Chartered Accountants of Canada

Climate Change Briefing

WRITTEN BY
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QUESTIONS FOR DIRECTORS TO ASK

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Preface

The Risk Management and Governance Board of the Canadian Institute of Chartered Accountants (CICA) commissioned this briefing to increase awareness among Canadian directors about the business impacts and related governance issues resulting from climate change.

The business implications of climate change will affect all companies, public and private. Climate change is a pressing global issue. At a company level it is a business and shareholder value issue, affecting strategy, risk management and financial performance. Accordingly business executives are assessing and acting on the strategic and risk management implications of climate change and directors are giving more attention to their oversight role.

This document provides discussion of the above issues and provides questions that directors might ask about climate change.

The Board acknowledges and thanks the members of the Directors' Advisory Group for their invaluable advice, the authors, Julie Desjardins, CA and Alan Willis, CA, and CICA staff who provided support to the project.

Brian Ferguson, CA
Chair Risk Management and Governance Board

Climate Change — A Business Issue

Many companies are increasingly recognizing that they need to address the environmental, social and broader economic impacts[1] of their operations and performance in order to achieve their long term business and financial goals.

Some Canadian oil sands development companies recognize that capitalizing on economic growth opportunities depends on successfully tackling attendant environmental and social issues. This is especially apparent in view of the convergence of various forces, be they foreign or domestic governments, activist investors, environmentalists, or other non-governmental organizations, urging that environmental and social considerations be taken into account in oil sands development.

The influence of corporate stakeholders — be they employees, investors, customers, local communities or governments — makes addressing environmental and social impacts an important reputational and financial issue for companies. Directors are key players in providing the necessary leadership, tone and management oversight of how such impacts have been factored into decisions about strategy and risk.

Climate change is intrinsically an environmental issue, but one whose effects have wide-ranging business, economic and social impacts. Within a business entity, climate change is inextricably linked to corporate strategy, risk, opportunity, financial performance and shareholder value — linkages that will be made apparent in this briefing.

Accordingly, executives of companies, in some sectors more than others, are now assessing and acting on the strategic and risk management implications of climate change for their companies' business operations, financial performance and future prospects. The need to address these implications is accentuated by the impact of current and anticipated government regulations for reduction of greenhouse gas (GHG) emissions, which are expected to progressively "put a price on carbon."

Many accept that climate change is a business issue that will continue to present important opportunities and challenges beyond the duration of the current global economic downturn.[2] It therefore requires ongoing attention by directors in their oversight of risk, strategy, financial performance and reporting.

Implications For Directors' Oversight

To carry out their oversight role, directors not only need a thorough knowledge and understanding of the company's business, but also how it might be impacted by climate change. In particular, they will want to enhance their understanding of:

- the business issues arising from climate change;
- how these business issues influence a company's risk management and strategy;
- the impact of these issues on the company's financial performance;
- the external communications necessary to inform investors about these matters;
- the adequacy of the company's information systems and related internal controls[3] for managing climate change issues.

This briefing is structured to discuss these topics and offers questions directors may want to ask about them.

1 Companies use a number of terms in speaking about these impacts and related initiatives, including corporate social responsibility, triple bottom line, sustainable development, ESG (environmental, social and governance), corporate sustainability and corporate citizenship.

2 Companies looking to reduce costs in the short term may be tempted to reduce costs on environmental matters without consideration of the longer term implications of such actions. More productive ground for cost savings may be in the area of waste reductions and energy efficiencies. There may also be longer term strategic opportunities as economic stimulus packages in Canada and the U.S. have budgeted significant amounts of government support to energy and infrastructure investments. Further, both countries have pledged to implement a cap-and-trade system that would in effect put a price on carbon; this may create opportunities and challenges, depending on the industry and company.

3 Companies are increasingly measuring and recording their greenhouse gas emissions, either due to voluntary commitments or regulatory requirements. As regulations put a price on carbon, it will become more important that management establish appropriate information systems and related internal controls to ensure the reliability of greenhouse gas emissions and related information.

Climate Change Business Issues Fall Into Two General Categories: Adaptation and Mitigation

Some companies will be more concerned with adaptation issues, others with mitigation; some may be equally concerned with both. In addition, these issues, sooner or later, may impact some industries and companies more than others.

