

The Role of Sustainable Development Indicators in Corporate Decision-making

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Executive Summary

The purpose of this paper is to provide insight and examples into how sustainable development indicators are being used in Board-level decision-making, corporate strategic management and supply chain management. The paper is also intended to help encourage further research in these areas. The paper was developed based on the outcomes of three key tasks: (1) a literature survey; (2) a detailed review of 17 corporate sustainable development reports; and (3) structured interviews with four corporate experts and 11 consultants, academics and others. The paper discusses several findings. At the Board level, many corporations have formed committees explicitly focused on sustainable development and related issues. However, concrete examples of how indicators were used to inform Board-level decision-making were scarce. At the corporate strategic management level, it is clear that senior management in most large corporations have access to some sustainable development indicators. This takes a wide variety of forms, including integration of sustainable development issues with balanced scorecards and executive participation in quarterly reviews of indicators. From a supply chain management perspective, the paper highlights that the use of sustainable development indicators is in the embryonic stage. While indicators are being used in limited instances, consideration of sustainable development issues in this area is largely driven by codes of conduct, green procurement policies or by requiring suppliers to achieve certification to a recognized management system standard with a verification of the impacts on specific outcomes. This paper represents the first step in an ongoing study. It is anticipated that the feedback received on the paper will provide the basis for further iterations.

Table of Contents

Executive Summary	ii
1 Introduction	1
2 Methodology	1
3 The Use of Sustainable Development Indicators in Board-level Decision-making	2
Results from the Literature Survey	2
Results from the Report Review	3
Results from the Interviews	4
4 The Use of Sustainable Development Indicators in Corporate Strategic Management	5
Results from the Literature Survey	5
Results from the Report Review	6
Results from the Interviews	8
5 The Use of Sustainable Development Indicators in Supply Chain Management	9
Results from the Literature Survey	9
Results from the Report Review	10
Results from the Interviews	11
6 Summary and Recommendations for Future Work	12
References	16
Appendix A – Corporate Sustainable Development Reports Reviewed	20
Appendix B – Experts Consulted.....	21
Appendix C – IISD Project Team.....	23

1 Introduction

Corporations are under growing pressure from internal and external stakeholders to consider the economic, environmental and social implications of their activities. In response, many have made a commitment to apply the principles of sustainable development to their operations. To meet these commitments, a multitude of policies, plans and programs have been developed. For instance, many corporations have created sustainable development policies, committed to stakeholder consultation, implemented environmental management systems and have produced sustainable development reports. However, despite these efforts, corporations have often struggled to actually apply the principles of sustainable development in their day-to-day decision-making processes.

To help put the concept of sustainable development into operation, “practical, cost-effective ways to assess performance and measure progress” must be developed [1]. Fundamental to this task is the creation and deployment of sustainable development indicators. While work on the development of corporate sustainable development indicators is abundant and growing, there are still many questions on how indicators are actually used in practice. This paper helps shed light on such questions by exploring the use of sustainable development indicators in Board-level decision-making, corporate strategic management and supply chain management. While it is recognized that sustainable development indicators may be used in other ways in corporations, the use of indicators in these three focus areas has not yet been adequately addressed in the literature.

With the above in mind, the paper is intended to promote thinking and discussion, to provide insight and examples, and to encourage further research on the use of sustainable development indicators in Board-level decision-making, corporate strategic management and supply chain management. The paper should be of particular interest to Board members, senior management and managers of sustainable development and related areas in corporations.

2 Methodology

The key question this paper explores is “*How are sustainable development indicators used in Board-level decision-making, corporate strategic management and supply chain management?*” To begin answering this question and to identify key gaps in the existing knowledge base, three key tasks were completed:

- Task 1: Literature Survey. Peer-reviewed journals, books and Internet reports were reviewed to identify the state of existing work by academics and consultants.

- Task 2: Review of Canadian Corporate Sustainable Development Reports. The sustainable development reports of 17 Canadian companies listed on the Dow Jones Sustainability Index were reviewed to identify current best practices.
- Task 3: Interviews with Canadian Experts. Fifteen corporate managers, consultants and academics were interviewed to provide insight into how sustainable development indicators are used in practice in the three areas of focus.

