost of carbon:</b> Represents the hypothetical suite of policies, regulations, and programs needed to curb emissions that is added to the backstop carbon pricing starting at \$0/t CO<sub>2</sub>e in 2030 and gradually increasing to \$330/t by 2050.</li> </ul>	<p><b>Climate Crisis scenario</b></p> <p>Current carbon pricing measures are not maintained across provinces and no new policies are announced to curb emissions.</p> <ul style="list-style-type: none"> <li><b>Backstop carbon pricing:</b> Becomes inconsistent across provinces as carve outs are made<sup>4</sup>.</li> </ul> <p>• Scattered policies across the country puts additional stress on supply chain logistics and fuel procurement practices.</p>
<p><b>How scenarios unfold</b></p>	<p><b>How might this affect VIA Rail?</b></p> <ul style="list-style-type: none"> <li>The significant increase in carbon pricing leads to an increase in the cost of diesel and other purchased goods, such as food and equipment, resulting in higher operating costs for VIA Rail.</li> </ul>	

3. Canadian Energy Regulator: Canada’s Energy Future 2023.

4. Canada Revenue Agency. FCN15 Temporary Relief of the Fuel Charge – Light Fuel Oil For Use Exclusively in Eligible Heating Activities. Gouvernement du Canada, 23 Nov. 2023, [www.canada.ca/en/revenue-agency/services/forms-publications/publications/fcn15/temporary-relief-fuel-charge.html](http://www.canada.ca/en/revenue-agency/services/forms-publications/publications/fcn15/temporary-relief-fuel-charge.html)



**Transition opportunities – Demand for low-carbon and efficient transport solution**

<p><b>Risk description</b></p>	<p><b>Demand for low-carbon and efficient transport solution</b></p> <ul style="list-style-type: none"> <li>The opportunity to attract significant market share of travelers with existing and new low-carbon, flexible and comfortable transportation options.</li> </ul>	
<p><b>Climate indicator</b></p>	<p><b>Rate of behavioral changes<sup>5</sup> and the final energy consumption</b> for mass transit and passenger trains<sup>6</sup>: to explore the potential passenger demand for rail transportation.</p>	
<p><b>Scenarios</b></p>	<p><b>Deep Decarbonization scenario</b></p>	<p><b>Climate Crisis scenario</b></p>
<p><b>How scenarios unfold</b></p>	<p>Consumer preferences are geared towards sustainable and low-carbon products (e.g. mass transit and high-speed rail), supported by rapid and systemic behavioral changes.</p> <p><b>Demand for mass transit and passenger trains:</b> Mass transit and passenger trains final energy consumption increases by 4% in 2030, and by 24% in 2050, respectively, when compared to 2020 which suggests an important rise in the demand for mass transit and passenger trains. This occurs even as significant energy efficiency improvements are made, indicating an increased demand for rail transport instead of cars.</p>	<p>There is some behavioural change including a preference for shared transport, however technological developments lag and a heavy reliance on fossil fuels continues.</p> <p><b>Demand for mass transit and passenger trains:</b> There is a much slower rise in the demand for passenger trains. Final energy consumption for mass transit and passenger trains rises faster, increasing by 13% by 2030 and 39% by 2050 compared to 2020. However, this increase is more attributable to a continued population growth and slower progress made in low-carbon technologies and energy efficiency than to significant behavioral shifts. The car remains the dominant mode of transport.</p>
<p><b>How might this affect VIA Rail?</b></p>	<p>VIA Rail's opportunity to increase ridership is greater in the short to medium term as the impact of behavioral change shifts over time. Toward 2030, behavioral change helps reduce locked-in emissions from carbon intensive assets like pre-existing fossil fuel passenger vehicles. In the long-term, the necessity of behavioral change decreases as the global energy system becomes increasingly clean and the share of zero-emission vehicles on the road increases. However, they significantly contribute to a reduction in energy use by 2050.</p>	<p>The Climate Crisis scenario presents a much more modest opportunity for VIA Rail. Demand for passenger trains does not increase much beyond population growth.</p>