Adaptation

Adaptation issues refer to those which require management to take action to minimize and respond to the effects of climate change on the business. These issues may present strategic opportunities and competitive advantage for some companies.

The operations of many businesses may be affected by climate change, whether or not they are responsible for emitting large amounts of greenhouse gases. Adaptation issues facing a given company or industry may be readily apparent or may take time to develop and may be cumulative. Climate change may impact the entire structure of an industry, creating risks and opportunities for the sector as well as for companies within the sector.

Examples of sectors where businesses may be affected by climate change:
- agriculture (e.g. seeding dates, crop variety choices),
- forestry (e.g. the spread of the pine beetle epidemic due to a lack of continuous cold winters),
- insurance (e.g. the growth in the number and severity of natural disasters and extreme weather events),
- shipping (e.g. the opening of previously ice-bound northern sea routes),
- utilities, telecommunications, and real estate (e.g. exposure of facilities to increased severe weather events),
- oil and gas (e.g. exposure of offshore facilities to increased severe weather events, water scarcity),
- mining (e.g. the impact of melting of the permafrost on access roads and on seepage from tailings ponds),
- recreation and tourism (e.g. ski resorts, recreational fishing, new northern tourism),
- fishing (e.g. the sensitivity of salmon to temperature changes in their spawning areas).

Mitigation

Mitigation issues refer to those which require that management take action to reduce the greenhouse gas emissions[4] attributable to a company's operations, products and services.

Some large customers are expecting their suppliers to report, and as appropriate reduce, their greenhouse gas emissions as a condition of qualifying as a supplier. In September 2007, Wal-Mart announced that it would begin asking its suppliers to measure their carbon footprint and find ways to reduce it.

The impetus for reducing greenhouse gases may be regulatory requirements and/or voluntary commitments arising from demands by environmental non-governmental organizations, customers, or some institutional investors. It may also relate to supply chains, product labelling, or other pressures.

PepsiCo's Walkers brand in the U.K. has begun to display a carbon footprint/reduction logo on its products. Timberland includes a label with its footwear that details the energy used in making the shoes, including the portion that is from renewable sources.

Transportation and buildings are responsible for significant quantities of greenhouse gas emissions. In addition, Canadian industries that are responsible for significant amounts of greenhouse gas emissions include:
- oil and gas production, transmission and distribution;
- coal, oil and gas electricity generation; and

4 See Appendix 3 for Background Information about Greenhouse Gas Emissions.

- mining and manufacturing such as chemicals, fertilizers, pulp and paper, smelting and refining, including aluminum, steel, cement, lime and glass.

Obligations to reduce greenhouse gas emissions may involve costs but also can present opportunities as businesses seek out new technologies, products and services to address climate change challenges. Prompt initiatives by a company to improve production and distribution processes to reduce greenhouse gas emissions can result in competitive advantage.

Government Regulations

In Canada, provinces have begun to implement climate change regulations. For example, in Alberta, effective July 2007, certain facilities were required to meet greenhouse gas emissions intensity limits. British Columbia has imposed a carbon tax on fuel consumption and requires public service organizations to be carbon neutral by 2010. Quebec has imposed a carbon tax on fuel distributors.

British Columbia, Manitoba, Ontario and Quebec are partners in the Western Climate Initiative, a U.S. initiated proposal for a cap-and-trade[5] system based on absolute emissions.

Federally, facilities in a range of industries had to submit information on 2006 greenhouse gas emissions by May 31, 2008.

Companies with international operations may be subject to mandated greenhouse gas reduction, reporting or trading requirements in other jurisdictions. For example, companies with operations in the European Union may be subject to its Emissions Trading Scheme which commenced operation in January 2005 as the largest multi-country, multi-sector greenhouse gas emissions trading scheme in the world. Similarly, companies doing business in the United States are increasingly likely to be affected by climate change regulations introduced by individual states or the US government.[6]

Potential Business Impacts

Companies that are currently facing difficult economic times and liquidity challenges may be tempted to ignore climate change issues. For some companies and industries, however, there may be unavoidable business impacts of climate change during difficult times as well as in the longer term. Whether due to adaptation or mitigation, the impacts of climate change on a company's business may include:

- **Continuity of Business Operations:** Climate change may cause interruptions in operations or disruptions in the availability of key inputs. It may call for modifications to property, plant or equipment or possibly relocation of facilities. In addition, changing consumer preferences and supply chain pressures may cause fundamental changes in demand for products and services.
- **Access to Capital:** Institutional investors, lenders and rating agencies are increasingly interested in the financial consequences of current and future climate change impacts and regulatory requirements on businesses. These organizations are becoming more aware of companies and industries that have high climate change exposures and risks.
- **Access to Insurance:** The impacts of climate change are likely to affect the affordability and availability of insurance. New climate change related insurance products are being developed. Insurers have begun to introduce climate change exclusions into policies and are increasingly encouraging their customers to evaluate climate change risk.