A detailed paper that expands on the results from Task 1 and 2 is available [2]. A summary of the reports reviewed is provided in Appendix A. A summary of the experts consulted in Task 3 is available in Appendix B. The three tasks noted above were conducted between January and December 2008 by the Measurement and Assessment Program at the International Institute for Sustainable Development (IISD) with support from IISD's Innovation Fund. A list of IISD Project Team members is provided in Appendix C. It should also be noted that a draft version of this paper was critically reviewed by eight experts in March 2009.

This paper represents the first step in an ongoing study. It is anticipated that the feedback received on the paper will provide the basis for further iterations and will help clarify priorities for additional research.

3 The Use of Sustainable Development Indicators in Board-level Decision-making

A Board of Directors assumes a central role in the governance of the corporation. While there are no universal standards for corporate governance, the Board generally assumes three core responsibilities: “oversight of strategic direction and risk management, ensuring accountability, and evaluating performance and senior level staffing” [3]. Boards must therefore pay close attention to concepts and issues that focus on the long-term health of the corporation, such as sustainable development [4]. Legal liabilities for Board members vary by jurisdiction. Although Board members are under no specific legal obligation to use sustainable development indicators, they are expected to exercise a duty of care to make decisions “prudently and on an informed basis” [5]. With that in mind, this section focuses on the use of sustainable development indicators in Board-level decision-making.

Results from the Literature Survey

There is little in the published literature that directly discusses the use of sustainable development

indicators at the Board level, beyond acknowledging that it is important [6]. While they do not specifically discuss indicators, there are a limited number of publications that address the use of sustainable development and related information in the boardroom.

Based on a study of 18 companies, one academic paper examines how corporate governance systems are evolving to accommodate the consideration of sustainable development issues [4]. The paper explores a number of areas, including directors' knowledge about sustainable development, the number of Board meetings where sustainable development strategy and policies are discussed, Board interactions with stakeholders, the development of codes of conduct and perspectives of the Balanced Scorecard. However, other than adapting the perspectives of the Balanced Scorecard to incorporate sustainable development, which the authors note is in its embryonic stage, the paper does not address the use of indicators. The role of the Board in corporate social responsibility was reviewed in a recent Conference Board of Canada publication [7], but it did not specifically address the use of indicators either.

Several authors [4, 6, 7] have highlighted that corporations are increasingly creating Board committees to address sustainable development and related issues. For example, Nike has created a "Corporate Responsibility Committee to review significant policies and activities and make recommendations to the Board of Directors regarding labour and environmental practices, community affairs, charitable and foundation activities, diversity and equal opportunity, and environmental and sustainability initiatives" [8]. However, while the literature highlights that many Boards consider sustainable development issues, it is not clear how they are using indicators.

Results from the Report Review

Four key areas were examined in the review of corporate sustainable development reports:

- *Chairperson of the Board Statement*: Did the report contain a formal, signed statement from the Chairperson of the Board of Directors?
- *Governance Structure*: Did the report provide a description of the role of the Board in the governance of the corporation or reference to such a description available on the corporate website?
- *Board Committees*: Did the report identify specific Board Committees responsible for environmental and social issues?
- *Use of Sustainable Development Indicators*: Did the report specifically describe how sustainable development indicators are used at the Board level?

CIBC's *Annual Accountability Statement* was the only report that contained a formal, signed statement from the Chairman of the Board. The Chairman stated, "CIBC has a longstanding commitment to

strong governance principles, which include sustainability” [9]. In two other reports, some message from the Board was provided. In Nexen’s report, a “Leaders’ Message” jointly signed by the President and CEO, the Vice President of Health, Safety, Environment and Social Responsibility, and the Chair of the Health, Safety, Environment and Social Responsibility Committee of the Board of Directors was provided [10]. Toronto-Dominion Bank’s report contained a quote from the Board Chairman: “I’m proud of TD’s progress in making corporate social responsibility an integral part of how we operate. We strive to be a caring and engaged corporate citizen. For us, corporate social responsibility is about doing business in a way that is ethical, fair and transparent. This includes being respectful of the environment, helping enrich our communities and society, and promoting the well-being of our employees” [11].

