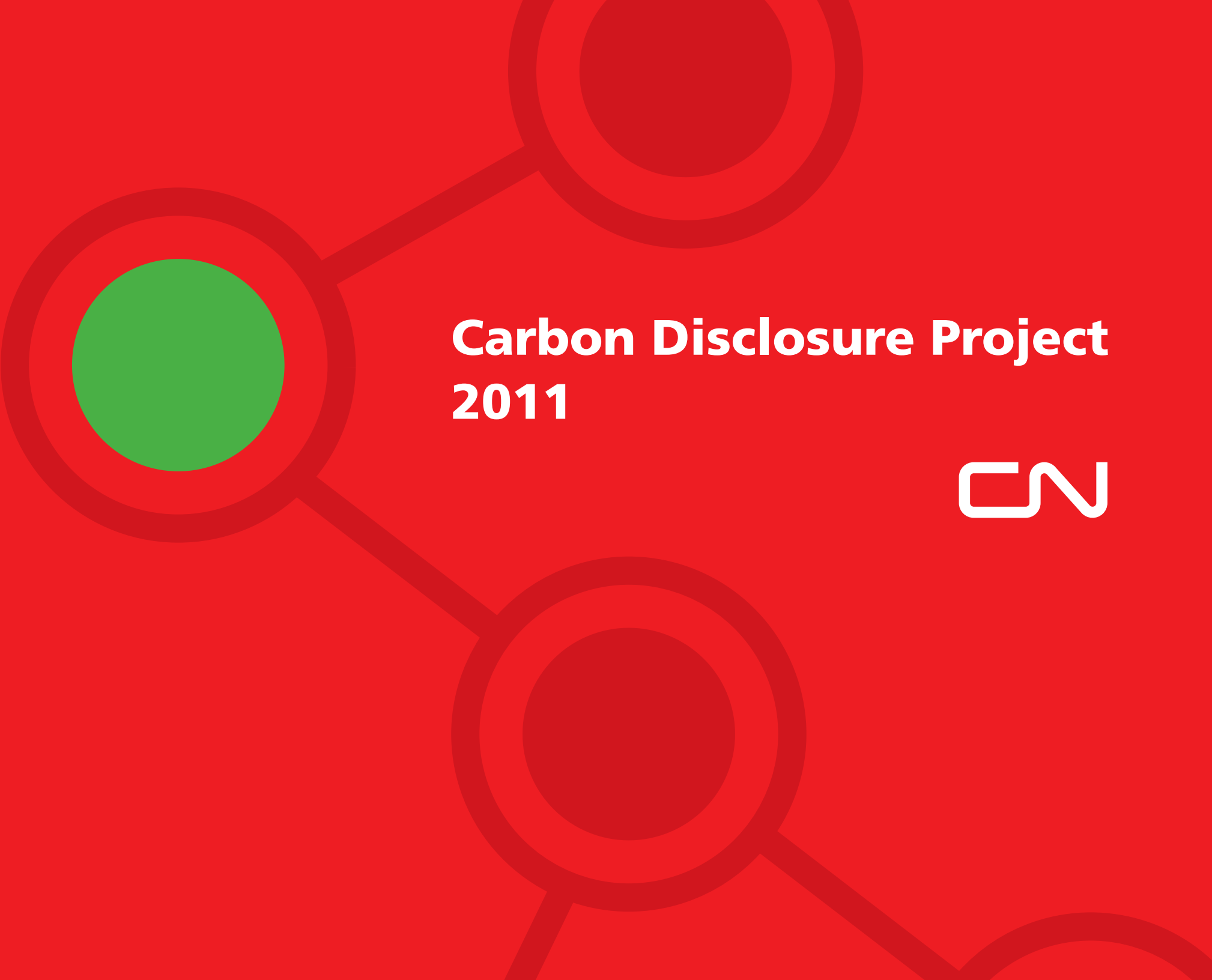


A network diagram on a red background. It features several circular nodes connected by lines. One node on the left is highlighted with a green center, while the others have dark red centers. The text 'Carbon Disclosure Project 2011' is positioned to the right of the green node.

# **Carbon Disclosure Project 2011**



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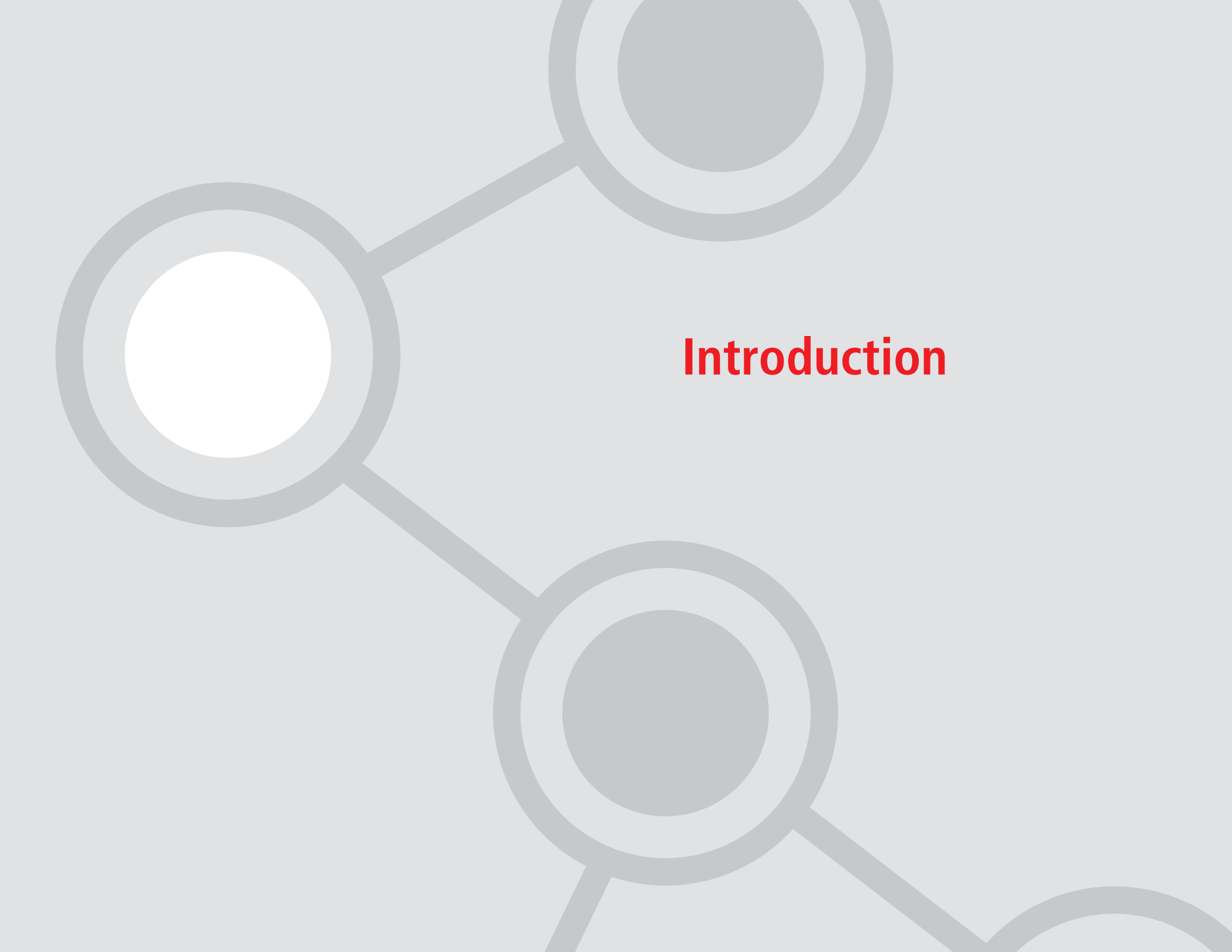
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The background features a network of gray circles and lines. One circle on the left is white with a gray border. Three other circles are gray with gray borders. Lines connect these circles, forming a branching structure.

# Introduction

# Introduction

## 0.1

An introduction to CN.

**As a leader in the North American rail transportation industry, CN has made sustainability an integral part of our business strategy by aligning our sustainability agenda with our business model. As part of our comprehensive sustainability action plan, we developed an emission and energy efficiency strategy focused on: reducing our carbon footprint; providing sustainable solutions to customers; growing the business through cleaner energy markets; investing in efficient and reliable infrastructure; and, enhancing our stakeholder outreach activities.**

Approximately 85% of our GHG emissions are being emitted from the use of our rail locomotives. As such, we believe the single best way we can positively impact the environment is by continuously improving the efficiency of these operations. In fact, we believe rail can be an integral part of the climate change solution. Rail is the most energy efficient method of moving freight on land; no ground transportation mode can outperform rail for the hauling of large volumes of high-density freight over long distances. Rail also relieves traffic congestion and stress from our strained public infrastructure.

We are proud to report that we have again made progress in reducing our rail carbon footprint in 2010. We invested \$225 million on fuel-efficient locomotives and improvements to our existing fleet, we continued to operate our railroad efficiently through precision railroading initiatives, and we improved yard efficiencies and fuel conservation practices. As a result, we surpassed our 5% GHG emission intensity (tCO<sub>2</sub>e/GTM) objective, achieving a 7% reduction in rail GHG emission intensity in 2010, based on 2007 numbers. Furthermore, in keeping with our strategy, we continued to leverage our operational excellence in rail by extending it to our other fleets, as well as our buildings and yard operations.

Being cognizant of the service disruptions that can result from weather events, the protection of our network remains a top priority. We do this by investing in track infrastructure upgrades, executing seasonal readiness plans, implementing natural hazardous warning systems, and establishing processes to recover from emergency weather conditions. In 2010, we invested \$1 billion to ensure the safety and reliability of our rail infrastructure.

In providing sustainable solutions to customers, we conduct ongoing collaborations with governments on our modal shift quantification protocol that can be used by customers to gain carbon credits for switching freight from truck to rail (the first of its kind in North America). We also provide our customers with a GHG carbon calculator, and fuel efficient services that include both service routing and other improved shipment delivery services. Growth in clean energy markets is also increasing. We continue to see increased opportunities in the area of sustainable energy products, including biodiesel and wood pellets, as well as equipment and components related to “cleaner” technologies, such as wind turbines and solar panels. Finally, we are reaching out to various stakeholders to identify and implement carbon solutions. We collaborate with our suppliers to support research into alternative fuels, and have committed \$1 million in research into next-generation locomotives. We also recently initiated an employee engagement program, which will facilitate increased engagement and participation on our energy management and carbon reduction initiatives.

As we look to the future, we are confident that our emissions and energy efficiency strategy is well aligned with the Company’s business goal to return value to our shareholders on a long-term basis. With more goods to be moved and more need for carbon responsible solutions, CN has never been better positioned to play a leadership role in the transportation sector.

For more information on CN, visit the company’s website at [www.cn.ca](http://www.cn.ca). Information on delivering responsibly, including climate change is available at [www.cn.ca](http://www.cn.ca).

## 0.2

The reporting year is the most recent 12-month period for which data is reported: 1 January 2010 to 31 December, 2010.

*CN – Canadian National Railway Company and its operating railway subsidiaries – spans Canada and mid-America, from the Atlantic and Pacific oceans to the Gulf of Mexico, serving the ports of Vancouver, Prince Rupert, B.C., Montreal, Halifax, New Orleans, and Mobile, Ala., and the key metropolitan areas of Toronto, Buffalo, Chicago, Detroit, Duluth, Minn./Superior, Wis., Green Bay, Wis., Minneapolis/St. Paul, Memphis, and Jackson, Miss., with connections to all points in North America.*



**Governance**

# 1. Governance

## Group and Individual Responsibility

**1.1 - 1.1a**  
Highest level of direct responsibility for climate change and position of individual or name of committee with this responsibility.

The highest level of responsibility for climate change rests with individual/sub-set of the Board or other committee(s) appointed by the Board.

At the Board level, the Environment, Safety and Security Committee reviews the Company's progress and status regarding climate change issues at regular quarterly and annual meetings. Through these meetings, the Board assesses performance against strategic programs as well as the relevancy and effectiveness of material climate change information.

At the executive level, the Chief Safety and Sustainability Officer (CSSO) and Assistant Vice President for Sustainability have direct responsibility for climate change within the company and communicate with the CEO regularly on strategic climate change initiatives. These individuals are responsible for reviewing our climate change strategic initiatives as defined through the sustainability action plan against set climate change objectives, targets and performance expectations.