The cost of insurance for oil rigs in the Gulf of Mexico may be impacted by the frequency and severity of extreme weather events.

- **New Capital Expenditure Considerations:** Some capital expenditures may become more attractive when viewed through a climate change lens, others less so. The ability to buy and sell emissions reduction credits or allowances creates a further dimension to capital expen-

5 See Appendix 3.

6 The U.S. and Canadian governments are increasingly discussing options for a harmonized North American regulatory approach that might include a cap-and-trade system, carbon taxes or other policy instruments.

diture decision-making and may make capital investments attractive where otherwise they would not have met hurdle rates.

- **Increased Inter-Jurisdictional Operating Complexities:** Companies that operate in multiple jurisdictions may have to deal with a variety of climate change regulations and emissions trading systems, each with different rules, risks and opportunities.
- **New Considerations in Mergers, Acquisitions and Divestitures:** Climate change risk, opportunity and valuation considerations introduce another layer of complexity to mergers, acquisitions and divestitures and may in certain situations be an impetus for them.

In short, directors will be interested in what keeps or should keep the CEO awake at night in terms of risks, strategies and financial impacts related to climate change.

Questions for Directors to Ask

1. What are the climate change issues that are reasonably likely to impact the company's business and operations in the foreseeable future?
2. What are the magnitude, sources and nature of the company's current and anticipated greenhouse gas emissions?

Risks and Risk Management

Oversight of Risk Identification and Risk Management Systems

Climate change presents a number of business risks, some of which may qualify as principal business risks for which boards have an oversight responsibility. Directors are increasingly looking to ensure that the identification and management of climate change related risks are appropriately included within the scope of risk management systems.

General Categories of Risks

Climate change risks are generally viewed as falling into four categories: physical, regulatory, reputational and litigation.

Physical
How might the operations of the business and its supply chains be affected by physical risks arising from climate change such as the impacts of changing weather patterns, increased frequency of extreme weather events and changes in air and ocean temperature, sea level and water availability?[7]

Regulatory
Companies face an uncertain and fragmented regulatory environment, with different jurisdictions introducing or developing different approaches and regulations related to climate change. This increases operating complexity and compliance costs.

Regulations may include not only greenhouse gas emissions limits and trading systems but also instruments such as carbon taxes, energy efficiency standards, building codes and environmental permits.

Reputational
How companies are perceived to be addressing climate change issues can have a positive or negative impact on intangibles such as brand value, consumer confidence, employee loyalty and timely regulatory approval of projects.

As the impacts of climate change become more apparent, companies that are perceived to be responsible for significant greenhouse gas emissions in either the production or use of their products or services will face increasing challenges. Some may face campaigns by environmental non-governmental organizations, activist investors[8] and others that may adversely

7 The bullets on page 4 of this publication illustrate how physical risks may impact certain sectors.

8 Ethical Funds Company's campaign about the Canadian oil sands—see https://www.ethicalfunds.com/SiteCollectionDocuments/docs/Albertaoilsands_whitepaper.pdf

affect reputation. Some companies may see a decrease in demand for their products or services. Conversely, companies whose products and services are seen to reduce greenhouse gas emissions may see an increase in customer demand and an enhanced reputation.

Activists with the Rainforest Action Network spoke out against Royal Bank of Canada's record on oil sands financing at the bank's Annual General Meeting in February 2009, claiming that oil sands development is one of the fastest growing sources of greenhouse gas emissions.

Litigation

To date, there are limited instances of climate change related litigation against companies, but this can be expected to change.[9] Companies may be threatened by nuisance, negligence, disclosure or other lawsuits or challenges brought by parties such as government bodies, communities, institutional shareholders, non-governmental organization or individuals.