All but one of the reports contained some details on the role of the Board in the governance of the corporation. In the one exception, further details were available on the corporation’s Web site. Fifty-nine per cent of the reports contained some details on how sustainable development issues were addressed at the Board Committee level. As highlighted in the literature survey, several corporations created a distinct committee. For some representative examples, Nexen had a “Health, Safety, Environment and Social Responsibility Committee” [10] and EnCana had a “Corporate Responsibility, Environment, Health and Safety Committee” [12]. In other instances, some corporations integrated sustainable development issues into existing Board committees. For example, at Talisman Energy it was explicitly noted that the entire Board of Directors is responsible for social, health and environmental performance [13].

None of the reports specifically described how sustainable development indicators are used at the Board level. However, there were several instances where it was explicitly noted that sustainable development information was being shared with the Board. As a representative example, at Telus “the chief financial officer shares the CSR report with the Audit Committee of the Board prior to publication. To ensure good governance, we present environmental reports to the Audit Committee of the Board of Directors each quarter” [14]. However, it is not clear from the reports how such information is being used in decision-making at the Board level.

Results from the Interviews

As one expert explained, although the Board may have a great deal of interest in sustainable development issues, this is not necessarily being captured in indicators. Several examples on how the Board receives information related to sustainable development, however, were cited. For example, several experts referred to the formation of distinct Board committees as a mechanism to address sustainable development issues. Another commonly cited approach was to expose the Board to sustainable development information by building on existing quarterly reporting processes for

financial information. Comments focused specifically on the use of indicators largely centred on issues relevant to risk management. As many experts noted, health and safety indicators are regularly reviewed by many Boards. Beyond health and safety indicators, the types of measures reviewed by the Board will vary by industry. For example, one expert noted that greenhouse gas emissions are particularly important in the energy industry. Another expert noted that long-term closure and community issues have lead many Boards in the mining industry to consider sustainable development indicators. However, beyond these examples, the experts were unable to offer concrete examples on how indicators are used in practice at the Board level. This was not entirely surprising. As several experts noted, Board members are inundated with information. Beyond indicators associated with risk management, many sustainable development indicators do not resonate with the Board. This is a criterion that is often overlooked in the development of indicator systems.

4 The Use of Sustainable Development Indicators in Corporate Strategic Management

A substantial challenge in applying sustainable development at the corporate level is determining “how to translate and integrate the normative sustainability concept into day-to-day business and management practices” [15]. Much has been published on how to create a sustainability report [16, 17]. In some jurisdictions, corporations may be required to develop sustainability or related reports. For example, Canadian banks, insurance companies, trust and loan companies are required under SOR/2002-133 to produce a public accountability statement that addresses some aspects of corporate sustainability [18]. However, the fact that a corporation develops a report does not necessarily mean that senior managers use sustainable development indicators as a key input in their decision-making processes. In fact, relatively little attention has been paid to how sustainable development information is used in corporate strategic management [19]. This section aims to shed some light on this issue by focusing on the use of sustainable development indicators in corporate strategic management.

Results from the Literature Survey

In many corporations, sustainable development programs initially focus on one of the three key pillars rather than addressing issues in a global manner. Frequently, corporate sustainable development initiatives begin in an effort to address environmental issues. There are a number of publications that provide insight into the development of environmental indicators [20, 21]. Eco-efficiency indicators represent an extension of the research on environmental indicators. These indicators focus on linking economic and environmental issues and have also been the focus of

much research [22, 23, 24]. Over the past decade, much of the research has focused on the development of more comprehensive sustainable development measurement and assessment systems that address economic, environmental and social issues. Beyond efforts associated with the Global Reporting Initiative (GRI), there are many examples of indicators created at the corporate level [25, 26], the sector level [27, 28, 29, 30] and the market level [31]. There have also been a number of efforts focused on tailoring the Balanced Scorecard [32] to address sustainable development issues [33, 34, 35], including its role in individual performance appraisals. However, in all of these cases, questions remain regarding how the indicators are actually applied in corporate decision-making.