5. International Energy Agency: World Energy Outlook 2023.

6. Energy Super Modelers and International Analysts (ESMIA): Canadian Energy Outlook.



2.2.2 Climate-related transition risks

Financial impact category	Risk	Select potential business impacts to VIA Rail	Select potential financial impacts to VIA Rail
<p><b>Policy and legal</b> High</p>	<p><b>Increased carbon pricing</b> Increased carbon pricing could adversely affect the cost of traction fuel, as well as other energy needs and supply chain costs (rolling stock, customer food, etc).</p>	<ul style="list-style-type: none"> <li>Increased purchase price of diesel.</li> <li>Internal absorption of increase in price of inputs.</li> </ul>	<p>↑ OpEx</p>
<p><b>Policy and legal</b> High</p>	<p><b>New regulations prescribing increased electrification of fleet and use of low-carbon fuels</b> New regulations could require VIA Rail to upgrade or replace its rolling stock or vehicle fleet, resulting in increased costs.</p>	<ul style="list-style-type: none"> <li>Forced or accelerated upgrading or replacement of rolling stock and/or vehicle fleet.</li> <li>Increased use of low-carbon fuels to meet new efficiency standards.</li> <li>Early retirement of current less efficient assets before their end-of-life.</li> </ul>	<p>↑ CapEx ↑ OpEx ↓ Value of assets</p>
<p><b>Technology + Market + Reputation</b> High-Moderate</p>	<p><b>Complexity of transitioning rolling stock to lower-carbon technology</b> Moving to cleaner technology could come with high concurrent demand, complexity, and costs, and that failing to do so could increase operational costs and might negatively impact VIA Rail's reputation as a low-carbon transporter.</p>	<ul style="list-style-type: none"> <li>Disruption of long-term planning and associated budgets.</li> <li>Increased price of fuel input from switching fuels to operate low-carbon technology.</li> <li>Decreased attractiveness if VIA Rail's decarbonization is jeopardized by high concurrent demand or shortage of low-carbon technology, or if transition to cleaner technologies is slower than expected.</li> </ul>	<p>↑ CapEx ↑ OpEx ↓ Value of assets ↓ Revenues</p>
<p><b>Technology</b> Moderate</p>	<p><b>Competition for new sources of energy</b> VIA Rail might encounter clean energy supply issues and increased cost, as many industries are looking to decarbonize their operations.</p>	<ul style="list-style-type: none"> <li>Increased price variability of fuel and electricity inputs.</li> <li>Increased possibility of low-carbon fuels and electricity shortage.</li> <li>Decreased attractiveness if low-carbon fuels or electricity shortage jeopardizes VIA Rail's decarbonization or if transition to cleaner technologies is slower than expected.</li> </ul>	<p>↑ OpEx ↓ Revenues</p>



**2.2.3 Climate-related transition opportunities**

Risk type and impact level	Risk	Risk	Select potential business impacts to VIA Rail	Select potential financial impacts to VIA Rail
<p><b>Resource efficiency + Energy source + Products and services</b> High</p>	<p><b>Implementation of energy efficiency and fuel substitution measures</b> Reduce operational costs and GHG emissions through measures including increased efficiency, fuel switching and the use of new technologies.</p>		<ul style="list-style-type: none"> <li>Decreased fuel consumption from the implementation of energy efficiency, fuel switching and use of new technologies.</li> <li>Increased demand for services due to passenger rail's appeal as a low-carbon transportation option.</li> </ul>	<p>↓ OpEx ↑ Revenues</p>
<p><b>Resource efficiency + Energy source + Products and services</b> High</p>	<p><b>Replacement of rolling stock on long distance, regional and remote routes</b> Replace fleet on long distance, regional and remote routes with a more energy efficient and less polluting option.</p>		<ul style="list-style-type: none"> <li>Decreased fuel consumption and air emissions from more energy efficient rolling stock.</li> <li>Increased demand for services due to passenger rail's appeal as a low-carbon transportation option.</li> </ul>	<p>↓ OpEx ↑ Revenues</p>
<p><b>Market</b> High</p>	<p><b>Demand for low-carbon and efficient transport solution</b> Attract significant market share of travelers with existing and new low-carbon, flexible and comfortable transportation options.</p>		<ul style="list-style-type: none"> <li>Increased demand for services due to passenger rail's appeal as a low-carbon transportation option.</li> <li>Increased need for infrastructure and equipment to expand the existing offering as a result of a rise in demand.</li> </ul>	<p>↑ Revenues ↑ CapEx ↑ OpEx</p>



## 2.3 Enhancing Resilience

Last year, through our climate risk assessment exercise, we convened teams from across the organization with the aim to achieve a greater integration of climate risks and opportunities into business processes and governance. These sessions helped identify several business responses that are currently in place or are in the process of being implemented. These responses are central to the multiyear roadmap we are currently developing to better position our organization to act upon and improve resilience across its operations and business model.