Also reporting to the CSSO and the Assistant Vice President for Sustainability is a cross-functional sustainability committee with senior representation from CN's departments. The sustainability committee meets quarterly to define and align CN's sustainability and climate change priorities with the business strategy, and monitor and communicate performance as identified in our sustainable development action plan.

## Incentives

**1.2 - 1.2a**  
Incentives for climate change management, including attainment of targets.

| Who is entitled to benefit from these incentives? | The type of incentives     | Incentivised performance indicator                                                                                                                                                                                                                                         |
|---------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Corporate executive team                          | Monetary reward            | Through our operation fuel efficiency target of 2.5% in 2010, executive compensation is inherently tied to our emission reduction objectives.                                                                                                                              |
| Management group                                  | Monetary reward            | Through our operation fuel efficiency target of 2.5% in 2010, executive compensation is inherently tied to our emission reduction objectives.                                                                                                                              |
| Energy managers                                   | Monetary reward            | Our 5% energy reduction target is tied to the Employee Performance Scorecard of employees working directly towards supporting this objective, including energy managers. This target is therefore linked to the bonus structure provided by CN.                            |
| All employees                                     | Recognition (non-monetary) | Fuel efficiency and energy reduction initiatives are recognized through CN's President's Awards for Excellence, which recognizes outstanding achievements. In 2011, we introduced a sustainability category, which includes efforts in GHG emissions and energy reduction. |



**Strategy**

## 2. Strategy

### Business Strategy

CN recognizes that long-term success is connected to a sustainable and viable future. In order to ensure our success, we have aligned our business strategy with our climate change strategy, which is further linked to our high rated carbon risks and opportunities. The risks and opportunities that ranked within the high to medium-high rating (as presented below) were considered strategically important. As such, the Company addressed actions to respond to these risks and opportunities as outlined in the table below. It is important to note that the risk rating of high is not synonymous with the concept of materiality as determined in our financial reports.

| Frequency / Probability | High               |     | <div>8</div> <div>5</div> <div>7</div> | <div>10</div> <div>1</div>                                       |
|-------------------------|--------------------|-----|----------------------------------------|------------------------------------------------------------------|
|                         | Medium             |     |                                        | <div>3</div> <div>2</div> <div>9</div> <div>6</div> <div>4</div> |
|                         | Low                |     |                                        |                                                                  |
|                         |                    | Low | Medium                                 | High                                                             |
|                         | Severity of Impact |     |                                        |                                                                  |

○ Opportunities

□ Risks

■ Strategic risks and opportunities (ie. rated as high or medium-high)

SEVERITY / DEGREE OF IMPACT

RISKS

1. Air Pollution Limits (locomotive / vessel emission standards) posing financial and compliance risks

2. Frequent severe weather events impacting network infrastructure / track operating efficiency

3. Changing customer demands for low carbon services impacting CN commodity markets

4. Competition from other carriers

OPPORTUNITIES

5. Voluntary agreements and emission limits could result in greater fuel efficiency

6. Cap and trade schemes / taxes means carbon credits from shifting truck to rail as well as from operational efficiencies

7. Customer and supplier requirements e.g. Walmart and CDP to benefit CN low carbon transport and logistics positioning.

8. Weather changes could increase CN natural resource markets eg. lumber in pine beetle-affected areas and agriculture and feedstock from warming climates

9. New energy products or services e.g. clean technology markets, biomass, ethanol

10. Enhanced reputation in sustainable rail freight transportation from CN's low carbon service offering

CN's CARBON STRATEGY

• REDUCE GHG EMISSIONS FROM OUR SERVICES

• INCREASE ENERGY EFFICIENCY FROM OUR BUILDINGS AND EQUIPMENT

• ADAPT THE BUSINESS TO THE CONSEQUENCES OF CLIMATE CHANGE

• ENGAGE IN CLIMATE CHANGE DIALOGUE

The Company is responding to its climate change risks and opportunities in a way that effectively aligns with our business strategy, enabling us to manage our exposure and position ourselves for growth in a carbon constrained world. Our climate change initiatives have been integrated into our sustainability action plan, which represents a tool for identifying and reporting on progress.

In order to effectively integrate the climate change opportunities into the business strategy, we will be working with our sustainability committee to align the Company's sustainability values, and specifically our climate change objectives, with the skills development, performance management, and empowerment of our work force.

## 2. Strategy

---

### Climate Change Risk Management

2.1 - 2.1a  
Risk management  
procedures regarding  
climate change risks and  
opportunities.

#### The Scope of the Process

Our comprehensive climate change risks and opportunities identification process incorporates departmental risk assessments, as well as information from external regulatory reviews, performance data, market trends, and customer analyses. The information is compiled and identified in a register.

In reviewing our climate change risks and opportunities we include regulatory, physical and other issues. Regulatory issues include existing voluntary agreements, emission limits, taxes, and carbon markets. Physical issues include impacts to our business related to changing climatic conditions. Other issues include market factors, such as customer demands, economic conditions, reputation, supply chain, and security factors.

#### Assessment of Risks and Opportunities at a Company Level / Asset Level Perspective

The process for assessing risks and opportunities is conducted at both a company level, and where relevant, from an asset level perspective. Regulatory and other risks and opportunities are assessed at a company level, while physical risks and opportunities are assessed at an asset level. For example, extreme cold temperatures typically impact our network operations in the northern Canadian regions, while extreme hot temperatures impact our network in the southern parts of the US.

#### The Frequency of Monitoring

The monitoring process is conducted on a quarterly basis through various business unit assessments and more formally, on an annual basis, through the direction of the sustainability committee with oversight from the audit committee.

#### Criteria for Determining Materiality / Priorities

Our climate change risks and opportunities are assessed based on the likelihood of the event and the level of magnitude of the impact. We evaluate the impacts in terms of the economic, environmental and social implications, using qualitative ratings of low, medium and high. Risks and opportunities that result in a medium or higher rating are assigned as significant. For CN, a significant rating is not synonymous with the concept of materiality as determined in our financial reports. Significance reflects those climate change risks and opportunities that could have both strategic and non-strategic implications on the business.

Climate change information that could be material is presented in the MD&A section of our financial annual report. Where a significant rating of high is assigned to a risk and opportunity, the Company conducts a more strategic review at the executive level to assess the costs and benefits associated with proposed strategic climate change programs to ensure alignment with CN's business goals. Once approved, strategic climate change programs are tracked and monitored through the sustainability committee's action plan.

#### Reporting of Results

The information is communicated through the sustainability committee to the Chief Safety and Sustainability Officer and the Assistant Vice President of Sustainability. This information is then generally discussed at meetings of the Executive Committee and where relevant, information is also presented to the Board of Directors. On an annual basis, significant climate change risks and opportunities are made publically available to CN's stakeholders, including investors, through the annual report, CN sustainability report, and the Carbon Disclosure Project submission.

## 2. Strategy

### Climate Change in Our Business Strategy

2.2 - 2.2a  
Climate change is  
integrated into our  
business strategy.

#### **i) How the Business Strategy Process Has Been Influenced, i.e. the Internal Communication / Reporting Processes That Achieve This**

Climate change aspects of our business are regularly discussed through the sustainability committee and then discussed at executive committee meetings by the Chief Safety and Sustainability Officer and the Assistant Vice President for Sustainability. Through these communications, the executive team develops the company-wide business strategy that effectively integrates top priority business issues, and if relevant, any topics within our energy and emissions strategy.

#### **ii) Climate Change Aspects That Have Influenced the Strategy**

The climate change risks that most influenced our business strategy included: locomotive and shipping vessels emission standards, and frequent severe weather events impacting network infrastructure and track operating efficiency. From an opportunity perspective, our business strategy was influenced by growth in new energy products or services, and changing customer requirements for low carbon service offerings.

#### **iii) Most Important Components of the Short-term Strategy That Have Been Influenced by Climate Change**

Our business strategy centres on operational and service excellence, with a focus on five key areas: quality top line growth, precision railroading, innovation capabilities, connecting with our people and smart stakeholder engagement. In the short-term, this strategy has been influenced by climate change in the following ways:

First, our focus on precision railroading has been influenced by our desire to increase fuel efficiency, reduce energy consumption and GHG emissions. We continue to invest in various initiatives and programs to efficiently operate the railroad and improve our fuel conservation practices. These initiatives are linked with our 2% year over year fuel efficiency target. We also expanded our operational excellence, founded on precision-railroading, to other aspects of the business including other fleets such as intermodal trucks, shipping vessels, and company vehicles. Finally, we have integrated energy efficiency, setting a 5% annual energy reduction target at select yard locations.

Second, our connecting with people strategy has been influenced by our climate change objectives, particularly given the need for greater awareness with our employees on efficiency and energy reduction. To this end, the Company recently launched a comprehensive employee engagement initiative to enhance communications and awareness on our carbon and energy reduction initiatives, including communications on better practices in operating our fleet and rail yard operations.

#### **iv) Most Important Components of the Long-term Strategy That Have Been Influenced by Climate Change**

Our strategic focus on innovation, top line growth and smart stakeholder engagement has been influenced by climate change within the long term, in the following ways. First, through our focus on innovation, we are committed to investing in a more efficient fleet. In 2010, we invested \$225 million on fuel-efficient locomotives and improvements to existing fleets and we are also investing \$1 million on research into next generation locomotives over the next three years. We also recognize the potential operational and service disruptions that could result from climate change and global warming impacts and the importance in maintaining an efficient and reliable infrastructure. As such, the Company continues to invest significantly in track infrastructure upgrades (approximately \$CDN 1 billion in 2010), we execute and enhance our seasonal readiness plans, and ensure processes and procedures exist to recover from emergency weather situations. Finally, we are working towards creating a more flexible customer-focused operating and service model, which we expect will ultimately enable our customers to gain fuel and carbon efficiencies.

Second, as part of our focus on top line growth, we continue to grow the business to support clean energy markets. We see increased opportunities in the area of sustainable energy products, including biodiesel and wood pellets, as well as equipment and components related to “cleaner” technologies, such as wind turbines and solar panels.

Third, through our focus on smart stakeholder engagement, we are well-positioned to take advantage of the positive climate change conditions impacting the rail industry. For instance, we are increasing customer awareness of government incentive programs for low carbon rail freight solutions, advancing our modal shift quantification protocol that can be used by customers to gain carbon credits for switching from truck to rail.

#### **v) How This Approach is Gaining a Strategic Advantage Over Competitors**

The Company is responding to its climate change risks and opportunities in a way that effectively aligns with our business strategy, enabling us to manage our exposure and position ourselves for growth in a carbon constrained world. Through our business strategy integration of climate change aspects, we are gaining a competitive advantage by continuing to offer the most carbon efficient and productive rail service in North America, enabling our customers to obtain carbon credits from switching freight from truck to rail (the first of its kind in North America), and gaining new market opportunities from an expected increase in products fuelled by a low carbon economy.

## 2. Strategy

---

### Climate Change in Our Business Strategy (continued)

#### **vi) Most Substantial Business Decisions Made During the Reporting That Have Been Influenced by Climate Change Aspects**

The most substantial business decisions made during 2010 that have been influenced by climate change aspects include: investment of \$CDN 225 million on fuel efficient locomotives and improvements to existing fleets, investment of approximately \$CDN 1 billion to ensure the safety and reliability of our rail infrastructures, the implementation of an employee engagement initiative that will include emission and energy management activities, and continued positioning of CN to take advantage of market opportunities for sustainable energy products and cleaner technologies.

## 2. Strategy

### Engaging With Policy Makers

#### 2.3 - 2.3a

Engagement with policy makers to encourage further action on mitigation and/or adaptation.

#### i) Engagement Process

**Method of engagement:** CN has been active at various levels throughout North America engaging with policy makers on responses to climate change. Our methods of engagement include direct participation as an individual company on issues related to carbon trading policy and biofuel specifications. On issues related to emission standards for the locomotive and non-locomotive aspects of our business, we have typically engaged through the respective trade or industry organizations. For example, these can include the Railway Association of Canada, American Association of Railroads, Lake Carriers Association, and various truck associations.

**Topic of engagement:** The general topics of engagement include CN's perspectives on carbon trading regimes, rail industry GHG emission standards and biofuel specifications.

**Nature of engagement:** The nature of engagement can include consultations such as with biofuel specifications, policy research in the case of the Western Climate Initiative, and verbal deliberations, as with the Railway Association of Canada.

#### ii) Actions Advocated

CN has been active at various levels throughout North America engaging with policy makers on responses to climate change, specifically in the area of carbon trading regimes, rail industry GHG emission standards and biofuel specifications. The following provides an overview of our engagements:

##### *Carbon Trading Policy Making Positioning*

**Alberta Government:** We have been actively engaged with the Alberta government's carbon offset program to work with them on the approval of a modal shift quantification protocol that gives shippers emission credits for switching from truck to rail. In 2010, the protocol was enhanced to meet customer specifications and is in the process of being re-approved through the Alberta government.