Only two articles were located that specifically addressed the use of sustainable development indicators. One article discussed the use of indicators in the broader context of sustainability reporting [36]. In that exploratory study, interviews were conducted with personnel from four British and three Australian companies on how indicators are used in decision-making, planning and performance management. Some tangible actions noted in the article included incorporating non-financial indicators into the Balanced Scorecard, requiring a sign-off that social and environmental impacts had been considered in decisions, and linking performance against indicators to remuneration. However, specific details were relatively limited, particularly with respect to linking indicators to remuneration. Among the challenges in using indicators that were cited were a lack of understanding about appropriate benchmarks and determining where funding should come from for sustainability initiatives. In the second article, the use of sustainable development indicators in Swedish water utilities was investigated [37]. Based on field studies with three utilities, including expert interviews, the authors investigated the extent to which indicators were used in monitoring/accounting, planning/measurement by objectives and benchmarking. The use of the indicators in reporting to permitting authorities, politicians/owners and customers was also examined. The study showed that the use of indicators varied widely in the three utilities, from relatively weak interest in one company to well established indicators at another. One company, the Stockholm Water Company, had established sustainability targets.

Results from the Report Review

In each of the reports, the following key areas were examined:

- *Top Management Statement*: Did the report contain a formal, signed statement from the Chief Executive Officer (or equivalent)?
- *Measurements of Sustainable Development Performance*: Did the report contain sustainable development indicators? Were economic, environmental and social issues addressed by the indicators?
- *Clear Targets*: Did the report contain explicit targets for the sustainable development

indicators that were highlighted in tables or figures?

- *Forms of Measurement:* Did the report contain any reference to the Global Reporting Initiative, the Global Compact, the Balanced Scorecard and/or aggregated measures?
- *Use of Sustainable Development Indicators:* Did the report specifically describe how sustainable development indicators are used in corporate strategic management?

All of the reports contained a formal statement from top management. One of the underlying themes in the statements was the senior executive highlighting the company's commitment to sustainable development or corporate responsibility. As a representative example, the Bank of Nova Scotia's (Scotiabank) President and CEO stated, "Corporate social responsibility is an opportunity for Scotiabank to strengthen these stakeholder relationships by paying closer attention to our social, economic, environmental and ethical responsibilities. CSR considerations inform our everyday business decisions" [38].

Similarly, all of the reports surveyed contained some measures of performance relevant to economic, environmental or social issues. Most of the reports addressed all three of those areas, though the number and types of measures varied widely. In many instances, concise performance summaries were provided in the opening pages of the report. As representative examples, Talisman Energy reported on 50 indicators in its "Performance Data Summary" [13]; Suncor offered a "Sustainability Scorecard" containing 12 indicators [39]; and Telus reported on 22 indicators [14]. Some examples of the indicators commonly reported include "Greenhouse Gas Emissions," "Employee Turnover," "Charitable Donations," "Taxes Paid" and "Lost Time Injury Frequency." Numerous other example indicators were available in the reports.

Many of the reports acknowledged the importance of targets and contained brief descriptions of targets in the main body. However, only 35 per cent clearly reported on progress towards targets for their sustainable development indicators that were highlighted in tables or figures. Telus provided the most explicit example. In the "At a glance" section of its report, Telus reported on economic, environmental and social performance measures that were accompanied by targets, results and a clear visual of whether or not the target had been exceeded, met or missed [14]. Barrick [40], BCE [41], CIBC [9], Toronto-Dominion Bank [11] and TransAlta [42] provided other notable examples. It is also noteworthy that many of the reports acknowledged the need to improve setting and reporting on progress towards targets.

Eighty-two per cent of the reporting corporations specifically referenced reporting on at least some of the GRI indicators and 29 per cent reported a commitment to the Global Compact. The Bank of Nova Scotia [38], CIBC [9] and Telus [14] were the only reporters to reference a Balanced Scorecard. For example, The Bank of Nova Scotia explained, "We measure our success not only in terms of financial criteria, but also by our success in building customer satisfaction and employee

engagement, and supporting the communities we serve. This way of thinking is evident in the Bank's balanced scorecard approach to management, which integrates CSR elements into our strategic planning and performance evaluation processes." Finally, 35 per cent of the reporting corporations provided data on some form of aggregated measures. A representative example is provided by Toronto-Dominion Bank, which had three indices entitled "Customer experience index," "Customer service index" and "Employee experience index" [11]. In no cases was any corporation's complete set of indicators aggregated to obtain an overall sustainable development score.