### Business responses to physical risks

#### Strategic

- Develop and prioritize measures to enhance the climate resilience of new buildings or major retrofits (e.g., adhere to the latest energy efficiency standard, mitigate heat island effect, etc.).
- Invest in and prioritize adaptation measures for stations in exposed areas.

#### Operational

- Monitor evolving climate conditions to activate workplace health and safety programs according to certain temperature thresholds (e.g., additional break time for staff, adapted clothing and gear provided by VIA Rail).
- Collaborate with business partners for regular maintenance and preventative measures (e.g., cleaning of culverts and drainage systems, vegetation management).

#### Emergency

- Optimize communication systems for passengers on delays, additional travel time or precautionary measures to take during severe climate events.
- Ensure mitigation measures are readily available aboard for passengers. (e.g., N95 masks for air quality)
- Reinforce current railway operations, buildings and utilities emergency response plans.
- Activate contingency plans for alternative modes of transportation when train services are unavailable.
- Monitor and enhancing communication protocols established with host railway.
- Apply winter readiness and/or seasonal readiness plans.



## Business responses to transition risks & opportunities

### Strategic

- Finalize and rolling out actions of our decarbonization plan.
- Continuously promote passenger rail as a low-carbon option.
- Ensure new buildings and building retrofits adhere to most up-to-date energy efficiency standards.
- Concert with host railway on decarbonization plans through industry collaboration.

### Operational

- Continuously implement energy efficiency measures in railway operations.
- Reshape fueling schedules to lower impact of diesel price.
- Implement fuel hedging to mitigate fuel cost uncertainty and volatility.

### Emergency

- Deploy current emergency power back-up plans as needed.

## Enhancing business resilience following the December 2022 winter storm

In December 2022, our operations were severely impacted by both an intense winter storm and the derailment of a freight train operating on the same tracks as our passenger trains. Following this event, VIA Rail conducted a comprehensive review of its performance. We held tabletop exercises and working groups involving all business units in our organization and collaborated with external experts to identify and validate ways to improve our operational and communication response during a crisis. This exercise led to the implementation of the following key enhancements to our preparedness and response protocols:

- **Winter protocol enhancements:** We revised winter protocols to ensure that additional food and beverage supplies are onboard trains, and our employees are better equipped with the right tools and strategically deployed at key locations in case of train immobilization.
- **Proactive service adjustments:** We implemented new processes to proactively adjust train services when potential issues, such as adverse weather events, are anticipated.
- **Enhanced collaboration:** We have strengthened protocols with local authorities, emergency services and host railways.
- **Compensation Policy clarification:** We have clarified our compensation policy and capabilities, particularly in cases of significant train cancellations or delays, ensuring transparent and consistent communication with our passengers.



A photograph of a train at a station platform during sunset. The train is on the left, and the platform with large glass windows is on the right. The sky is a mix of orange, pink, and blue. The text "3. Decarbonizing our Operations" is overlaid in white, underlined, in the center of the image.

### 3. Decarbonizing our Operations



# 3. Decarbonizing our operations

## 3.1 GHG profile

An accurate and exhaustive GHG emissions inventory is an essential foundation for executing a transition plan and achieving our decarbonization targets. To this end, our GHG emissions reporting is based on the ISO 14064 standard and applies emission factors from the latest Environment Canada National Inventory Report: greenhouse gas sources and sinks<sup>7</sup>. Our GHG emissions inventory initially included direct emissions (scope 1) and indirect emissions (scope 2).

In 2022, we expanded the scope of the emissions inventory to integrate other indirect emissions (scope 3), as we recognize that our climate impact goes well beyond the perimeter of our direct operations. We undertook a screening exercise of GHG emissions across our value chain. We used a spend-based method to estimate emission totals per category and identify which categories of scope 3 emissions were the most material. For the categories deemed material, we performed a more detailed calculation, prioritizing primary data when available.

**Scope 1:** direct emissions from combustion of fossil fuels and refrigerant releases at facilities owned or controlled by VIA Rail (maintenance centres, stations and offices) and mobile sources (rail locomotives and road vehicles).

**Scope 2:** indirect emissions from the generation of electricity and steam purchased and consumed at facilities owned or controlled by VIA Rail.