**British Columbia Government:** CN has been actively engaging with the province of BC through the Pacific Carbon Trust (PCT), to position the modal shift protocol. The protocol was adopted in 2010. Over the next year, we expect to continue to work with the PCT to establish the first modal shifting project.

**Saskatchewan Government:** Over the past year, CN has engaged with the province of Saskatchewan to present the modal shift protocol. It is currently under review.

**Western Climate Initiative:** We have been engaged with the WCI in discussions associated with its regional cap and trade system, and the positioning of rail freight as a viable low carbon transportation alternative. CN believes that involvement in such sessions with leading policy makers in the WCI, moves the transportation sector forward in identifying practical solutions that contribute to or support future policy development in a manner that will foster economic growth, while ensuring significant GHG emission reductions.

##### *Emission Standards Policy Making Positioning*

**Railway Association of Canada (RAC):** Through our membership with the RAC, we have been participating in initiatives to provide GHG emission data and support studies into the carbon benefits of rail freight transport.

**Environment Canada:** We engage with Environment Canada, through our role as the chair of the RAC MOU Management Committee, in discussions regarding future emission standards for locomotives.

**US EPA:** We are involved and continue to engage with the US EPA to reduce emissions and develop action plans to demonstrate progress in meeting our SmartWay agreements.

**Lake Carriers Association and Great Lakes Maritime Task Force:** CN participates on these associations as a major contributing member, playing an active role in shaping policy. In addition, CN has engaged with the US EPA on emission standards and implementation feasibility for shipping vessels as specified under the EPA Rule.

**Truck Associations:** As members of the associations, CN participates on discussions related to climate and fuel efficiency issues. We also receive regular information on fuel conservation in trucking.

##### *Biofuel Specifications*

CN has engaged with a number of provinces including Quebec, BC and Manitoba, on issues related to renewable content in diesel fuels. Through our deliberations, we communicated our concern on the potential for fuel cost increases when the supply of renewable content alternatives is low, and we continue to dialogue on the technical difficulties associated with applying biofuels in rail freight transportation during winter periods.

The background features a light gray network of circles and lines. A central white circle is connected by lines to three other circles: one at the top, one at the bottom, and one to the right. The circle on the right is partially cut off by the edge of the frame.

# Targets and Initiatives

### 3. Targets and Initiatives

#### Intensity Targets and Performance

##### 3.1 - 3.1b

Our intensity target.

| ID  | Scope   | % of emissions in Scope | % reduction from base year | Metric                                                    | Base year | Base year emissions (metric tonnes CO <sub>2</sub> e) | Target year | Comment                                                                                                                                                                                                                                       |
|-----|---------|-------------------------|----------------------------|-----------------------------------------------------------|-----------|-------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 001 | Scope 1 | 85%                     | 5%                         | Other: tonnes of CO <sub>2</sub> per Gross Ton Mile (GTM) | 2007      | 12.82                                                 | 2010        | The target applies to fuel consumption from our rail locomotives. The following provides an overview of our emission intensity history in tCO <sub>2</sub> e / Gross Ton Mile: a) 2007: 12.82; b) 2008: 12.74; c) 2009: 12.23; d) 2010: 11.87 |

##### 3.1c

Change in absolute emissions our target reflects.

| ID  | Direction of change anticipated in absolute Scope 1+2 emissions at target completion? | % change anticipated in absolute Scope 1+2 emissions | Direction of change anticipated in absolute Scope 3 emissions at target completion? | % change anticipated in absolute Scope 3 emissions | Comment                                                                                                                 |
|-----|---------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 001 | Decrease                                                                              | 2%                                                   |                                                                                     |                                                    | Our absolute emission reductions relate to our Scope 1 GHG emissions intensity target of 5% reduction, described above. |

##### 3.1d

Our progress compared to our target.

| ID  | % complete (time) | % complete (emissions) | Comment                                                                                                                       |
|-----|-------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 001 | 100%              | 100%                   | During the reporting year, we met and exceeded our emission intensity goal by attaining a 7% reduction versus a target of 5%. |

### 3. Targets and Initiatives

## Enabling Third Parties to Avoid GHG Emissions

#### 3.2 - 3.2a

How our service directly enables GHG emissions to be avoided by third parties.

#### i) How Emissions Are Avoided

CN has played an active role in the development of a modal shift quantification protocol to provide shippers with carbon credits for shifting long-haul freight from truck to rail. The protocol provides a method of calculating the GHG emission reductions that occur from shifting baseline truck freight to rail locomotives. The protocol has now been approved under the Alberta Greenhouse Gas (GHG) Offset System and the British Columbia cap and trade system, and is awaiting approval with Saskatchewan.

#### ii) Estimated Amount of Emissions Avoided Over Time

To date, the protocol has not yet been used to obtain carbon credits. We are currently working with a customer(s) within the province of British Columbia and Alberta to establish the first modal shifting project. Since the protocol has not yet been applied to obtain credits, there have been no credits validated or verified. In addition, CN will not be involved in the validation or verification of credits. Instead, it will be the responsibility of our customers to ensure the credibility of the credits, since they will ultimately own the credits.

#### iii) Methodology, Assumptions, Emission Factors and Global Warming Potentials Used

The methodology is based on the detailed specifications as defined in the Quantification Protocol for Freight Modal Shifting. The Alberta protocol is located at:

<http://environment.alberta.ca/02286.html>, and the British Columbia protocol is located at:

<http://www.pacificcarbontrust.com/LinkClick.aspx?fileticket=SyA1NMa6DZw%3D&tabid=81&mid=577>

The protocol provides a method for calculating the GHG emission reductions from shifting baseline truck freight transport to project rail freight transport. This activity results in emission reductions given the significantly higher fuel consumption and associated GHG emission rates of trucks as compared to rail per amount and distance of freight shipped.

*Three key assumptions* have been developed to account for the complex array of factors that can influence emissions, as follows:

- First, since complications can arise when there is a lack of data to account for the detailed truck and rail routing configurations, a simplified quantification approach has been developed. The simplified approach uses average and conservative emission factors and assumptions to allow for the recognition of emission reducing modal shifting when detailed per-shipment project data is not available.
- Second, since emission reductions from a single shipment of goods will be very small, the protocol is intended to be used for the aggregation of emission reductions from all shipments initiated by a particular producer or aggregator of goods.
- Third, in order to accurately compare the GHG emissions of rail transport to truck transport, the protocol assumes a common project and baseline function of freight transportation, and a functional unit of revenue ton-kilometres (RTK) shipped, representing the product of the mass of freight shipped and the distance the freight is shipped.

*The emissions sources and sinks* are identified in the protocols.

*Global warming potentials* are those used by Environment Canada.

In addition, we also provide a GHG calculator on the CN website to estimate GHG emissions when shipping with CN versus other transportation modes. In general, the calculator is based on the same quantification methodology as set out in the modal shift quantification protocol, however the value applied for truck weight can be adjusted and is a customizable function in the calculator.

#### iv) Considerations on Generating CERs or ERUs Within the CDM or JI

At this time, we are not considering generating any CERs or ERUs within the CDM or JI of the UNFCCC.

### 3. Targets and Initiatives

#### Emissions Reduction Initiatives

3.3 - 3.3a  
Emissions reduction  
initiatives active within the  
reporting year.

| Activity type                        | Description of activity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transportation: fleet                | <b>Locomotive Fleet Management:</b> Emissions from our locomotive diesel engines represent 85% of our total carbon emissions. These reductions are being made on a voluntary basis and remain an ongoing priority for the company. To target fuel and cost saving efficiencies, we focused our initiatives on our asset-lean precision railroading initiatives, fuel efficient locomotive acquisitions and technology upgrades, efficient operation of the railroad through routing and co-production arrangements, innovative yard efficiencies and fuel conservation practices.                                                                                                                                                                                                                                                                                                         |
| Transportation: fleet                | <b>Trucking Fleet Management:</b> To address our trucking fleet fuel emissions, we have implemented a number of voluntary initiatives to target fuel and cost savings during the period 2010-2014. These initiatives include new truck acquisition specifications on fuel efficiency and efficiency upgrades, preventive maintenance, route optimization, operator training on fuel efficient driving practices, and the optimization of containers and chassis being hauled by our trucks.                                                                                                                                                                                                                                                                                                                                                                                               |
| Transportation: fleet                | <b>On Company Service Fleet Management:</b> To reduce emissions from our OCS fleet, we have in place an annual vehicle replacement program that provides for the purchase of 400 state-of-the-art, fuel-efficient vehicles, including those using alternative power sources, such as hybrids. We are also training our employees to reduce unnecessary vehicle idling, speeding and insufficient vehicle utilization.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Transportation: fleet                | <b>Shipping Vessel Fleet Management:</b> To reduce emissions from our shipping vessel fleet, we are replacing and upgrading existing engines with new fuel-efficient engines, and training ship operators on better practices designed to reduce fuel consumption, such as speeding protocols and operating parameters. These initiatives are being undertaken as part of mandatory EPA requirement and conducted on an ongoing basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Energy efficiency: building services | <b>Building Services:</b> To address our electricity consumption, CN is conducting building consolidation activities and continues to invest on a voluntary basis in the acquisition and installation of energy efficient technologies, particularly lighting, HVAC systems, building controls and more efficient IT systems. These initiatives were implemented from 2003 to 2010.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Energy efficiency: building fabric   | <b>Building Fabric:</b> Increasingly, we look to the Leadership in Energy and Environmental Design (LEED) criteria when we expand or construct new office space. We have various initiatives to implement LEED-inspired offices, which are already an important part of Montreal, Edmonton and Homewood offices.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Process emissions reductions         | <b>New Technologies:</b> CN has directed strategic investments in information technology, which provides a critical foundation for the Company's ongoing efforts to drive innovation and efficiency in our service, cost control, asset utilization and safety, which effectively boosts our company's energy and carbon efficiency.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Transportation: use                  | <b>Business Travel:</b> The Company initiated a voluntary project to implement a multi-point telepresence system between four locations at CN: Montreal, Homewood, Toronto and Edmonton. Through telepresence, CN employees have access to high definition video conferencing, reducing Scope 3 carbon emissions that would otherwise be emitted during travel for face-to-face meetings. The Company implemented the system in 2010, and is expecting results over the next years.                                                                                                                                                                                                                                                                                                                                                                                                       |
| Product design                       | <b>New Engine Technologies:</b> On a voluntary basis, CN actively investigates and adopts new engine technologies that have proved effective in lowering fuel consumption and emissions. Over the last several years, we have continued to monitor our manufacturers in the development of new engine technologies to lower fuel consumption and emissions. New technologies that we are currently monitoring include: hydrogen injection, GENSETs, engine idling technologies, rail lubrication, and alternative fuels, such as liquefied natural gas. Over the past year, CN partnered with General Electric and the Sustainable Development Technology of Canada in the advancement of the next generation of locomotives for GHG reduction. We are also continuing to dialogue with our manufacturers to understand GENSET locomotives and the additional advantages of fuel savings. |
| Behavioral change                    | <b>Employee Engagement:</b> Over the next few years, CN will be implementing an employee engagement program that will focus on communicating and engaging employees on energy conservation practices targeting all aspects of our emissions through Scope 1, Scope 2 and Scope 3. Through this program we expect to continue to encourage employee behaviours that drive energy consumption efficiencies through the operation of our locomotives and non-locomotive vehicles, while also targeting energy consumption in our buildings and rail yards, and through travel.                                                                                                                                                                                                                                                                                                               |