Limited details on the use of indicators were provided in four reports. For example, Telus noted that "its management team incorporates economic, environmental and social concerns into decisions on an ongoing basis." The report further explains, "The key to this integration is to embed CSR into every aspect of our business, from corporate targets around CSR performance to accountability from every business unit for this performance. Over the years, we have worked toward this integration through the use of training or policies that support each area of the triple bottom line—economic, social and environmental. We will look for continuous improvement in 2007 by the inclusion of a CSR metric in the CEO's scorecard and by working to add CSR-related metrics into the scorecards of relevant business units" [14]. As a second example, at the Royal Bank of Canada it was explicitly noted that indicators are being used to help assess practices focused on reducing paper consumption and GHG emissions [43]. Beyond specific examples on how indicators are used to inform corporate strategic management, there were numerous statements focused on integrating sustainability considerations into the decision-making process. For a representative example, Suncor noted that its sustainability vision has guided its day-to-day decision-making since its adoption in 1992 [39].

Results from the Interviews

Based on the expert consultations, it is clear that senior management in most of the corporations included in the research have access to sustainability information in the form of indicators. As the experts noted, this is reflected in the integration of indicators with Balanced Scorecards in some instances and top management approval of sustainability reports in others. One expert stressed that sustainability reporting can be a wake-up call for senior management by underlining the need to pay attention to this information. There were a limited number of examples offered on how sustainable development indicators specifically informed decision-making. At Suncor, it was explained the CFO now receives sustainability indicators along with the traditional financial indicators on a regular basis. Although it does not explicitly address the use of indicators, Suncor also created a Vice President of Sustainable Development position to ensure that relevant issues are considered at the executive level. In other corporations, such as Telus, key sustainable development performance indicators and their associated targets are regularly reviewed and discussed in directors meetings. At Barrick, an

executive committee receives a quarterly report with environmental, safety and community indicators. In cases where indicators are regularly reviewed at the senior levels of a corporation, the trends highlighted by the indicators are used to help identify needs for action. Finally, three corporate experts noted that efforts to incorporate sustainable development indicators into individual performance appraisals in their corporation had been initiated. However, in all cases it was stressed that these efforts were preliminary and requests were made to keep specifics confidential.

5 The Use of Sustainable Development Indicators in Supply Chain Management

A supply chain is “the network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hand of the ultimate customer” [44]. Corporations are increasingly considering supply chain issues as a part of their overall sustainable development program. There are two broad reasons for this [45]. The first reason is that corporations are now being held responsible for the environmental and social problems caused by their suppliers. The second trigger is that an increasing share of corporate value is being created at the supplier level. Both of these reasons are broadly related to managing corporate risk. While there is growing research interest in supply chain management, questions remain on how sustainable development indicators are used in this area.

Results from the Literature Survey

The literature on sustainable supply chain management, green supply chain management and sustainable/ethical sourcing is rapidly expanding and has been the subject of comprehensive surveys [46]. The literature highlights that there are a number of different approaches that may be pursued when creating indicators at the corporate level. For instance, sustainable development issues may be integrated with supply chain management through amendments to the purchasing process [47, 48]. However, associating supply chain management solely with purchasing may overlook other opportunities [49]. For example, indicators may be structured to reflect the fact that there are different levels in supply chain management, including policy, strategy and the operational level [45]. The characteristics of a corporation’s supply chain will influence the difficulty of developing indicators, such as the strength of the relationship with the supplier, the diffuseness of the supply network, the reputational vulnerability of different suppliers and the power base of the members in the supply network [50]. However, relatively few articles specifically focus on performance measurement in supply chain management.

In the articles that do focus on performance measurement, the discussions are largely theoretical, highlight the difficulty of developing even theoretical indicators that address social issues in the supply chain and underline that corporations tend to focus on their own internal activities. One article describes the Overall Business Impact Assessment (OBIA), an indicator used by Unilever to relate environmental and economic issues [51]. Although no concrete examples were provided on how it has been used in practice, the paper notes that the OBIA approach can provide “a means of screening product or business areas which should be targeted for environmental improvement or substitution” [51]. Generic lists of environmental indicators relevant to the supply chain are available [52], as are environmental indicators specific to some industries [53], but there is little detail on how they have been applied in practice. Even in articles specifically focusing on performance measurement in the supply chain, there is widespread agreement that additional work is needed in this area.