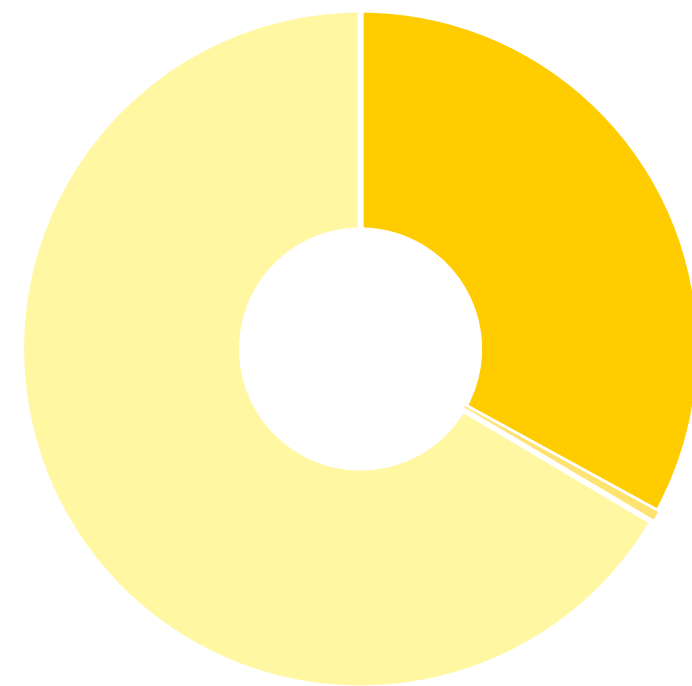
**Scope 3:** indirect emissions include all other indirect emissions not included in Scope 1 and Scope 2 and that occur in VIA Rail's value chain, including both upstream and downstream emissions.

7. National Inventory Report (2003), [En81-4-2021-1-eng.pdf \(publications.gc.ca\)](#)



# VIA Rail's GHG emissions breakdown

### Total GHG emissions



- **33%** Scope 1
- **0.5%** Scope 2
- **66%** Scope 3

### Scope 1 GHG emissions

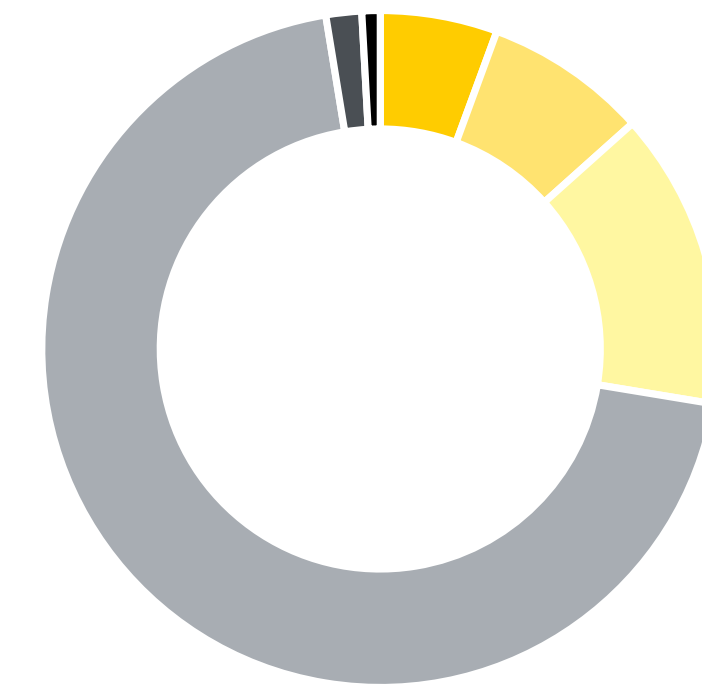
(% breakdown)



- **7%** Buildings
- **0.3%** Road vehicles
- **93%** Locomotives and cars

### Scope 3 GHG emissions

(% breakdown)



- **5%** Employee commuting
- **8%** Passenger commuting
- **14%** Fuel and energy production and transportation
- **70%** Purchased products and services
- **2%** Waste generated
- **1%** Other (includes all other non-material scope 3 emissions)



## 3.2 Transition Plan

Rail accounts for less than 4% of Canada’s transportation GHG emissions<sup>8</sup>. Yet, the rail sector moves more than 100 million people annually (pre-pandemic), making it the least GHG intensive mode of ground transportation<sup>9</sup>. As such, passenger rail helps reduce the transportation sector’s impact on climate change. VIA Rail can play an important role in driving the transition towards a low-carbon economy and helping Canada reach its climate goals. VIA Rail reached its objective of reducing absolute GHG emissions by 20% by 2020 compared to 2005 and is now progressing towards its objective to reduce GHG emissions by 30% or more by 2030.