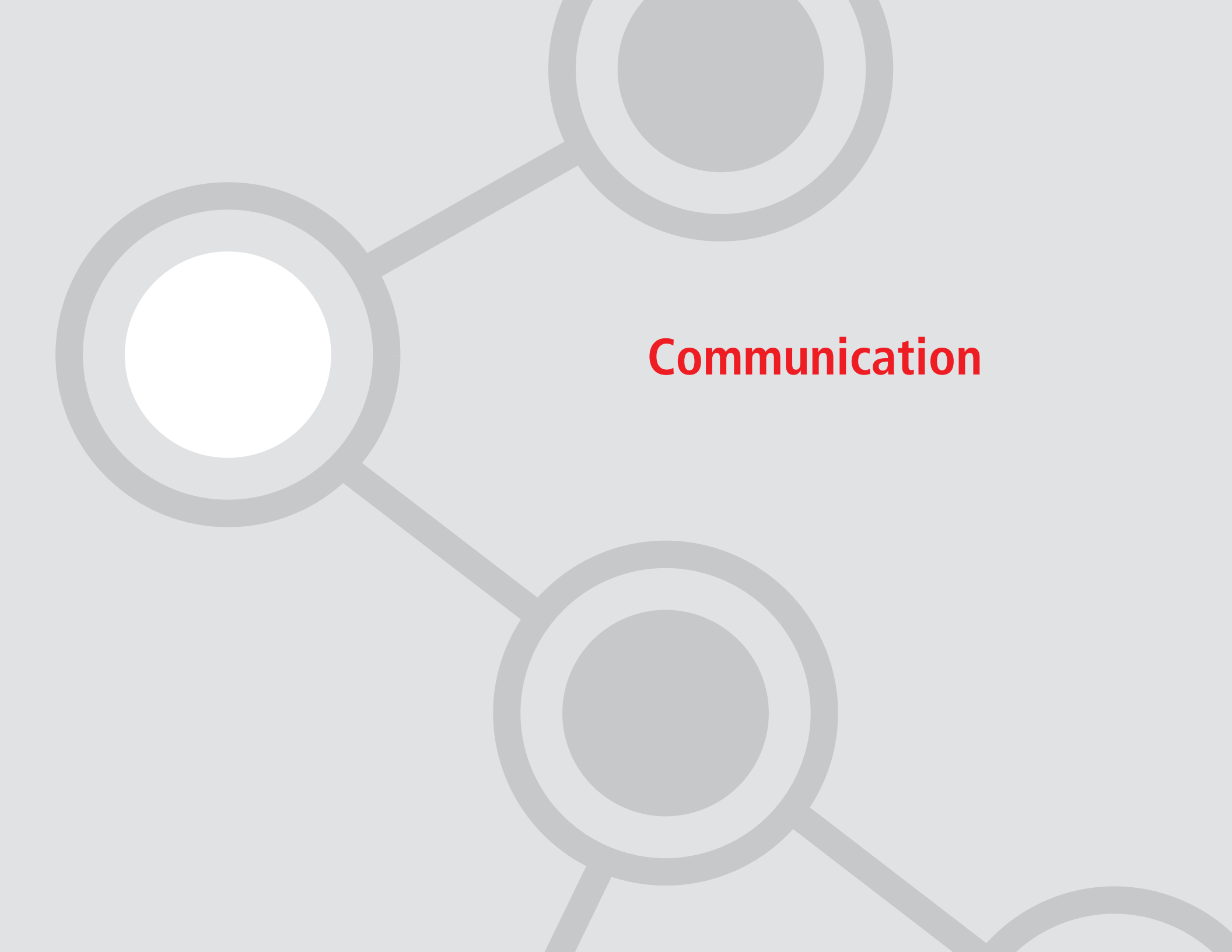
### 3. Targets and Initiatives

#### Investment in Emissions Reduction

##### 3.3b

Methods used to drive investment in emissions reduction activities.

| Method                                                   | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Compliance with regulatory requirements/standards        | Under the MOU with Environment Canada, Class I freight railways are committed to acquire, retire and upgrade locomotives to improve air quality, enhance fuel efficiency and reduce GHG emission intensity. Based on this obligation, we assess our locomotive fleet annually through financial optimization calculations to determine the budget that would be necessary to meet these obligations in the context of our business needs. In 2010, we allocated approximately \$CDN 225 million on fuel efficient locomotives and improvements to existing fleets.                           |
| Dedicated budget for energy efficiency                   | In 2010, we established a 5% energy reduction target at select buildings and yards within our operations. To meet this objective, we identify processes and equipment where the biggest reductions are possible, by reviewing our energy management data information. Once identified, we conduct business analyses to determine the key projects that could support our reduction initiatives. We then assess the projects based on saving potentials, investment needs and return on investment calculations. Through this analysis we select projects and allocate a budget for approval. |
| Dedicated budget for other emission reduction activities | We have established a dedicated budget for various other emission and energy reduction activities as identified in our sustainability action plan. On an annual basis, various department heads and groups, including intermodal, supply management, Great Lakes shipping, and our facilities team, submit their business case investment needs to meet the corporate fuel efficiency and carbon reduction objectives. Based on these analyses, we allocate our dedicated sustainability budget on projects that bring the biggest efficiency or reduction benefits.                         |
| Internal incentives/recognition programs                 | Through our Employee Performance Scorecard, a percentage of the bonus structure is allocated to meeting corporate objectives, including our fuel efficiency objectives. These incentive contributions differ according to employee level within the organization, and the extent to which the employee contributes to meeting objectives.                                                                                                                                                                                                                                                    |
| Partnering with governments on technology development    | The Company remains committed to investing in fuel efficient locomotives and advancements in new and cleaner technology alternatives. As such, we have allocated a specific budget of CDN\$1 million into research into next-generation locomotives. This budget is allocated based on a dedicated R&D budget.                                                                                                                                                                                                                                                                               |

An abstract graphic on a light gray background. It features a network of gray lines connecting several circular nodes. One node on the left is a white circle with a thick gray border. The other nodes are solid gray circles of varying sizes, also with thick gray borders. The lines connect these nodes in a branching pattern, with one line extending from the bottom right towards the edge of the frame.

**Communication**

## 4. Communication

### Climate Change and GHG Emissions Performance

#### 4.1

Information CN has published relating to our responses to climate change and GHG emissions performance.

| Publication                            | Page/Section Reference                         | To view the publication                                                                                                                                                                   |
|----------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| In annual reports (complete)           | Committing to Safety and Sustainability, p. 11 | 2010 Annual Report at <a href="http://www.cn.ca/en/investors-financial-annual-report.htm">http://www.cn.ca/en/investors-financial-annual-report.htm</a>                                   |
| In voluntary communications (complete) | Pages 16-24, Emissions and Energy Efficiency   | 2010 Sustainability Report: <a href="http://www.cn.ca/documents/Corporate_Citizenship/Delivering_Resp_EN.pdf">http://www.cn.ca/documents/Corporate_Citizenship/Delivering_Resp_EN.pdf</a> |
| In voluntary communications (complete) | Pages 66-68, Environment                       | 2009 Investor Fact Book: <a href="http://www.cn.ca/en/investors-financial-fact-book.htm">http://www.cn.ca/en/investors-financial-fact-book.htm</a>                                        |
| In voluntary communications (complete) | Delivering Responsibly section                 | <a href="http://www.cn.ca/en/corporate-citizenship.htm">http://www.cn.ca/en/corporate-citizenship.htm</a>                                                                                 |



# **Risks and Opportunities**

# Risks and Opportunities

## 5. Climate Change Risks

### Regulatory Risks

Regulatory risk exposure is identified based on external regulatory assessments, interactions with governments and industry associations. The significant regulatory risks for the Company have been identified and include voluntary agreements, air pollution limits, fuel / energy taxes and regulations, emission reporting obligations, cap and trade schemes, and uncertainty surrounding new regulations. The regulatory risks were then assessed for significance based on the likelihood of the regulatory risk occurring and the severity of the impact on the Company.

|                         |                    |     |              |              |
|-------------------------|--------------------|-----|--------------|--------------|
| Frequency / Probability | High               |     | 4            | 3            |
|                         | Medium             |     |              | 5            |
|                         | Low                |     | 6<br>7<br>11 | 1<br>2<br>12 |
|                         |                    | Low | Medium       | High         |
|                         | Severity of Impact |     |              |              |

#### Voluntary Agreements

1. Canadian MOU on rail emissions
2. US SmartWay Agreement

#### Air Pollution Limits

3. USEPA locomotive standards
4. USEPA vessel standards
5. Canada proposed standards
6. Heavy duty vehicle standards (pending)
7. Light duty vehicle standards
8. Canadian rail yard standards

#### Fuel Energy Taxes and Regulations

9. Renewable fuel content standards
10. Fuel carbon tax

#### Emission Reporting Obligations

11. EU Aviation Directive

#### Cap and Trade Schemes

12. Western Climate Initiative (WCI)

#### Uncertainty Surrounding New Regulations

13. US Climate Bill
14. Canadian federal and provincial regulations

|  |                                                                               |
|--|-------------------------------------------------------------------------------|
|  | High significance - disclosure and alignment with business strategy           |
|  | Medium-high significance - disclosure                                         |
|  | Medium low significance, disclosure depends on risk perception of the Company |
|  | Not significant, disclosure not required                                      |

# Risks and Opportunities

## 5. Climate Change Risks

### Regulatory Risks (continued)

5.1 - 5.1a  
Risks driven by changes in regulation.

| ID    | Risk driver                       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01REG | Voluntary agreements              | CN is committed to its MOU obligations under Environment Canada and Transport Canada. Through the MOU, Class I freight railways are committed to acquire, retire and upgrade locomotives, to improve air quality, enhance fuel efficiency and reduce GHG emission intensity.                                                                                                                                                                                                                                                                                                                                        |
| 02REG | Voluntary agreements              | CN is a signatory to the US SmartWay Agreement, a voluntary program between the US EPA and the rail industry to increase energy efficiency and reduce air pollution and GHG emissions. The goal of the program is to eliminate between 33-60 million metric tonnes of CO <sub>2</sub> emissions and up to 200,000 tonnes of NOx emissions per year in the US by 2012.                                                                                                                                                                                                                                               |
| 03REG | Air pollution limits              | In the US, CN's locomotive emissions are regulated by the US EPA, which sets emission standards for newly manufactured and re-manufactured off-road engines, covering Sulphur Dioxides (SO <sub>2</sub> ) Nitrogen Oxides (NOx), Hydrocarbons (HCs), Particulate Matter (PM), and Carbon Monoxide (CO). In 2008, the EPA adopted even more stringent locomotive Tier 4 emission standards on PM and NOx, with an additional requirement that mandates the application of idle emission controls on newly manufactured and remanufactured engines.                                                                   |
| 04REG | Air pollution limits              | Once our Memorandum of Understanding on locomotive emissions standards with the RAC expires in 2010, the Canadian government has expressed its intention to put in place emission standards similar to those established under the US EPA, expanding the scope of requirements into Canada.                                                                                                                                                                                                                                                                                                                         |
| 05REG | Fuel/energy taxes and regulations | There has been a national movement throughout Canada to increase the percentage of renewable content in diesel fuel at both the federal and provincial levels of government. Renewable content in diesel fuel could expose the Company to potential fuel price increases when renewable content is in limited supply. Furthermore, where renewable fuel content exceeds a 10% blend our manufacturers have indicated that locomotive engine functioning could be comprised. While CN is currently excluded from the BC renewable fuel content regulations, we are not exempt from the Canadian federal regulations. |
| 06REG | Fuel/energy taxes and regulations | In British Columbia, the Carbon Tax Act taxes the GHGs emitted from the use of virtually all fossil fuels, including diesel. In 2008, the taxation rate was established at \$10 per tonne, and is expected to increase by \$5 per year for the next four years. In 2010 the taxation rate increased to \$20 per tonne.                                                                                                                                                                                                                                                                                              |

# Risks and Opportunities

## 5. Climate Change Risks

### Regulatory Risks (continued)

#### 5.1b

Potential financial implications of risk before taking action, methods used to manage risk, and associated costs.

#### Voluntary Agreements (01- REG and 02-REG)

**Financial implications of the risk:** Not meeting our voluntary obligations through the MOU with Environment Canada and SmartWay Agreement with the US EPA, could expose the Company to reputational risks, increase operational costs over the long-term through more restrictive regulatory requirements.

**Methods to manage the risk:** In accordance with the MOU (01-REG), CN established an intensity target of 5% (tCO<sub>2</sub>e/GTM) by 2010, based on 2007 levels. In order to meet this objective, we implemented a number of emission reduction programs, described in Q.3.3a. To demonstrate our SmartWay commitments (02-REG), we developed and implemented an action plan outlining various performance improvement projects, including employee awareness on fuel conservation, improved train handling procedures, and reduced engine idling.

**Costs associated with these risks:** The Company invested CDN\$ 225 million in 2010 as part of our locomotive acquisitions, retirements and upgrade strategy. Doing so enables us to meet our voluntary agreement obligations, while minimizing GHG emissions and increasing fuel efficiency.

#### Air Pollution Limits – Emission Standards on Locomotives (03- REG and 04-REG)

**Financial implications of the risk:** Non-compliance with locomotive emissions standards would expose the Company to administrative penalties, such as fines, as well as loss of some business due to locomotive shutdowns.