Results from the Report Review

The review of the sustainable development reports focused on three key areas:

- *Supply Chain Management Strategy*: Did the report contain a description of, or reference to, the corporation’s supply chain management strategy?
- *Supply Chain Management Performance Measurement*: Did the report contain indicators on the corporation’s management of its supply chain?
- *Use of Sustainable Development Indicators*: Did the report specifically describe how sustainable development indicators are used in supply chain management?

Eighty-two per cent of the reports reviewed contained some details on the corporation’s supply chain strategy. The reports generally focused on the incorporation of sustainable development criteria into the supplier selection process, supplier compliance with corporate codes of conduct and descriptions of corporate procurement policies. For example, TransAlta explained that suppliers are selected based on “experience, financial wellbeing, compliance with TransAlta’s safety practices, adherence to our environmental obligations and priorities, and them carrying all appropriate supplier insurances. Where appropriate, TransAlta will hire small, local vendors to support community economies” [42]. The Bank of Montreal noted that it makes “sure that our major suppliers are aware of our code of conduct” [54] while Suncor explained that its “commitment to sustainable development influences the way we choose suppliers, manage projects and handle inventory. We screen potential vendors to ensure they share our corporate values and our high standards regarding safety and the environment” [39]. As a final representative example, Manulife has implemented environmentally responsible procurement guidelines “based on Canada’s Environmental Choice Program and U.S. Environmental Protection Agency (EPA) recommendations” and includes environmental criteria in its Request for Proposal process [55].

Eighty-eight per cent of the reports had some form of performance measurement relevant to their supply chain. However, the reported indicators were generally restricted to the GRI indicators or a single indicator focused on supplier expenditures. The GRI indicators focusing on supplier issues are “Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation” and “Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken” [16]. Some corporations modified the GRI indicators to suit their needs, while in other cases a limited number of indicators that go beyond the GRI were also reported. Some representative examples include EnCana’s indicator entitled “Procurement from Aboriginal suppliers (C\$ millions)” [12] and Suncor’s “Aboriginal businesses/suppliers” indicator [39]. Toronto-Dominion Bank noted that it would consider reporting on the indicator “Supplier satisfaction” in the future [11]. TransAlta explained that a “Supplier Performance Scorecarding System” was piloted at one of its sites and that this process would be introduced at other locations in the coming year [42]. However, data on the system was not provided in the report.

Telus’ report was the only one that provided explicit insight into how sustainable development indicators are used in their supply chain, though details were relatively limited. After noting that the company has an environmentally responsible purchasing policy, the report went on to explain, “Telus currently utilizes total cost analysis (considering price, social and environmental factors) on a case-by-case basis. For example, while renewing our contracts for the purchase of network switching components, an evaluation was done including source of supplier (local versus international), percentage of components ultimately ending up in landfills, nature of components toxicity, energy (used in construction or required to use the item) and finally cost. We intend to expand the use of total cost analysis in our procurement and network development in 2007” [14]. No further details were provided on the total cost analysis, but it does provide insight into how sustainable development indicators help inform decision-making in the corporation’s management of its supply chain.

Results from the Interviews

In general, the experts expressed that there is less emphasis on quantitative performance measures in this area. The experts noted that sustainable development issues are on the radar of supply chain management, but that it is generally addressed through codes of conduct, green procurement policies or requiring suppliers to achieve recognized certification, such as ISO 14001. While there are some exceptions, such as for safety indicators when hiring contractors in the energy industry, the consideration of sustainable development issues in supply chain management is not driven by indicators. A limited number of other example indicators were provided by the experts. At Barrick, it was noted that indicators have been developed on how much is purchased locally, the number of

people trained on policies and the number of suppliers following its code of ethics. Telus has initiated efforts to address both upstream and downstream impacts, but recognizes that measurement in the supply chain remains a key challenge. In other corporations, such as Direct Energy, efforts are under way to develop meaningful indicators.