In September 2007, the Attorney General of New York State issued subpoenas to Xcel Energy Inc., Dynegy Inc. and three other companies seeking information regarding climate change disclosure practices. Xcel provided disclosures made not only in the Carbon Disclosure Project questionnaire and its "Triple Bottom Line" report but also in its 10K filings and information provided regarding an application for a new facility in Colorado. Xcel Energy resolved the matter with the Attorney General by voluntarily agreeing to expand and/or continue its disclosure of climate change risk, strategies and governance in its 10K filings. A second company, Dynegy Inc., also settled with the Attorney General of New York State and agreed to include disclosures of material risks related to climate change in its 10K filings.

Imperial Oil's Kearl Oil Sands project in Alberta was delayed due to a challenge by two non-governmental organizations. The Federal Court of Canada found that the company's environmental assessment was incomplete as it had not provided a sufficient rationale on its conclusion on greenhouse gas emissions.

Risk Management

Directors will want to assess whether the risk management strategies employed (e.g. insurance for physical risks, physical upgrades, disaster planning, public policy engagement, development of action plans to respond to non-governmental organizations' campaigns, acceptance of risks, etc.) are adequate and appropriate for the types of risk in question and the company's risk tolerance.

Questions for Directors to Ask

3. What is management's plan, if any, for responding to physical risks to the company arising from climate change? What strategies, if any, has management developed to address input shortages or disruptions in its supply chain due to adverse weather events or climate changes affecting suppliers?
4. What is management's assessment of how the company will or could be impacted by existing or potential government regulations in key jurisdictions in which it operates?
5. What is management's evaluation of the reputational risks that may influence key stakeholders (e.g. customers, employees, suppliers, governments or communities) related to the company's approach to dealing with climate change issues?
6. What is management's assessment of and response to the possibility of actions regarding climate change, whether by non-governmental organizations, foreign or domestic governments, activist investors, lobbyists or other parties, which might impact the company, its operations or its reputation?
7. What is management's assessment of the possibility of current or future nuisance, negligence, disclosure or other legal actions against the company arising from climate change related actions or inactions?

9 For example, it may be that the reference to the corporation having "duties as a responsible corporate citizen" in the December 2008 Reasons for Judgment by the Supreme Court of Canada in the BCE decision may encourage climate change related litigation.

Strategy

Oversight of Strategic Planning Process and Approval of Strategic Plan

Climate change will require companies to position themselves for success in a low-carbon economy. This may involve reassessing strategies to ensure that companies seize opportunities for carbon competitive advantage.[10] For example, companies are increasingly designing products, developing production processes and supply chains and creating technologies that will be appropriate in a low-carbon future.

Some jurisdictions have already enacted legislation that puts a price on carbon; others are in the process of doing so. Leading companies are developing a range of possible legislative scenarios and evaluating their potential impacts on the company and industry sector.

For companies with longer operating or investment cycles (e.g. automotive industry, oil and gas, utilities, real estate), it will be particularly important to understand the impact of structural changes in markets arising from climate change adaptation and mitigation issues.

Companies' strategies regarding climate change may also affect intangibles such as brand value, reputation and the ability to attract and retain employees.

Questions for Directors to Ask

8. What is the potential impact, if any, of climate change on the company's strategic plans under possible adaptation and mitigation scenarios? What timeframes were assumed or considered in developing such scenarios?
9. What innovation and technology opportunities, if any, has management investigated to reduce greenhouse gas emissions and gain competitive advantage?
10. What GHG emission reduction targets has management set, if any, and how challenging are they? Does management track and report progress against these targets?
11. How does the company's climate change strategy compare to that of key competitors?
12. How may climate change impact any merger, acquisition and divestiture plans and decisions?

Financial Impact

How might climate change impact financial performance and future prospects?

Revenues could be impacted for reasons such as:
- changes in consumer demand for goods and services due to perceptions about associated greenhouse gas emissions;
- changes in supply chain requirements related to greenhouse gas emissions;
- the sale of, or royalties on, innovative technologies;
- the speed of obtaining regulatory environmental approvals;
- the sale of emissions allowances or tradable emissions credits.