However, the road towards deep decarbonization of rail in Canada continues to be challenging, accentuated by the complexity of operations and by the maturity of available technologies. As part of its sustainability plan, VIA Rail launched at the end of 2022 the development of a decarbonization plan to help us identify short-, medium- and long-term measures, as well as major operational, financial and technological challenges in decarbonizing our operations. In 2023, we completed the feasibility analysis of decarbonization measures for rolling stock and infrastructures, leveraging the expertise and knowledge from experts internally. We also reviewed different low-carbon fuels integration pathways and alternative propulsion modelling.

VIA Rail’s decarbonization plan aligns with the trajectory outlined in the Rail decarbonization roadmap for Canada<sup>10</sup> developed through the Railway Association of Canada and Transport Canada. Based on the conducted roadmap, the proposed net zero trajectory for rail is set to unfold in three overlapping stages:

1. **Efficiency Improvements:** Pursuing efficiency improvements remains a top priority as efficiency gains will assist in reducing the burden of decarbonization of fuels and propulsion technologies. VIA Rail will, among other things, continue to explore how to minimize traction energy consumption and maximize onboard energy efficiency. In 2023, VIA Rail continued to test an artificial intelligence powered application providing recommendations for fuel efficient train handling, given promising initial results.
2. **Low-carbon Fuels:** The use of renewable content in diesel is currently regulated by the federal and provincial governments to a minimum of 5%; higher-blend rates are now technically possible and are anticipated to be increasingly authorized and used by 2030. Our new fleet recently introduced on the Québec City – Windsor corridor is designed to accept higher low-carbon fuel content, allowing for future greater flexibility in the use of fuel mix as we decarbonize our operations.
3. **Alternative Propulsion:** Alternative propulsion technologies, like electrification via battery or catenary systems, or hydrogen fuel cells, should eventually become commercially available and prevail in the longer term, as we reach the limits of what low-carbon fuels and efficiency measures can offer to reduce GHG emissions. In the long-term, VIA Rail will prepare and adapt to deploy these technologies.

The timeframe of these stages aligns with Canada’s climate strategy and commitment to net zero emissions by 2050. Until 2030, VIA Rail’s decarbonization measures should primarily focus on efficiency improvements and the gradual integration of low-carbon fuels.

8. National Inventory Report (2003), [En81-4-2021-1-eng.pdf \(publications.gc.ca\)](#)

9. Railway Association of Canada, Rail Trends 2020, p. 13-14.

10. Railway Association of Canada. Towards Net Zero: Developing a Rail Decarbonization Roadmap for Canada, Dec. 2022.



## 3.3 GHG emissions reduction case studies

### 3.3.1 Reducing the global warming potential of structural reinforced concrete

In 2023, VIA Rail completed a pilot project, in collaboration with its project delivery supplier Arup, to reduce the embodied carbon footprint of concrete used in the reconstruction of its Brockville and Brantford station rail platforms. The construction process utilized two different techniques to minimize GHG emissions related to concrete usage:

- **Minimizing quantity:** First, we looked for opportunities to reduce the quantity of concrete used in the project as this would be a primary driver of the project carbon footprint. We therefore altered the shape of section curbs, which enabled us to reduce by almost 50% the amount of concrete used in the process.
- **Optimizing mix:** Once the optimal shape was determined, the design team then conducted several tests to select a mix of materials that passed all safety and stability tests while also carrying the lowest possible carbon footprint. The mix also had to be compatible with the supplier's production abilities. The use of precast concrete, produced in a controlled indoor fabrication facility and then transported to the site, provided greater flexibility in finding the optimal mix.

The combination of these two techniques resulted in a 50% reduction in the concrete lifecycle carbon footprint relative to the precast concrete industry average carbon footprint. Following the success of the project, VIA Rail will evaluate the feasibility of applying similar techniques to other station retrofits and construction projects in the future.