**Methods to manage risks:** To meet the US EPA emission standards (03-REG), we purchase only tier-compliant engines. Since 1995, we have acquired 631 new locomotives of which 90 were acquired in the 2009-2010 period. These locomotives enable us to meet Tier 2 regulatory obligations. To meet the more stringent Tier 4 standards, we are working with our manufacturers in the development of new engine technologies that can effectively lower fuel consumption and emissions. Our efforts to meet the US EPA emission standards will enable us to comply with the Canadian emission standards (04-REG), which we understand will be similar to the US EPA standards.

**Costs associated with these risks:** The Company invests CDN\$ 225 million annually as part of our locomotive acquisitions, retirements and upgrades strategy. Doing so enables us to meet locomotive emission standards.

#### Fuel / Energy Taxes and Regulations – Renewable Fuel Content Regulations (05-REG)

**Financial implications of the risk:** Renewable content in diesel fuel could expose the Company to potential fuel price increases when renewable content is in limited supply.

**Methods to manage risks:** We are working with our engine suppliers to see what type of additives would be needed if renewable fuel blends exceed the 10% threshold. We are also trying to understand the impacts on locomotive engine functioning.

**Costs associated with these risks:** At this time, we have not had to incur costs associated with the R&D activities of our manufacturers.

#### Fuel / Energy Taxes and Regulations – Fuel Carbon Tax (06-REG)

**Financial implications of the risk:** In BC, the Carbon Tax Act - Bill 37, taxes GHGs emitted from the use of virtually all fossil fuels. In 2010, the taxation rate increased to \$20 per tonne.

**Methods to manage risk:** Our customers shipping freight within BC are obligated to pay a carbon surcharge to cover the carbon taxation costs for freight shipped within the province. For CN, the introduction of the tax in BC has prompted greater attention to the accuracy of our fuel data management system. Over the next three years, we will be enhancing our fuel management reconciliation system in order to gain a better understanding of fuel inventory variations.

**Costs associated with these risks:** Currently the costs associated with the carbon tax are passed through to our customers.

# Risks and Opportunities

## 5. Climate Change Risks

### Risks From Physical Climate Parameters

At CN, we recognize that climate change, including the impacts of global warming, could increase the frequency of adverse weather events. Severe weather and natural disasters, such as extreme cold and extreme heat, flooding, drought, and hurricanes, can disrupt operations and service for the railroad, affecting the performance of locomotives, rolling stock, and the physical plant, as well as disrupting operations for the Company's customers. The following diagram and section provides an overview of significant climate change related physical risks that are impacting, or have the potential to impact CN's operations, and the actions taken to manage these risks.

|                         |                    |     |        |        |
|-------------------------|--------------------|-----|--------|--------|
| Frequency / Probability | High               |     |        |        |
|                         | Medium             | 5   | 2<br>3 | 1<br>4 |
|                         | Low                | 9   | 6      | 7<br>8 |
|                         |                    | Low | Medium | High   |
|                         | Severity of Impact |     |        |        |

#### Changes in Frequency of Weather Events

1. Network Infrastructure / Productivity
2. Asset Vulnerability
3. Insurance Cost Increases

#### Changes in Precipitation Patterns

4. Track operating efficiency

#### Induced Changes in Supply Chain and / or Customers

5. Risk of energy shortages and cost increases
6. Raw materials / equipment supplies

#### Induced Changes in Natural Resources

7. Commodity market changes
8. Network efficiency risks from high sea levels
9. Declining navigational waters

|  |                                                                               |
|--|-------------------------------------------------------------------------------|
|  | High significance - disclosure and alignment with business strategy           |
|  | Medium-high significance - disclosure                                         |
|  | Medium low significance, disclosure depends on risk perception of the Company |
|  | Not significant, disclosure not required                                      |

# Risks and Opportunities

## 5. Climate Change Risks

### Risks From Physical Climate Parameters (continued)

5.1c  
Risks driven by change in  
physical climate  
parameters.

| ID    | Risk driver                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01PHY | Change in temperature extremes                | Extreme temperatures, especially, can present a significant risk to our network infrastructure. For instance, if a rail heats more than 33°C above its neutral temperature, rail misalignments and track buckling are possible from thermal rail expansions. On the other hand, extreme cold can also present potential risks from track freezing, which result in greater frequencies of broken rails, frozen switches, and high rates of wheel replacements. Extreme cold temperatures are particularly frequent in the northern Canada regions, while extreme hot temperatures are particularly common in the southern parts of the US as well as parts of the Canadian prairies. In such instances, there have been cases when CN has had to shut down significant portions of the network, exposing the Company to operational and financial risks. As the frequency and severity of extreme weather events increase, and insurers are forced to contend with greater uncertainty, insurance premiums in general could rise, adversely affecting the Company financials. Network disruptions and increasing costs associated with the frequency of weather events could further adversely affect customer deliveries and efficiencies. |
| 02PHY | Tropical cyclones                             | Our sites and networks are located within the US Tornado Belt, making us vulnerable to increases in tornado occurrences and intensity. This is particularly the case throughout the Midwest and the New Orleans area. For instance, during hurricane Katrina, we were subjected to disruptions in our operations. Not only were we unable to access our fuelling stations, but we also experienced damage to infrastructure and property.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 03PHY | Change in precipitation extremes and droughts | Over the past years, the Company has experienced increases in intense precipitation, leading to more pronounced episodes of flooding, landslides in unstable mountainous regions, and mud slides. Such episodes can be disruptive to our operations. Flooding can be damaging to rail bed support structures and cause overflows onto tracks. Landslides and mud slides can be especially damaging to our rail tracks. In previous years, severe flooding in Eastern Canada, as well as in the Chicago, Illinois area, was particularly disruptive to our infrastructure resulting in service disruptions. Meanwhile, extensive winter rain with accompanying mud slides led to the closure of some of our networks in Western Canada. Warming temperatures could result in significant declines in navigational waters, particularly along the St. Lawrence-Great Lakes Seaway, Gulf Coast, and the Mississippi River. Navigational interruptions from ice, floods, and droughts could adversely impact CN's shipping traffic and rates.                                                                                                                                                                                                   |
| 04PHY | Sea level rise                                | The IPCC projections suggest that average global sea level is expected to rise with considerable regional variations. Based on studies by Natural Resources Canada, higher mean sea levels, coupled with high tides and storm surges could severely impact transportation infrastructure, resulting in service disruptions. CN has a number of port locations that could be vulnerable to rising sea levels, including our operations at Halifax, Prince Rupert, Vancouver and New Orleans. Furthermore, rising sea levels could result in more frequent flooding of railroads near estuaries during high tides and storms, which could disrupt operations and service. We do not expect sea level rises to have an immediate impact on our business, as these risks are more likely to occur well into the future.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 05PHY | Induced changes in natural resources          | Supply disruptions and biodiesel shortages due to changing weather patterns could make the Company susceptible to the volatility of fuel prices. Rising fuel prices could adversely affect the Company's expenses. Furthermore, changing weather conditions could adversely impact the types and volumes of products that we ship. For example, severe drought conditions in Western Canada significantly reduced the quantity and quality of the grain crop and agricultural products, which impacted CN's volumes and associated revenues. Further, an increase in precipitation during the early spring season combined with an above average snow pack led to significant flooding in Illinois and Iowa. The flooding delayed spring planting, which ultimately resulted in a later crop harvest. As such, the normal timing of our commodity shipments was impacted.                                                                                                                                                                                                                                                                                                                                                                   |

# Risks and Opportunities

## 5. Climate Change Risks

### Risks From Physical Climate Parameters (continued)

#### 5.1d

Potential financial implications of risk before taking action, methods used to manage risk, and associated costs.

#### Changes in Temperature Extremes (01-PHY)

**Financial implications of the risk:** The financial implications of extreme temperature conditions could result in the loss of business revenues from specific commodity groups.

**Methods to manage risks:** CN has put in place a number of programs to respond to such extreme weather events. For instance, summer and winter readiness plans have been established that include procedures for train speed, train length and weight, inspections, rail replacements, de-stressing, and fire-prevention and response. Furthermore, our engineering department ensures the productivity and fluidity of the network through continued testing of our tracks, additions of ultrasonic rail flaw detectors, increased sightline and surface inspections, and computerized track inspection logs. We also installed weather stations to monitor outside temperatures and humidity.

**Costs associated with these actions:** Year over year, CN expends considerable costs towards the maintenance of its infrastructure to protect the company assets from wear and tear that could be attributable to changes in climate. In 2010, CN invested CDN\$ 1 billion to ensure the safety and reliability of our rail infrastructure.

#### Tropical Cyclones (02-PHY)

**Financial Implications of the risk:** The financial implications of tropical cyclones could result in the loss of business revenues from specific commodity groups.

**Methods to manage risk:** On an ongoing basis, our teams review and update our emergency response planning procedures to address extreme weather patterns, including hurricanes. This has included the redesign of fuelling station locations as well as providing the necessary back-up IT systems. Furthermore, our field forces have ready access to a 24-hour weather forecasting and advisory service using the Smartrad weather warning service.

**Costs associated with these actions:** In 2010, CN invested approximately CDN\$ 1.7 billion on capital expenditures, of which close to CDN\$ 1 billion was targeted towards operating a safe railway, including investments into emergency response programs, IT and weather monitoring programs.

#### Changes in Precipitation Extremes and Droughts (03-REG)

**Financial implications of the risk:** The financial implications of precipitation extremes and droughts could result in the loss of business revenues related to specific commodity groups.

**Methods to manage risk:** Through our winter, summer and spring operating plans, our engineering department conducts ongoing rail inspections to check for obstructed waterways, water pooling near roadbeds, evidence of roadbed or bank erosion, unusually high and/or

turbulent water adjacent to the track, and changes in normal draining patterns. We have also installed natural hazard warning systems to detect and report on slides or track hazards in known sensitive areas, such as in the BC corridors. For example, we constructed slide fences that activate alarms if rock or debris fall on the track, warning approaching trains of a hazard. We also built tip-over posts to detect larger movement of debris such as those from mud slides. CN is also well-placed to address reduced vessel traffic volumes that may occur as a result of extreme drought conditions given our ability to provide both locomotive and truck freight transport alternative services.

**Costs associated with these actions:** In 2010, CN invested approximately CDN\$ 1.7 billion on capital expenditures, of which close to CDN\$ 1 billion was targeted towards operating a safe railway, including addressing adverse impacts resulting from changing climatic patterns.

#### Sea Level Rise (04-PHY)

**Financial implications associated with the risk:** The financial implications of sea level rise could result in the loss of business revenues that depend on the respective shipping routes.

**Methods to manage risk:** As described, we have well-developed spring and summer readiness plans, which include established procedures for flooding and storm activity. We continue to monitor sea level rising trends and remain committed to ensuring that network updates take these risks into consideration.

**Costs associated with these actions:** In 2010, CN invested approximately CDN\$ 1.7 billion on capital expenditures, of which close to CDN\$ 1 billion was targeted towards operating a safe railway, including addressing adverse impacts resulting from changing climate patterns.

#### Induced Changes in Natural Resources (05-PHY)

**Financial implications associated with the risk:** The financial implications from changes in natural resources could result in the losses related to specific commodity markets that we ship.

**Methods to manage risk:** The Company maintains a diversified portfolio of commodities and customers. This, along with a strong transportation service offering, can help to mitigate any potential negative impact of climate change on our overall revenue performance. To address fuel cost increases, CN has implemented a fuel surcharge program with the view of offsetting the impact of rising fuel prices.

**Costs associated with these actions:** The costs associated with offering a diversified portfolio of commodity markets and the fuel surcharge program is integrated into the Company's operating costs.