Expenditures could be impacted for reasons such as:
- the need to retrofit existing property, plant and equipment to reduce greenhouse gas emissions;
- research and development activities related to more carbon efficient operations and processes;
- purchase and implementation of new information systems to measure and record greenhouse gas emissions;
- increased or new insurance coverage or premiums;
- purchases of emissions allowances or emission reduction credits to meet regulatory emissions requirements;
- penalties for failure to meet government emission targets;
- rebuilding facilities impacted by adverse weather events;
- investments in productive capacity that embody new "green" or more energy-efficient technologies;

10 *The Carbon Margin: Translating Carbon Exposure Into Competitive Advantage.* Arthur D. Little. 2007. www.adl.com

- investments in projects to generate offset credits;
- financing costs related to expenditures.

Questions for Directors to Ask

13. What has been, and is likely to be, the impact of climate change issues on revenues, expenditures and cash flows?
14. What impact, if any, could climate change issues have on the company's financial condition and liquidity?

External Reporting

Responsibility for Review and Approval of Mandatory and Voluntary Reporting

Climate change presents new external reporting issues in both mandatory and voluntary disclosure channels.

There are two main categories of mandatory reporting:
- continuous disclosure reporting to capital markets, and
- required filings under governmental climate change regulation.

Many companies voluntarily provide information beyond that required by securities regulators or other government departments and agencies. Voluntary information may be reported in responses to surveys such as the Carbon Disclosure Project, in separate corporate sustainability and climate change reports and on corporate websites.

Mandatory Reporting

In their review of Management's Discussion & Analysis (MD&A) reports and financial statements, directors should be aware that:
- carbon taxes, regulatory emissions reduction targets/caps and emissions trading create transactions and obligations that need to be appropriately recognized and disclosed in financial statements;[11]
- some mainstream institutional investors are seeking additional disclosures about climate change matters;

The Carbon Disclosure Project 2008 report presents results from a survey conducted on behalf of 385 institutional investors with assets under management of $57 trillion seeking expanded disclosures about climate change matters. Forty Canadian institutional investors including the Canada Pension Plan Investment Board, the British Columbia Investment Management Corporation, Caisse de depot et placement du Quebec, major Canadian banks, Alberta Teachers Retirement Fund, mutual fund companies, and Ontario Teachers Pension Plan are signatories to the survey request. These signatories currently use the information provided to a greater or lesser extent in their investment decision-making

- the Ontario Securities Commission issued in 2008 a staff notice on inadequacies of environmental disclosures in financial statements, MD&A reports and annual information forms and noted the audit committee's oversight role related to disclosures about material environmental matters;[12]
- the Canadian Institute of Chartered Accountants provided new guidance on MD&A climate change disclosures in a fall 2008 publication entitled *Building a Better MD&A: Climate Change Disclosures*.[13]

Many companies are already required to file greenhouse gas emissions information with provincial and federal governments. It may be prudent for directors to enquire about the adequacy of

11 The International Accounting Standards Board has initiated a project on financial statement treatment of transactions related to greenhouse gas emissions trading schemes.

12 OSC Staff Notice 51-716 Environmental Reporting, February 2008 does not specifically mention climate change but deals with environmental issues generally.

13 Available at www.cica.ca/climatechange

systems, processes and controls in place to deliver timely and reliable information for such filings (as well as for quantifying financial consequences related to greenhouse gas emissions).

Voluntary Reporting

Concerning reports that companies voluntarily provide, it may be prudent for directors to enquire whether:

- information disclosed within voluntary reports is consistent with information filed in mandatory reports,
- material information in voluntary reports is also disclosed on a timely basis in mandatory reports, and
- voluntary external reporting is reliable and complies with applicable Canadian Securities Administrators' requirements about forward looking information.

Questions for Directors to Ask

15. What assessment has management made of the materiality to investors of information about climate change issues? Are disclosures made in the MD&A and/or financial statements consistent with this assessment?
16. How do the company's mandatory and voluntary public disclosures about climate change compare with those of competitors?
17. How has management ensured that information reported on corporate websites or in voluntary reports (e.g. corporate sustainability reports, Carbon Disclosure Project survey responses) is consistent with that provided in government filings and continuous disclosure filings with securities regulators?

Reliability of Information for Decision-Making and External Reporting

Oversight of Management Information Systems and Related Internal Control

Directors need to know that management has implemented systems, procedures and controls to gather reliable and timely climate change information for:

- management analysis and decision-making purposes
- disclosure to investors, governments and other stakeholders.