### 3.3.2 Integrating sustainability and decarbonization in fleet procurement

In 2022, VIA Rail delivered a proposal to the government of Canada for a new fleet of trains to serve our long distance, regional and remote routes, as our current fleet will need to retire in the next decade. A new fleet would provide a more comfortable, sustainable, efficient and fully accessible passenger rail service to all Canadians.

Although net-zero emissions technologies suitable for long-distance rolling stock do not exist at this time, we have put in place the right parameters for the pre-procurement activities that will allow to adjust the new fleet according to the evolution of available technologies over time. These include:

- achieving an environmental standard that meets or exceeds EPA Tier 4;
- ensuring the capability of rolling stock to use increased blends of low-carbon fuels;
- minimizing energy consumption of each train; and
- agreeing on clear technological options and timeframes towards decarbonization



A photograph of a man in a white shirt and dark vest sitting on a train seat, talking to a woman and a child. The man is on the left, looking towards the woman and child on the right. The woman is smiling and looking out the window. The child is also smiling and looking out the window. The train interior has grey seats and windows with seat numbers like '10C' and '10D'.

## **4. Governance and risk management**



# 4. Governance and Risk management

## 4.1 Board and management oversight

### 4.1.1 Board of Directors

The Board of Directors (Board) oversees VIA Rail and holds management accountable for the Corporation's performance, long-term viability, and the achievement of its objectives. The Board is accountable to VIA Rail's shareholder, the Government of Canada, and reports to Parliament through the Minister of Transport. It is notably responsible for approving VIA Rail's strategic direction and priorities, as well as the Corporate Plan, and for ensuring that key business risks are identified with adequate treatment plans and management systems put in place.

With respect to VIA Rail's Environmental, Social and Governance (ESG) strategy, the Board monitors its development and implementation, as well as its integration into VIA Rail's management, operations, and decisions. It also monitors VIA Rail's compliance with ESG-related statutory and regulatory requirements and industry standards, including ones associated to climate change, and for ensuring that, where applicable, treatment and programs are in place. In addition, the Board approves annually how management reports on ESG performance, which includes VIA Rail's sustainability and TCFD related information. Progress on VIA Rail's sustainability plan and on its Climate Action priority is also reviewed periodically by the Board.

The Board is responsible for overseeing and approving the overall Enterprise Risk Management (ERM) Framework and ERM Policy at VIA Rail. Once a year, Board members review the enterprise risk universe and risk responses and identify top strategic risks to be monitored. An enterprise risk update is provided during quarterly Board meetings to keep the Board informed of the evolution and status of top strategic risks, which include ESG-related risks.

The Board has established various committees, including the ones listed below. In addition to the activities described, each committee identifies, evaluates and assesses risks related to its responsibilities.

- **The Audit & Pension Investment Committee** (Audit Committee) is responsible, amongst others, for overseeing VIA Rail's internal and external audit process as well as its financial reporting and disclosure. The Audit Committee also reviews financial components and risks associated with VIA Rail's five-year Corporate Plan and annual operating and capital budgets, which could be influenced by climate-related risks and opportunities as these continue to be integrated into the business strategy.
- **The Stakeholder Engagement and Communications Committee** (Stakeholder Committee) oversees VIA Rail's stakeholder engagement initiatives, including communications and marketing strategies, key corporate reports such as the TCFD report, its ESG strategy, as well as VIA Rail's participation in the High Frequency Rail (HFR) Project.



- **The Major Projects / Fleet Modernization Committee** (Major Projects Committee) is responsible for overseeing and monitoring major projects and programs, such as the purchase and conditioning of a new Québec City – Windsor corridor fleet. The Major Projects Committee is also responsible for overseeing policies, practices and procedures regarding management of major projects, as well as monitoring capital spending.

#### 4.1.2 Executive Committee

The Executive Committee is composed of VIA Rail's core executive team. As a member of the Executive Committee, the Chief Strategy Officer (CSO) is responsible for VIA Rail's sustainability plan, which includes reporting on progress in meeting GHG emissions targets and the oversight of the integration of climate-related risks in governance mechanisms. The CSO reports directly to the President and Chief Executive Officer.

Within the Executive Committee, the Chief Legal, Risk and Compliance Officer (CRO) supervises the implementation of the ERM program. As part of the ERM governance, each risk theme is assigned to an Executive Committee member or to a senior team member (Vice-President, Senior Director or Director level) who is considered as the accountable executive.