# Risks and Opportunities

## 5. Climate Change Risks

### Risks Driven by Changes in Other Climate-Related Developments

In the normal course of business, CN is exposed to various other climate change risks, which are identified through the Company's annual risk management process. Through this process, CN's Corporate Environment Department plays an integral role in identifying other climate change risks based on the results of operational and maintenance programs, as well as ongoing environmental audits. Figure 3 depicts the other climate change risks.

|                         |                    |     |             |        |
|-------------------------|--------------------|-----|-------------|--------|
| Frequency / Probability | High               |     |             |        |
|                         | Medium             |     | 2<br>5      | 1<br>4 |
|                         | Low                |     | 6<br>7<br>3 |        |
|                         |                    | Low | Medium      | High   |
|                         | Severity of Impact |     |             |        |

|  |                                                                               |
|--|-------------------------------------------------------------------------------|
|  | High significance - disclosure and alignment with business strategy           |
|  | Medium-high significance - disclosure                                         |
|  | Medium low significance, disclosure depends on risk perception of the Company |
|  | Not significant, disclosure not required                                      |

#### Market Risk

1. Changing customer demands
2. Economic conditions
3. Credit risk
4. Competition from other carriers

#### Changes in the availability and costs of goods and services

5. Dependence on diesel fuel as an energy source

#### Reputational Risks and Regulations

6. Reputation associated with the shipment of carbon intensive goods and services

#### Security Risks

7. Loss or damage to assets associated with carbon intensive goods and services

# Risks and Opportunities

## 5. Climate Change Risks

### Risks Driven by Changes in Other Climate-Related Developments (continued)

5.1e  
Risks driven by changes in other climate-related developments.

| ID    | Risk driver                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 010TH | Reputation                    | Given the environmental advantages that rail freight provides over other modes of transport, the Company could face competition from rail carriers that effectively market and differentiate themselves as the lowest carbon freight service offering. Competition from other railroad carriers could impact volumes, revenues and profit margins.                                                                                                                                                                                                                                                                                                                                                                                                          |
| 020TH | Changing consumer behaviour   | With growing awareness and concern for climate change, consumer demands for low carbon and more responsible products are growing throughout Europe and North America. With these demands have come increasing pressures on our customers to demonstrate the carbon impacts of their products, including aspects of their distribution networks. In fact, some large multinational retailers and manufacturers are already starting to pre-select their suppliers based on environmental criteria that include carbon criteria within the distribution network. Furthermore, US states, in particular California, have put in place low carbon fuel standards (LCFS) which could indirectly impact oil and gas companies from a public relations standpoint. |
| 030TH | Reputation                    | With increasing public concern for the environment, the Company is exposed to reputational risks from stakeholders that hold the Company accountable for carbon intensive products that we may transport. As a rail common carrier, we have a duty to carry all freight, as long as there are no reasonable grounds to refuse to do so. Therefore, railroads cannot generally refuse to transport a commodity based on its specific characteristics. The Company is committed to being a good corporate citizen, and providing carbon efficient transport and logistic services to our customers in a way that ensures safety and respect for the environment.                                                                                              |
| 040TH | Uncertainty in market signals | The Company's operations, and in particular the running of our locomotives, are currently dependent on the availability of diesel. Declining oil reserves, which may impact the available supply of diesel fuel, could pose a risk on the Company's ability to operate. While we do not consider this risk to materialize in the short- to medium-term, we are monitoring developments on alternative fuel sources with interest.                                                                                                                                                                                                                                                                                                                           |

# Risks and Opportunities

## 5. Climate Change Risks

### Risks Driven by Changes in Other Climate-Related Developments (continued)

#### 5.1f

Potential financial implications of risk before taking action, methods used to manage risk, and associated costs.

#### Competition from Other Carriers (01-OTH)

**Financial implications of the risk:** Competition from other carriers could result in reduced demand for our services.

**Methods to manage risk:** We work with our customers to not only demonstrate the carbon benefits of rail freight, but to also differentiate ourselves in the marketplace as the most fuel-efficient service provider. To further communicate the carbon benefits of rail, we introduced a GHG calculator to estimate the carbon emissions for shipments using a combination of vessel, rail and truck. Please refer to <http://www.cn.ca/environment-rail-locomotive-greenhouse-gas-calculator.htm>.

**Costs associated with these actions:** Year over year, CN expends considerable costs, up to \$225 million, to ensure we operate the most fuel efficient railroad. In addition, we also expend costs into marketing the low carbon freight advantages of shipping by rail versus other transportation modes, which is part of our overall operating budget.

#### Changing Consumer Demands (02-OTH)

**Financial implications of risk:** Changes in consumer demand, including a focus on low carbon solutions, could adversely affect our volumes.

**Methods to manage risk:** The Company is well-positioned to manage this risk as we benefit from a diversified portfolio of business, both in terms of the commodities that we ship and the customers that we service, as well as our broad geographic scope. Additionally, we continue to demonstrate to customers the carbon benefits of rail freight transportation. We have also increased our participation in sustainable product markets, including: ethanol; recycled and new forest products such as wood pellets; wood pulp; wind turbines; and biodiesel.

**Costs associated with these actions:** The costs associated with communicating with our customers, and continuing to offer a diversified portfolio of commodity markets is integrated into the Company's operating costs.

#### Reputation (03-OTH)

**Financial implications of risk:** The financial implications of not shipping goods could impact our reputation and business related to carbon intensive goods.

**Methods to manage risk:** As a rail common carrier, we have a duty to carry all freight, as long as there are no reasonable grounds to refuse to do so. Railroads cannot generally refuse to transport a commodity based on its specific characteristics. The Company is committed to being a good corporate citizen, and providing carbon efficient transport and logistic services to our customers in a way that ensures safety and respect for the environment.

**Costs associated with these actions:** We have developed a sustainability action plan and assigned costs to various aspects of our business to enhance our sustainability performance that has implications on our customer shipments.

#### Changes in the Availability and Costs of Goods and Services (04-OTH)

**Financial implications of risk:** A reliance on fossil fuel could expose our customers to fuel price volatility and increases, adversely impacting business.

**Method to manage risk:** We are committed to exploring renewable alternative by supporting and monitoring research towards cleaner alternative energy sources, including liquid natural gas, fuel cell power natural gas, and biodiesel fuels.

**Costs associated with these actions:** We are investing CDN\$1 million into next generation locomotives, which includes renewable fuel alternatives.

# Risks and Opportunities

## 6. Climate Change Opportunities

### Regulatory Opportunities

Regulatory opportunities related to climate change are typically identified through our work with government authorities, various stakeholders, and third-party reviews. Based on our review, CN has identified the following regulatory opportunities.

| Frequency / Probability | High               |     | <div>6</div> <div>7</div> <div>10</div> <div>13</div> <div>2</div> <div>3</div> <div>9</div> <div>12</div> |      |
|-------------------------|--------------------|-----|------------------------------------------------------------------------------------------------------------|------|
|                         | Medium             |     | <div>11</div> <div>4</div> <div>8</div> <div>1</div> <div>5</div>                                          |      |
|                         | Low                |     |                                                                                                            |      |
|                         |                    | Low | Medium                                                                                                     | High |
|                         | Severity of Impact |     |                                                                                                            |      |

|  |                                                                               |
|--|-------------------------------------------------------------------------------|
|  | High significance - disclosure and alignment with business strategy           |
|  | Medium-high significance - disclosure                                         |
|  | Medium low significance, disclosure depends on risk perception of the Company |
|  | Not significant, disclosure not required                                      |

#### Voluntary Agreements

1. Canadian MOU on rail emissions and the US Smart Way Agreement

#### Cap and Trade Schemes

2. Alberta Climate Change and Emissions Act
3. British Columbia GHG Act
4. Quebec Bill 42
5. Western Climate Initiative (WCI)

#### Air Pollution Limits

6. USEPA Off-road Emission Standards

#### Fuel Energy Taxes

7. B.C. Carbon Tax Act – Bill 37
8. Renewable Fuel Content

#### Indirect Exposure through Customers and Suppliers

9. Walmart Sustainability Questionnaire
10. Carbon Disclosure Project
11. Climate Bill
12. Low Carbon fuel Standard
13. Government policies supporting rail freight

# Risks and Opportunities

## 6. Climate Change Opportunities

### Regulatory Opportunities (continued)

6.1 - 6.1a  
Opportunities driven by  
changes in regulation.

| ID    | Opportunity driver       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01REG | Voluntary agreements     | As part of our ongoing voluntary commitments under the Canadian MOU and the US SmartWay Agreement, opportunities exist to realize long-term carbon efficiencies and significant fuel savings through our locomotive fleet management strategy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 02REG | Cap and trade schemes    | The cap and trade schemes developing in Canada, particularly through the WCI, present an important opportunity for CN in positioning the modal shift quantification protocol for switching long-haul truck freight to rail. Already the provinces of Alberta, British Columbia, Saskatchewan, Ontario and Quebec have put into effect regulations that align with the setting up of a cap and trade scheme through the WCI. The protocol has been adopted by the provinces of Alberta and British Columbia and is currently under consideration with the province of Saskatchewan. By positioning the protocol for approval throughout North America, CN's customers can benefit from the carbon credits associated with shifting truck freight traffic to rail.                                    |
| 03REG | Voluntary agreements     | There are growing pressures to manage the carbon impacts throughout the supply chain. Leading multinational and manufacturing companies are already setting environmental pre-selection criteria for their suppliers. For example, Walmart has invited its suppliers to report their GHGs and reduction targets as part of its sustainability index for Walmart products. In addition, the CDP recently came out with a supply chain questionnaire, endorsed by Walmart and other leading multinational organizations, to enable companies to capture supplier emissions. These requirements present an important opportunity for CN to enhance our reputation and gain market share by demonstrating to our customers and other stakeholders CN's low carbon rail freight transportation solution. |
| 04REG | Other regulatory drivers | With increasing support for low carbon transportation and logistics services from North American governments, opportunities exist to enhance the positioning of CN's rail freight transportation as the 'greener choice.' For example, as part of its 2006-2012 action plan on climate change, the Quebec government created an assistance program to support transportation companies and organizations in their efforts to improve energy efficiency and lower GHGs. We are also starting to see similar developments evolving in other North American states and provinces, including New Brunswick, Illinois, Minnesota, and Wisconsin.                                                                                                                                                         |

# Risks and Opportunities

## 6. Climate Change Opportunities

### Regulatory Opportunities (continued)

#### 6.1b

Potential financial implications of opportunity, methods used to manage opportunity, and associated costs.

#### Voluntary Agreements (01-REG)

**Financial implications of opportunity:** Our voluntary agreements drivers play a role in our fuel efficiency reductions.

**Method to manage opportunity:** To increase our fuel efficiency, we have implemented various initiatives that have resulted in fuel savings. This has included the implementation of fuel efficiency measures, such as improved train handling, the inherent improvements in diesel engine thermal efficiency, reduced 'parasitic' losses in the locomotive auxiliaries, high horse power capacities allowing longer / heavier trains, train operation with Dynamic Brakes, train consolidations facilitated by 'Distributed Power' and the acquisition of more fuel efficient locomotives.

**Cost associated with opportunity:** The Company invested CDN\$ 225 million in 2010 as part of our locomotive acquisitions, retirements and upgrade strategy. Doing so enables us to meet our voluntary agreement obligations, while minimizing GHG emissions and increasing fuel efficiency.

#### Cap and Trade Schemes (02-REG)

**Financial implication of opportunity:** The protocol provides an opportunity for CN to grow revenue from customers exposed to various regulatory or other requirements that are driving the need to control their Scope 3 emissions.

**Method to manage opportunity:** Over the past year, CN has been engaging with the province of Saskatchewan as well as the WCI and its member provinces and states to present the freight modal shift protocol for review and adoption. We are also actively engaging with our customers to improve the carbon footprint of our customer's shipments and increase our revenues from modal shift.

**Cost associated with action:** The costs associated with communicating with our customers, and exploring opportunities to benefit from government funding have been included in marketing and sustainability functional budgets.

#### Customer and Supplier Requirements (03-REG)

**Financial implication of opportunity:** Through an enhanced reputation we expect to both increase revenues as well as our share price and investor returns.

**Method to manage opportunity:** CN has developed and enhanced its GHG calculator to enable customers to measure the GHGs from rail, marine and truck transportation; the first of its kind in the industry. Further, with the development of a modal shift rail freight protocol, ongoing strategic partnerships and engagement with stakeholders, as well as our own operational efficiency, we have significantly improved our visibility and reputation as a leader in fuel efficiency.

**Cost associated with these actions:** The costs associated with developing the GHG calculator and modal shift protocol was part of our overall operating budget.

#### Government Policies That Support Rail Freight (04-REG)

**Financial implication of opportunity:** Government incentives towards low carbon transportation and logistics services could reduce costs for our customers, while allowing CN to increase our market share.

**Method to manage opportunity:** In order to maximize government support for low carbon transportation and logistics services, we have been increasing customer awareness of government incentive programs, including those offered by the Quebec government. Furthermore, CN also expects to benefit from government funding to support our initiatives to enhance our locomotive, truck and shipping fleets towards greater fuel efficiency.

**Costs associated with the action:** The costs associated with communicating with our customers, and exploring opportunities to benefit from government funding have been included in marketing and sustainability functional budgets.