The establishment of appropriate data collection and reporting systems and related controls requires a decision on the part of management and dedication of appropriate resources. Some companies have invested significantly in establishing reliable measurement and reporting systems related to greenhouse gas emissions data and other climate change related information, but as yet many have not.

The reliability of these systems and controls is a necessary underpinning for government filings, securities filings, including CEO/CFO certifications for financial reporting, and voluntary reporting.

Questions for Directors to Ask

18. How has management ensured that it is gathering reliable and timely greenhouse gas emissions and other climate change information for internal management purposes as well as for disclosures to capital markets and governments?

Board Structure and Responsibility

Current practice reveals a variety of board structures and arrangements respecting the oversight of climate change issues. Should oversight of climate change issues be the responsibility of the board as a whole or should it be delegated to a committee of the board? If delegated, which committee should play the lead role—for example, Risk? Audit? Environment, Health and Safety?

Climate change is a cross-cutting issue in many companies, affecting strategy, risk and financial performance. An argument can be made that as an enterprise wide business issue, the board as a whole should play the lead role. Given the heavy agenda of most boards, however, consideration might reasonably be given to assigning primary responsibility for climate change matters to a particular committee.

Regardless of which committee is charged with primary responsibility for climate change issues, the board may expect its compensation committee to align short and long term management incentives with achievement of objectives that include those related to management of climate change business issues.

Whatever structure is chosen, directors are increasingly expected to promote and support a corporate culture that embeds climate change as well as other environmental and social factors into decision making and performance throughout the organization.

Questions for Directors to Ask

19. How does the company's executive compensation system support the integration of climate change issues into decision making and performance throughout the organization?
20. As a board, what governance structure have we established to enable us to appropriately oversee the management of climate change issues?

Conclusion

Climate change presents environmental business issues that are likely to affect value creation in the longer term as well as in the more immediate future. Attention to these issues is inescapable in a prudent board's oversight of strategy, risk, financial performance and reliable, timely reporting. On-going board vigilance is required to keep abreast of the fast evolving business impacts of climate change.

Appendix 1: Summary of Questions for Directors to Ask

Following are some questions that directors may wish to consider asking themselves and management, as the case may be, in carrying out their oversight role regarding the business implications of climate change.

General

1. What are the climate change issues that are reasonably likely to impact the company's business and operations in the foreseeable future?
2. What are the magnitude, sources and nature of the company's current and anticipated greenhouse gas emissions?

Risks

3. What is management's plan, if any, for responding to physical risks to the company arising from climate change? What strategies, if any, has management developed to address input shortages or disruptions in its supply chain due to adverse weather events or climate changes affecting suppliers?
4. What is management's assessment of how the company will or could be impacted by existing or potential government regulations in key jurisdictions in which it operates?
5. What is management's evaluation of the reputational risks that may influence key stakeholders (e.g. customers, employees, suppliers, governments or communities) related to the company's approach to dealing with climate change issues?
6. What is management's assessment of and response to the possibility of actions regarding climate change, whether by non-governmental organizations, foreign or domestic governments, activist investors, lobbyists or other parties, which might impact the company, its operations or its reputation?
7. What is management's assessment of the possibility of current or future nuisance, negligence, disclosure or other legal actions against the company arising from climate change related actions or inactions?

Strategy

8. What is the potential impact, if any, of climate change on the company's strategic plans under possible adaptation and mitigation scenarios? What timeframes were assumed or considered in developing such scenarios?
9. What innovation and technology opportunities, if any, has management investigated to reduce greenhouse gas emissions and gain competitive advantage?
10. What GHG emission reduction targets has management set, if any, and how challenging are they? Does management track and report progress against these targets?
11. How does the company's climate change strategy compare to that of key competitors?
12. How may climate change impact any merger, acquisition and divestiture plans and decisions?

Financial Performance and Condition

13. What has been, and is likely to be, the impact of climate change issues on revenues, expenditures and cash flows?
14. What impact, if any, could climate change issues have on the company's financial condition and liquidity?

External Reporting

15. What assessment has management made of the materiality to investors of information about climate change issues? Are disclosures made in the MD&A and/or financial statements consistent with this assessment?
16. How do the company's mandatory and voluntary public disclosures about climate change compare with those of competitors?
17. How has management ensured that information reported on corporate websites or in voluntary reports (e.g. corporate sustainability reports, Carbon Disclosure Project survey responses) is consistent with that provided in government filings and continuous disclosure filings with securities regulators?