## 4.2 Risk Management

VIA Rail manages its risks based on the processes of ERM, project risk management and resiliency planning. In recent years, VIA Rail crystallized a new ERM reporting format. The improved governance structure allows for enhanced oversight from the Board on risk levels, perceived effectiveness of treatment plans, residual risks and executive accountability. It is also more agile to assess and monitor risks, and support better decision-making in order to achieve the Corporation's objectives.

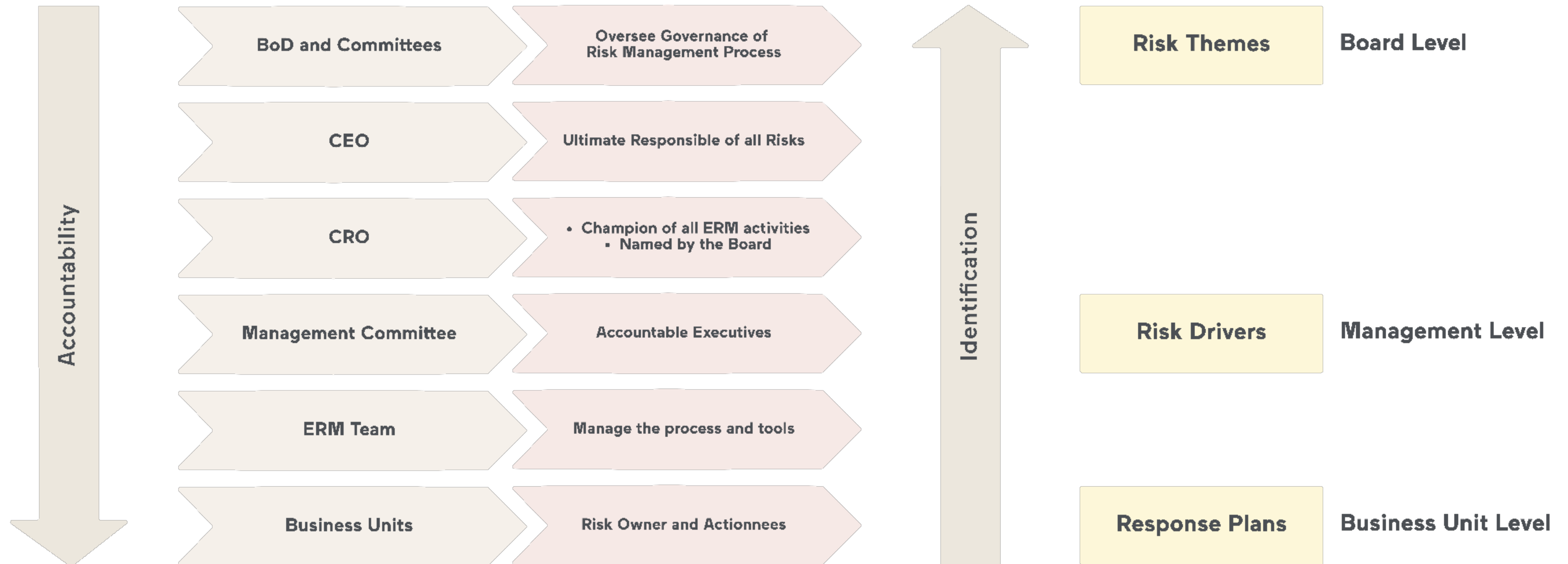
In accordance with the improved governance framework, a three-tier approach has been implemented to identify, assess, and address (1) risk themes, (2) risk drivers and (3) response plans.

Risk themes represent key enterprise risks ranked from low to critical, according to their health and safety, financial, environmental, customer, and human resources impacts. They are examined at the Board level. The Executive Committee maintains oversight on key risk drivers and is responsible for assigning relevant risk owners to ensure appropriate risk management as well as the effectiveness of associated treatment plans.

Along with the ERM team, accountable executives conduct an annual enterprise risk identification exercise to review existing risk themes and risk drivers and identify new ones if need be. They also evaluate and review risk levels on an annual basis. On a quarterly basis, the ERM team updates the Executive Committee on the status of treatment plans, controls and Key Risk Indicators (KRIs). ESG-related risks and broad climate-related risks encompassed in this enterprise-wide framework are subject to the same control and management procedures as other risk themes.