# Risks and Opportunities

## 6. Climate Change Opportunities

### Climate Parameters Opportunities

At CN, we also recognize that while physical changes resulting from climate change could present important opportunities for our business. The Sales and Marketing Department typically identifies opportunities to grow revenues, while various departments throughout the Company typically identify areas for cost savings. Opportunities that could present significant benefits to the Company are included in our planning process and are generally discussed at the regular meetings of the Executive Committee. The following section provides an overview of physical opportunities that are, or could impact, CN's operations.

|                         |                    |     |        |      |
|-------------------------|--------------------|-----|--------|------|
| Frequency / Probability | High               |     | ③<br>① |      |
|                         | Medium             |     |        |      |
|                         | Low                |     | ②<br>④ |      |
|                         |                    | Low | Medium | High |
|                         | Severity of Impact |     |        |      |

#### Induced changes in natural resources and amenities

1. Increase in agriculture and feedstock from warming climates
2. Competitive advantage from declining navigational waters
3. Volume growth of lumber in pine beetle-affected areas
4. Energy savings from warmer climates

|  |                                                                               |
|--|-------------------------------------------------------------------------------|
|  | High significance - disclosure and alignment with business strategy           |
|  | Medium-high significance - disclosure                                         |
|  | Medium low significance, disclosure depends on risk perception of the Company |
|  | Not significant, disclosure not required                                      |

# Risks and Opportunities

## 6. Climate Change Opportunities

### Climate Parameters Opportunities (continued)

**6.1c**  
Opportunities driven by changes in physical climate parameters.

| ID    | Opportunity driver                            | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01PHY | Change in mean (average) temperature          | A warmer climate could lengthen growing seasons and increase the availability of agricultural and forest feedstock. These opportunities could be especially important within the prairie regions of Canada, lengthening growing seasons and increasing crop production in northern regions where suitable soils exist. We continue to monitor warming trends and the impact on agriculture and forest feedstock revenues.                                                                                                                                                                                                                               |
| 02PHY | Change in precipitation extremes and droughts | Warming temperatures could result in significant declines in navigational waters, particularly along the St. Lawrence-Great Lakes Seaway, Gulf Coast, and the Mississippi River. These declines could impact barge traffic and present a competitive advantage for our rail and intermodal operations, particularly in terms of coal and grain. Barge competition and barge rates can be adversely affected by navigational interruptions from ice, floods, and droughts. As such, warming temperatures and their impact on navigational waters could increase our traffic volumes when shipping alternatives are not possible due to climatic changes. |
| 03PHY | Change in mean (average) temperature          | Warmer winters could result in decreased fuel consumption needs for rail locomotives and trucks during the winter months. In addition, reduced energy needs within our yards and business operations, could also provide reduced heating costs and ultimately fewer GHG emissions. The positive impact of warming trends on fuel and energy consumption is not expected in the immediate short-term.                                                                                                                                                                                                                                                    |

**6.1d**  
Potential financial implications of opportunity, methods used to manage opportunity, and associated costs.

#### Changes in Mean Average Temperature (01-PHY)

**Financial implication of opportunity:** A warmer climate could lengthen growing seasons and increase the availability of agricultural and forest feedstock from our customers, increasing commodity markets for the freight we transport. Given the geographic scope and nature of our operations, it is difficult to quantify the revenue increase potentials.

**Method to manage opportunity:** We continue to monitor warming trends and the impact on commodity groups, such as agriculture and forest feedstock, that could be impacted from changing climates. With a diversified portfolio of business from a variety of commodity groups, CN has been able to offset the impacts of climate change.

**Costs associated with these actions:** No specific costs or actions have been associated with this opportunity.

#### Changes in Precipitation Extremes and Droughts (02-PHY)

**Financial implication of opportunity:** Warming temperatures and their impact on navigational waters could increase our traffic volumes when shipping alternatives are not possible due to climatic changes. Given the geographic scope and nature of our operations, it is difficult to quantify the revenue increase potentials from increased traffic volumes.

**Method to manage opportunity:** We continue to market our rail services within the area of the Great Lakes, and maintain a competitive advantage, as we are one of the only railroads with capabilities to ship by rail in the region.

**Costs associated with this action:** No specific costs or actions have been associated with this opportunity.

#### Energy Savings From Warmer Temperatures (03-PHY)

**Financial implication of opportunity:** Warmer winters could result in decreased fuel consumption needs for rail locomotives and trucks during the winter months. In addition, reduced energy needs within our yards and business operations, could also provide reduced heating costs and ultimately fewer GHG emissions. These types of cost reductions are difficult to monetize.

**Method to manage opportunity:** The positive impact of warming trends on fuel and energy consumption has already been experienced during isolated years. We continue to monitor warming impacts on our fuel and energy consumption to determine any historical trends.

**Costs associated with these actions:** There have been no costs associated with this action.

# Risks and Opportunities

## 6. Climate Change Opportunities

### Opportunities From Climate-Related Developments

Other opportunities related to climate change are typically identified by a variety of internal departments. Business opportunities that are considered significant to the business are itemized and addressed at the regular meetings of the Executive Committee, as well as at the annual board meetings, as considered relevant. The following section provides an overview of other climate change opportunities that could impact our business.

|                         |                    |     |         |       |
|-------------------------|--------------------|-----|---------|-------|
| Frequency / Probability | High               |     |         | 7     |
|                         | Medium             |     | 8 1 2 3 | 6 4 5 |
|                         | Low                |     |         |       |
|                         |                    | Low | Medium  | High  |
|                         | Severity of Impact |     |         |       |

#### New service and / or product market opportunities

1. Competitive positioning over truck due to fuel cost increases

#### Increased efficiency of goods and services

2. Technological developments
3. Economic conditions
4. Acquisitions

#### New energy products or services

5. Product innovation and new markets
6. Clean technology markets

#### Reputation / Attract and Retain Talent

7. Enhanced reputation in sustainable rail freight transportation
8. Attract, develop and retain talent

|  |                                                                               |
|--|-------------------------------------------------------------------------------|
|  | High significance - disclosure and alignment with business strategy           |
|  | Medium-high significance - disclosure                                         |
|  | Medium low significance, disclosure depends on risk perception of the Company |
|  | Not significant, disclosure not required                                      |

# Risks and Opportunities

## 6. Climate Change Opportunities

### Opportunities From Climate-Related Developments (continued)

6.1e  
Opportunities driven by  
changes in other climate-  
related developments.

| ID    | Opportunity driver          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 010TH | Reputation                  | Environmental responsibility is becoming a top issue on corporate agendas as companies grapple with the complexities associated with creating meaningful ecoefficient operations. As a result, there are growing pressures to not only manage the impacts controlled by the Company but also those it influences through the supply chain network. For example, leading multinational and manufacturing companies, such as Walmart and Ford, are already setting environmental pre-selection criteria for their suppliers, which include specific criteria for carbon efficient operations. These pressures could present opportunities to enhance our reputation by demonstrating to our customers and other stakeholders the value of rail as a low carbon rail freight transportation solution. |
| 020TH | Changing consumer behaviour | Increases in fuel costs due to disruptions in supply caused by climatic changes could provide a competitive advantage to railroad carriers, especially in relation to long distance trucking companies. This is especially the case when you consider that railroads are up to six or more times more fuel-efficient than trucks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 030TH | Other drivers               | With increasing pressures to reduce our reliance on nonrenewable sources of energy, opportunities exist to explore alternative more sustainable fuels, particularly within rail freight transportation. Doing so will enable us to further reduce our GHG emissions as well as meet regulatory compliance obligations. To this end, CN has been committed to working with manufacturers and research centres to support the development of cleaner rail technologies.                                                                                                                                                                                                                                                                                                                              |
| 040TH | Other drivers               | As the issue of climate change and the need for renewable energy sources reaches a critical point, CN is well positioned to find growth opportunities in cleaner technology markets. In many places in North America, policy and financial incentives are being introduced to encourage the development of clean technology.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# Risks and Opportunities

## 6. Climate Change Opportunities

### Opportunities From Climate-Related Developments (continued)

#### 6.1f

Potential financial implications of opportunity, methods used to manage opportunity, and associated costs.

#### Reputation (01-OTH)

**Financial implication of opportunity:** The reputational benefits associated with a low-carbon freight service offering could result in increased market share and revenue for the Company. However, the financial implications are difficult to quantify.

**Method to manage opportunity:** With the active participation in the development of a modal shift rail freight protocol, ongoing strategic partnerships and engagement with stakeholders (suppliers, customers, and governments), as well as our own operational efficiency focus, we have significantly improved our visibility and reputation as a leader in fuel efficiency. We continue to be recognized by the Corporate Knights rating scheme, Jantzi Social Index, the FTSE4Good Index, Global Challenges Index and the Dow Jones Sustainability Index.

**Costs associated with these actions:** The costs associated with this opportunity are integrated into the operating budgets of our sustainability team.

#### Changing Consumer Demands (02-OTH)

**Financial implication of opportunity:** With increases in fuel costs, CN could have a competitive advantage over truck freight transport. The financial implications associated with such a competitive advantage are difficult to quantify.

**Method to manage opportunity:** We continue to market the environmental benefits of rail over other modes of transport, including the fact that railroads are up to six or more times more fuel-efficient than heavy trucks.

**Costs associated with these actions:** Marketing costs associated with communicating the benefits of rail over other modes of transport is integrated into the overall operating budget.

#### Other – Alternative Fuels (03-OTH)

**Financial implication of opportunity:** Reducing our reliance on fossil fuels through alternative fuels could increase CN's market share with customers. Currently, our customers assume the cost of fuel oil price increases and volatility. The precise value of market share increases related to cleaner alternative fuel service are difficult to quantify as the feasibility and cost analysis are still in development.

**Method to manage opportunity:** CN has been committed to working with manufacturers and research centres to support the development of cleaner rail technologies. Furthermore, we support research and educational advancements in rail through university sponsorships. We are also currently implementing an initiative to replace our largest shipping motor vessel engines with more efficient models, and are initiating a study to assess the feasibility of converting our steam vessels to more fuel efficient motor vessels.

**Costs associated with these actions:** Investments have now reached CDN \$1 million, which includes monitoring research and development of the next generation locomotives using hydrogen injection, GENSET, and alternative fuels.

#### Alternative Sustainable Fuel (03-OTH)

**Financial implications of the opportunity:** The implications of clean technology markets is growing, but not yet a significant part of the business.

**Methods to manage opportunity:** In order to tap into this opportunity, CN has been working with wind turbine companies like Vestas and GE Energy to provide transportation solutions for wind farm projects throughout North America. Revenue growth from clean technology markets has the potential of presenting a considerable long-term growth initiative for CN, including increased shipments of biofuels, solar panels and wood pellets. In addition, the Company also sees potential for the outbound movement of oil sands by-products, particularly the shipment of bitumen and carbon dioxide destined for carbon capture storage.

**Costs associated with these actions:** Marketing costs associated with working with our customers, including marketing our services for clean technology markets is integrated into the overall operating budget.



**GHG Emissions Accounting,  
Energy and Fuel Use, and Trading**

# GHG Emissions Accounting, Energy and Fuel Use, and Trading

## 7. Emissions Methodology

7.1  
Base year and base year  
emissions (Scopes 1 and 2).

| Base year                         | Scope 1 Base year emissions (metric tonnes CO <sub>2</sub> e) | Scope 2 Base year emissions (metric tonnes CO <sub>2</sub> e) |
|-----------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| Mon 01 Jan 2007 - Mon 31 Dec 2007 | 4,486,788                                                     | 226,443                                                       |

7.2 - 7.2a  
Methodology used to  
collect activity data and  
calculate Scope 1 and  
Scope 2 emissions.

**Locomotive fuel consumption data:** We rely on a combined approach of consumption data from fuel invoices as well as fuel storage metered measurements. On a monthly basis, the fuel consumption data is compiled and a reconciliation is done to ensure all fuel purchased is accounted for either in inventory or consumed data. This process is audited as part of the financial audit process.

**Shipping fleet data:** The fuel consumption and cost data from our eight-vessel shipping fleet, comprising diesel and bunker, are submitted regularly to CN's fuel supply management and shipping vessels department through supplier invoices. On an annual basis, the information is reconciled between the two departments to identify and resolve any discrepancies.

**Intermodal trucking data:** CN compiles both intermodal truck mileage data and fuel consumption data. Fuel mileage data is compiled from the odometer readings entered into truck owner operated Blackberries at the start and finish of trips. CN's dispatch system extracts the information to a data compilation and reporting system. Fuel consumption data is collected from truck owner fuel cards, which are used to purchase fuel. On a monthly basis the information is uploaded onto the CN payroll system. On an annual basis, audits are undertaken to: validate that fuel card numbers match the respective trucks; identify discrepancies in terms of miles per gallon data; and assess random trucks for a detailed review of fuel purchases in relation to mileage. Annually, our sub-contractors provide a report on intermodal truck fuel consumption and mileage information.