Systems and Controls

18. How has management ensured that it is gathering reliable and timely greenhouse gas emissions and other climate change information for internal management purposes as well as for disclosures to capital markets and governments?

Governance

19. How does the company's executive compensation system support the integration of climate change issues into decision making and performance throughout the organization?
20. As a board, what governance structure have we established to enable us to appropriately oversee the management of climate change issues?

Appendix 2: Additional Sources of Information on Climate Change

Harvard Business Review. Jonathan Lash and Fred Wellington. *Competitive Advantage on a Warming Planet*. March 2007. www.wri.org/publication/competitive-advantage-warming-planet

McKinsey & Company. McKinsey on Finance. Perspectives on Corporate Finance and Strategy. Number 29. Autumn 2008. *How climate change could affect corporate valuations*. http://corporatefinance.mckinsey.com/_downloads/knowledge/mckinsey_on_finance/MoF_Issue_29.pdf

The Ethical Funds Company. March 2007. *Head in the Oil Sands? Climate Change Risks in Canada's Oil and Gas Sector*. https://www.ethicalfunds.com/SiteCollectionDocuments/docs/Head_in_the_Oil_Sands_Final.pdf

The McKinsey Quarterly 2008 No. 2. *Business Strategies for Climate Change*. http://www.mckinseyquarterly.com/PDFDownload.aspx?L2=21&L3=114&ar=2125

World Business Council for Sustainable Development. July 2008. *Adaptation An issue brief for business*. http://www.wbcsd.org/DocRoot/iMn5EtG4bkjxQNLfU9UZ/Adaptation.pdf

Appendix 3: Background Information about Greenhouse Gas Emissions

Greenhouse gases (GHGs):

Scientists note that certain gases act like a giant greenhouse around the earth by trapping heat in the atmosphere, causing it to be warmer than it would otherwise be.

The main greenhouse gases are:

Carbon Dioxide (CO_2): Carbon dioxide is emitted naturally through the carbon cycle and also through human activities like burning fossil fuels, solid waste, trees and wood products, and manufacturing products (e.g., chemical reactions in cement making). The primary natural processes that release CO_2 into the atmosphere (sources) and that remove CO_2 from the atmosphere (sinks) are animal and plant respiration, and ocean-atmosphere exchange, in which oceans absorb and release CO_2 at the sea surface.

Methane (CH_4): Methane sources include landfills, natural gas and petroleum systems, agricultural activities, coal mining, stationary and mobile combustion, wastewater treatment, and certain industrial processes.

Nitrous Oxide (N_2O): Nitrous oxide sources are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, and certain acid production. Nitrous oxide is also produced naturally from a wide variety of biological sources in soil and water.

Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are potent synthetic greenhouse gases that are emitted from a variety of industrial processes.[14]

Every business has processes, products, or services that emit greenhouse gases either directly (e.g., through the burning of fuel in the business' plant or vehicles), or indirectly (e.g., through the use of electricity generated using fossil fuels).

Greenhouse Gas Emissions Inventory:

A GHG emissions inventory is a quantified statement of an entity's GHG emissions over a particular period.[15] An entity may be a complete organization, an individual installation or a facility within an organization—many regulatory requirements are aimed at individual installations or facilities that have emissions over a particular threshold. An emissions inventory usually:

- discloses GHGs as carbon dioxide equivalents (CO_2e)[16] so that the quantity of different greenhouse gases can be meaningfully aggregated;
- calculates emissions by measuring an activity, e.g., the distance travelled by a vehicle or the use of a particular fuel, and applying an "emission factor" that relates the measured activity to the emissions it causes;

14 The U.S. Environmental Protection Agency website is the source for information provided on GHGs.

15 There are two widely accepted methodologies for calculating a company's GHG emissions inventory: "The Greenhouse Gas Protocol—A Corporate Accounting and Reporting Standard, Revised Edition, 2004", developed by the World Business Council for Sustainable Development & World Resources Institute (available for download at www.ghgprotocol.org/standards) and ISO 14064-1:2006 "Greenhouse Gases—Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals," released in 2006 by the International Organization for Standardization (available for purchase at www.iso.org/iso/iso_catalogue.htm).