### Risk management framework





### 4.2.1 How We Identify and Evaluate Climate-related Risks

Currently, an ESG risk theme is part of VIA Rail's ERM framework and high-level climate-related risks are part of the enterprise-wide risk universe under the risk driver Climate Action, which VIA Rail has identified as one of its top strategic risks for 2023-2024. For physical risks, we use a risk assessment conducted in 2019 to gain a better understanding of the physical climate-related risks that could affect our business, our infrastructure, and our people. This risk assessment covers a selection of important buildings and infrastructure that VIA Rail owns, including 10 stations, 4 maintenance centers and around 300 kilometers of track. Not included in this assessment are the equipment and infrastructure owned by our service delivery partners, including the vast majority of the tracks our trains operate on.

In 2023, VIA Rail conducted a detailed qualitative climate scenario analysis to identify and explore climate-related risks and opportunities, building on past work initiated in 2019. VIA Rail first selected two scenarios, a Deep Decarbonization or low-emissions scenario and a Climate Crisis or high-emissions scenario, for two time horizons (2030 and 2050). These scenarios cover a wide range of potential outcomes to study the potential impacts of climate risks and opportunities across the geographic regions in which we operate.

For physical risks, a workshop with representatives from Railway Operations, Real Estate, Health and Safety, Mechanical Services, Infrastructure and Finance, amongst others, was held to study the potential impacts of climate change under two different climate scenarios and through climate variables such as heavy snowfall, freezing rain and high temperatures. The evaluation will allow us to integrate key findings in our ERM framework and focus on building resiliency for the organization moving forward.

For transition risks, a preliminary exercise was conducted in 2022 to map out key risks and opportunities and identify the most significant through a strategic workshop involving VIA Rail senior representatives from Sustainability, Communications, Legal, Finance, and Health and Safety, amongst others.

These identified risks and opportunities constituted a first step towards further exploring transition scenarios towards net zero emissions commitment by 2050. Last year, VIA Rail undertook qualitative climate scenario analysis to evaluate how risks and opportunities identified in previous work might impact our operations and further enhance the resilience of our business strategy.

Workshops organized internally helped identify the sensitivity of our value chain to the various risks and opportunities, potential impacts and identify current as well as potential future mitigation measures to ensure VIA Rail is minimizing the potential impacts of risks and making the most of potential transition opportunities. These workshops covered both physical risks and transition risks and opportunities.

VIA Rail understands that climate-related risks could impact other risks that are already part of its enterprise risk universe. Physical risks that are more operational in nature could affect the risk level and response plans at the Business Unit level, while some transition risks such as transitioning to a low-carbon propulsion rolling stock are already directly integrated into the ERM framework. Risks and opportunities identified through these two approaches are being shared with different teams across the organisation so that they can be addressed at the right level.

Furthermore, identified business responses are assigned to relevant VIA Rail teams to ensure the integration of climate risks and opportunities throughout the organization.



### Scenario Analysis Sources:

The Deep Decarbonization (low-emissions) scenario was informed by:

- The International Panel on Climate Change’s (IPCC) Shared-Socio-economic Pathway (SSP) 1 Representative Concentration Pathway (RCP) 2.6, commonly referred to as SSP1-RCP2.6 scenario for the physical risk assessment, approximately compatible with
- The Canadian Energy Regulator’s (CER) 2023 Canada’s Energy Future: Global Net Zero scenario, the International Energy Agency’s (IEA) 2023 World Energy Outlook: (WEO) Net Zero Emissions by 2050 scenario and Energy Super Modelers and International Analysts’ (ESMIA) 2023 Net Zero by 2050 scenario for the transition risk and opportunity assessment.

The Climate Crisis (high-emissions) scenario was informed by:

- The IPCC’s SSP5-RCP8.5 for the physical risk assessment, approximately compatible with
- The CER’s 2023 Canada’s Energy Future: Current Measures scenario and ESMIA’s 2023 Reference scenario for the transition risk and opportunity assessment.

# 5. Moving Forward

In 2023, we made progress on identifying, understanding and managing the climate risks and opportunities we may face in the future and we recognize this is an ongoing iterative process.

As we continue to implement identified business responses to our key risks and opportunities, we will also ensure regular stakeholder engagement on the topic of climate to identify additional ways VIA Rail can best respond to climate risks and opportunities in the future and monitor the effectiveness of existing measures. Moreover, we will continue integrating our most material climate risks and opportunities into our ERM system. To further structure these efforts across all our business operations, we are developing a multiyear roadmap with clear short-, medium-, and long-term milestones. This process will contribute to enhancing the resilience of our business strategy.