**On Company Service (OCS) fleet data:** Approximately 94% of the total fuel (gasoline and diesel) consumed by OCS vehicles is captured by fuel credit cards and uploaded into the Automotive Management Information System (AMIS). An additional 5% of fuel consumed by OCS vehicles is drawn from CN fuel tanks on CN property. This usage is manually recorded, by vehicle, in AMIS by Fleet Management clerical staff on an ongoing basis. The final 1% of CN's total OCS fuel usage is supplied by suppliers outside of the credit card process, representing 285 vehicles (out of our fleet of 4,450). On an annual basis, a reconciliation is done between the numbers entered into the AMIS system and the credit card records, resulting in a 99% reporting accuracy.

**Miscellaneous fuel consumption:** Information from the use of miscellaneous fuel is compiled through our tanks data base, which is comprised of a list of CN's tanks and fuel consumption and cost data entered manually from invoices.

**Natural gas consumption:** The natural gas cost data are extracted into an Excel spreadsheet from a central SAP database system that houses CN's energy consumption invoices. Once extracted, the average natural gas cost per MWh per region is obtained from a Hydro-Quebec analysis report. The natural gas cost data is calculated in MWh.

The information is converted into GHG emissions data by the Corporate Environmental Department. GHG emission factors for locomotive emissions apply Environment Canada emission factors and for non-locomotive emissions, we have applied emissions factors (for carbon dioxide, methane, and nitrous oxide) provided by the IPCC 2006, Volume 2 Energy for stationary and mobile sources. For natural gas, GHG emissions are calculated directly into CO<sub>2</sub>e, using provincial/state emission factors from the National Emissions Inventory (for Canada) and from the US EPA (for USA). The traffic data is compiled through mileage readings at our various stations located throughout the railway infrastructure network.

### Scope 2 GHG Emissions – Emissions From Electricity Consumption

The electricity consumption data are extracted into an Excel spreadsheet from a central SAP database system that stores electricity cost data from utility invoices.

Once extracted, the average electricity cost per MWh per region is obtained from a Hydro-Quebec analysis report. The electricity cost data is then calculated into MWh and GHG emissions are calculated directly into CO<sub>2</sub>e, using provincial/state emission factors from the Environment Canada National Emissions Inventory and from the US Energy Information Administration.

7. Emissions Methodology

7.3  
Source for global warming potentials used.

| Gas                                  | Reference                                                                                                           |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| CO <sub>2</sub>                      | IPCC Second Assessment Report (SAR - 100 year)                                                                      |
| CH <sub>4</sub>                      | IPCC Second Assessment Report (SAR - 100 year)                                                                      |
| N <sub>2</sub> O                     | IPCC Second Assessment Report (SAR - 100 year)                                                                      |
| Other: Electricity CO <sub>2</sub> e | Other: Environment Canada National Inventory Report 2009                                                            |
| Other: Electricity CO <sub>2</sub> e | Other: Energy Information Administration State Average CO <sub>2</sub> emission coefficients for Electric Utilities |

7.4  
Emissions factors applied and their origin.

To view this information, please see:  
[www.ipcc.ch](http://www.ipcc.ch)

# GHG Emissions Accounting, Energy and Fuel Use, and Trading

## 8. Emissions Data

**8.1**  
Boundary used for Scope 1 and 2 greenhouse gas inventory.

Financial control

**8.2a**  
Gross global Scope 1 emissions.

4584604 metric tonnes CO<sub>2</sub>e

**8.3a**  
Gross global Scope 2 emissions.

194268 metric tonnes CO<sub>2</sub>e

**8.4 - 8.4a**  
Sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions not included in this disclosure.

| Source                        | Scope   | Explain why the source is excluded                                                                                                         |
|-------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Use of diesel from intermodal | Scope 1 | Data is not readily available. Diesel fuel consumed through the use of intermodal equipment is estimated at less than 0.25 % of emissions. |

**8.5**  
Level of uncertainty of the total gross global Scope 1 and Scope 2 figures supplied and sources of uncertainty.

| Scope   | Uncertainty Range        | Main sources of uncertainty       | Please expand on the uncertainty in your data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|--------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scope 1 | Less than or equal to 2% | Metering/ Measurement Constraints | We currently apply a combination of both generic mass balance and metering measurement methodology in the compilation of our locomotive fuel consumption data. A reconciliation between the fuel consumption data from our invoices and the fuel consumption data from mass balance and metering measurements revealed a 2% variance. The 2% variance is mostly a result of the fuel evaporation losses at the dispenser fuel tanks. The discrepancies related to fuel consumption measurements from fuel dispenser metering systems are not always being captured. Furthermore, metering systems do not exist throughout our fuelling systems, thereby forcing the Company to rely on a combination of certified mass balance and metering measurements. The Company has initiated a precision fuel management program, which will expand our fuel metering system to cover all our fuel tanks. |
| Scope 2 | Less than or equal to 2% | Extrapolation                     | <b>Extrapolations made to estimate MWH:</b> At this time, invoices from utilities that are uploaded onto our SAP system provide costs only. In order to calculate the MWh consumption numbers, the Company has applied generic cost per MWh factors, as provided by the Hydro Quebec Analysis. Data uncertainty could exist where utility cost variances occur based on the time of use of electricity as opposed to the quantity of use of electricity.<br><b>Use of generic factors to calculate GHG emissions:</b> Conversions into GHG emissions are based on the generic GHG emission factors as provided through the Canadian GHG National Inventory and not the utility factors. We will be working over the next years to obtain detailed utility invoicing to effectively capture electricity consumption and emission factors.                                                         |

8. Emissions Data

8.6  
Verification/assurance  
status for our Scope 1  
emissions.

Not verified or assured.

8.7  
Verification/assurance  
status for our Scope 2  
emissions.

Not verified or assured.

8.8  
Relevance of carbon  
dioxide emissions from the  
combustion of biologically  
sequestered carbon.

The emissions of carbon dioxide from the combustion of biologically sequestered carbon (i.e. carbon dioxide emissions from burning biomass/biofuels) are not relevant to our company.

## GHG Emissions Accounting, Energy and Fuel Use, and Trading

### 9. Scope 1 Emissions Breakdown

#### 9.1 - 9.1a

We have Scope 1 emissions sources in Canada and the US.

| Country                  | Scope 1 metric tonnes CO <sub>2</sub> e |
|--------------------------|-----------------------------------------|
| Canada                   | 3,287,881                               |
| United States of America | 1,296,723                               |

#### 9.2 - 9.2a

Our total gross global Scope 1 emissions by business division.

| Business Division              | Scope 1 metric tonnes CO <sub>2</sub> e |
|--------------------------------|-----------------------------------------|
| Locomotives                    | 4,048,864                               |
| Intermodal trucks              | 80,969                                  |
| Shipping vessel fleet          | 212,103                                 |
| On company service fleet       | 98,164                                  |
| Miscellaneous fuel consumption | 144,504                                 |

#### 9.2c

Our total gross global Scope 1 emissions by GHG type.

| GHG type         | Scope 1 metric tonnes CO <sub>2</sub> e |
|------------------|-----------------------------------------|
| CO <sub>2</sub>  | 4,031,754                               |
| CH <sub>4</sub>  | 254                                     |
| N <sub>2</sub> O | 1,508                                   |

## GHG Emissions Accounting, Energy and Fuel Use, and Trading

### 10. Scope 2 Emissions Breakdown

10.1 - 10.1a  
Scope 2 emissions sources  
in Canada and the US.

| Country                  | Scope 1 metric tonnes CO <sub>2</sub> e |
|--------------------------|-----------------------------------------|
| Canada                   | 61,826                                  |
| United States of America | 132,441                                 |

### 11. Emissions Scope 2 Contractual

11.1  
Grid average factors.

We consider that the grid average factors used to report Scope 2 emissions in Question 8.3 reflect the contractual arrangements we have with electricity suppliers.

11.2  
Retired certificates.

Our organization has not retired any certificates, e.g. Renewable Energy Certificates, associated with zero or low carbon electricity within the reporting year.

# GHG Emissions Accounting, Energy and Fuel Use, and Trading

## 12. Energy

### 12.1

Percentage of total operational spend in the reporting year on energy.

More than 0% but less than or equal to 5%.

### 12.2

Fuel, electricity, heat, steam, and cooling our organization has consumed during the reporting year.

| Energy type | MWh        |
|-------------|------------|
| Fuel        | 15,826,165 |
| Electricity | 488,824    |
| Heat        |            |
| Steam       |            |
| Cooling     |            |

### 12.3

A breakdown of the total "Fuel" figure (above) by fuel type.

| Fuels              | MWh        |
|--------------------|------------|
| Diesel/Gas oil     | 15,314,392 |
| Propane            | 48,356     |
| Other: Furnace oil | 10,619     |
| Other: Stove oil   | 1,774      |
| Kerosene           | 1,968      |
| Natural gas        | 449,056    |

# GHG Emissions Accounting, Energy and Fuel Use, and Trading

## 13. Emissions Performance

### 13.1 - 13.1a

Absolute emissions (Scope 1 and 2 combined) for the reporting year compared to the previous year.

When compared to the previous year, our absolute emissions (Scope 1 and 2) for the reporting year have increased.

| Reason           | Emissions value (percentage) | Direction of change | Comment                                                                                                                                                                                                                          |
|------------------|------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Change in output | 7                            | Increase            | In 2010, we increased our gross ton miles by 12% since 2009, resulting in an increase in our GHG emissions. In 2009, the reduction in economic activity meant less GTMs, which makes a comparison between these years difficult. |

### 13.2

Gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO<sub>2</sub>e per unit currency total revenue.

| Intensity figure | Metric numerator                | Metric denominator | % change from previous year | Direction of change from previous year | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------|---------------------------------|--------------------|-----------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.00058          | metric tonnes CO <sub>2</sub> e | unit total revenue | 5                           | Decrease                               | In 2010, we continued to implement emission reduction activities. We invested \$225 million on fuel efficient locomotives and improvements to our existing fleet, we continued to operate our railroad efficiently through precision railroading initiatives, and we improved yard efficiencies and fuel conservation practices. Furthermore, in keeping with our strategy, we continued to leverage our operational excellence in rail by extending it to our other fleets, as well as our buildings and yard operations. |

### 13.3

Gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO<sub>2</sub>e per full time equivalent (FTE) employee.

| Intensity figure | Metric numerator                | Metric denominator | % change from previous year | Direction of change from previous year | Explanation                                                                                                                                                                        |
|------------------|---------------------------------|--------------------|-----------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 214.5            | metric tonnes CO <sub>2</sub> e | FTE Employee       | 3.34                        | Increase                               | Despite an increase in employees (calculated as FTE at year end), we reduced our emission intensity as a result of various emission reduction activities, as described previously. |

### 13.4

Additional intensity (normalized) metric appropriate to our business operations.

| Intensity figure | Metric numerator                | Metric denominator          | % change from previous year | Direction of change from previous year | Explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------|---------------------------------|-----------------------------|-----------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11.87            | metric tonnes CO <sub>2</sub> e | Other: 1000 Gross Ton Miles | 3                           | Decrease                               | The scope of emissions relates to the Scope 1 emissions from the use of our locomotives. These emissions represent more than 85% of our emissions. Despite an increase in GTMs, we reduced our GHG emission intensity. This reduction can be attributed to the emission reduction activities that the Company has undertaken, as described in question 13.2. Gross Ton Miles is a measure of the movement of one ton of freight or equipment over one mile. |

14. Emissions Trading

14.1  
Emission trading.

We do not participate in emission trading schemes, and do not currently anticipate doing so in the next two years.

14.2  
Project-based carbon credits.

We have not originated any project-based carbon credits, or purchased any, within the reporting period.

15. Scope 3 Emissions

15.1  
Data on sources of Scope 3 emissions relevant to our organization.

| Sources of Scope 3 emissions | metric tonnes CO <sub>2</sub> e | Methodology                                                                                                                                                       | If you cannot provide a figure for emissions, please describe them                                                   |
|------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Business travel              | 3,198                           | The data was compiled from our various service providers, who apply their own unique data compilation and calculations for the data, based on industry standards. | The Scope 3 emissions presented cover more than 60% of our air travel and most of our business rail and road travel. |

15.2  
Verification/assurance status regarding our Scope 3 emissions.

Our Scope 3 emissions are not verified or assured.

15.3  
Scope 3 emissions comparison.

We cannot compare our absolute Scope 3 emissions for the reporting year as this is our first year of estimation.