16 The emissions of each GHG (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6.) are calculated separately and then converted to CO_2 equivalents on the basis of their global warming potential. For example, N_2O has been assigned a global warming potential of 310 times that of CO_2.

- includes a categorization of emissions by source[17] (and perhaps geographical segments) and explanatory notes including the measurement and calculation methods used.

Direct and Indirect GHG Emissions:[18]

An emissions inventory will ordinarily include at least direct emissions (called Scope 1 emissions in the GHG Protocol[19]), which occur from sources that are owned or controlled by the company. Scope 1 emissions include, for example, those from combustion in owned or controlled boilers, furnaces and vehicles and emissions from chemical production in owned or controlled process equipment.

An emissions inventory may also include indirect emissions, which the GHG Protocol splits into categories called Scope 2 and Scope 3.

- Scope 2 emissions (a required reporting category under the GHG Protocol) are GHG emissions from the generation of purchased electricity consumed by the company. Scope 2 emissions are "indirect" because the physical emissions associated with electricity occur at the facility where electricity is generated, rather than at the place where the electricity is consumed.
- Scope 3 emissions (an optional reporting category under the GHG Protocol but included under British Columbia requirements for carbon neutrality of public service organizations) are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Examples of activities that give rise to Scope 3 emissions are employee business travel, outsourced activities, consumption of fossil fuel or electricity required to use the entity's products, extraction and production of materials purchased as inputs to the entity's processes and transportation of purchased fuels.

Emissions Trading:

Emissions trading is one mechanism to provide economic incentives for reducing emissions. It involves the transfer of ownership of an emission allowance (cap-and-trade systems) or emission reduction credit (offset and baseline-and-credit systems) from one entity to another.

Cap-and-Trade System

Under cap-and-trade systems, governments establish an aggregated emissions cap or limit and assign allowances to various emitters to release specified quantities of greenhouse gases to the atmosphere. The number of allowances (with one allowance generally being equal to one tonne of GHG emissions) received by an emitter is the total amount of greenhouse gases it is allowed to emit. Companies can sell or buy allowances. Annually, companies must remit to the government sufficient compliance units to equal their actual GHG emissions. Over time, governments are expected to lower the limit or cap, making allowances more scarce and expensive.[20]

Offset System

In an offset system, facilities, organizations and individuals may be able to create tradable credits by developing a project to reduce GHG emissions below a baseline level of emissions. A system regulator generally mandates specific requirements for acceptable emission reduction projects and approves the emission reductions before it issues tradable credits. Project based credits, such as those under the Clean Development Mechanism (CDM) or other offset schemes, may be sold to those that require compliance units in cap-and-trade systems.

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17 The GHG Protocol offers the following broad categorization of sources of emissions:
- *Stationary combustion:* combustion of fuels in stationary equipment such as boilers, furnaces, burners, turbines, heaters, incinerators, engines, flares, etc.
- *Mobile combustion:* combustion of fuels in transportation devices such as automobiles, trucks, buses, trains, airplanes, boats, ships, barges, vessels, etc.
- *Process emissions:* emissions from physical or chemical processes such as CO_2 from the calcination step in cement manufacturing, CO_2 from catalytic cracking in petrochemical processing, PFC (perfluorocarbon) emissions from aluminum smelting, etc.
- *Fugitive emissions:* intentional and unintentional releases such as equipment leaks from joints, seals, packing, gaskets, as well as fugitive emissions from coal piles, wastewater treatment, pits, cooling towers, gas processing facilities, etc.

18 The total of a company's direct and indirect greenhouse gas emissions is sometimes referred to as its "carbon footprint".

19 See GHG Protocol at www.ghgprotocol.org/standards.

20 Government of Ontario, Discussion Paper A Greenhouse Gas Cap-and-Trade System for Ontario, December 2008.

Baseline-and-Credit System
In a baseline-and-credit system, such as that of the 2007 Alberta regulations, facilities can create tradable credits by reducing their GHG emissions below a baseline level of emissions.

Carbon Capture and Storage (CCS):

Carbon capture and storage is an approach to mitigating GHG emissions. It is not yet fully researched or widely commercialized but involves capturing and compressing carbon dioxide and storing it in deep geological formations (currently the most promising sequestration site), in deep ocean masses or in the form of mineral carbonates.

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