6 Summary and Recommendations for Future Work

This paper presented a review of the current state of the art on the use of sustainable development indicators in Board-level decision-making, corporate strategic management and supply chain management. The key findings of the literature survey, report analysis and interviews include:

- *Board-level Decision-making:* At the Board level, the importance of sustainable development measurement and assessment has been acknowledged in the literature. While the corporate reports provided evidence that Boards are increasingly considering sustainable development issues at the committee level, it is not clear from the reports if or how sustainable development indicators are being used in Board-level decision-making. The interviews reinforced these findings by highlighting that Board interest in sustainable development issues is not currently driven by indicators. At the same time, it is clear that Board-level decision-making must be rooted in evidence about performance and risk. This leaves the question open with regard to how Boards ensure that their decisions are rooted in facts and evidence about the corporation. Further research on both theory and practice in this area is needed.
- *Corporate Strategic Management:* While there are many publications that address the design of sustainable development indicators, there are few that specifically focus on the use of indicators in practice. This was underscored in the review of corporate reports, where details on the use of the many indicators presented were very limited. In the interviews, the experts highlighted that senior management in most large corporations do have access to sustainable development indicators, but there are ongoing questions as to how those indicators are used to guide decision-making. Further research on the specific uses of indicators at the executive level is required.
- *Supply Chain Management:* The literature survey, report analysis and interviews all highlighted that interest in sustainable supply chain management is growing. However, in all cases, indicators in this area were underdeveloped and few examples were available on how indicators were being used in decision-making in supply chain management. Further research on the development and use of indicators in this area is required.

The paper highlights that there is substantial room for further work on the use of sustainable development indicators in Board-level decision-making, corporate strategic management and supply chain management. Some possible areas include (in no particular order):

- *Explore the Role of Indicators in Board-level Accountability.* A corporation's Board of Directors is expected to make decisions on an informed basis. Although corporate Boards are increasingly considering issues associated with sustainable development, there is little evidence that sustainable development indicators are being used at the Board level. There is a need for further work that explores the relationship between the use of indicators and Board accountability and responsibility. For example, one possible avenue of research in this area is to explore the legal implications of financial reporting and how these may translate to other forms of measurement and reporting. More broadly, another possibility is to explore the extent to which sustainable development indicators are connected to reducing corporate risk and exposure.
- *Identify Indicators that are Useful in Decision-Making.* To have a meaningful impact, sustainable development indicators must be viewed as a core part of the corporation's management systems. However, there were few concrete examples available in the literature, reports or interviews on how sustainable development indicators are actually used in decision-making. There is also little information regarding the cost of designing and measuring indicators. It is not clear which indicators are actually considered useful by Board- and executive-level decision-makers or that existing indicators merit the cost required to develop them. Work on the usefulness of existing indicators, such as those proposed by the GRI, is required.
- *Developing Indicators on Supply Chain Management.* Few corporations have created sustainable development indicators relevant to their supply chain that go beyond those suggested by the GRI. Since the indicators must always be context specific, it is not possible to develop anything but a very limited set of indicators that is broadly applicable. Guidelines to assist in the development of indicators specifically tailored to the supply chain of the corporation, however, may help promote the use of sustainable development indicators in supply chain management. The use of indicators as a leverage point for driving sustainable development practices through the supply chain is a particularly salient issue that merits attention.
- *Setting and Measuring Progress towards Clear Targets.* This has relevance to all three areas of interest. Although many corporations recognize the need to set and measure progress towards clear targets, the review of corporate reports highlighted that few do this in a systematic manner. There is a need for further work to understand why this is the case. More fundamentally, there is also a need to determine what mechanisms are necessary to help corporations set and measure progress towards clear targets.
- *Incorporating Sustainability Indicators into the Balanced Scorecard.* The Balanced Scorecard is one of the most widely used performance measurement frameworks. However, only three of the corporate reports reviewed in the study made any mention of it. Given its relatively wide use in decision-making at the senior levels in many corporations, the Balanced Scorecard may serve as an important leverage point for incorporating sustainable development indicators into Board-level and strategic decision-making. There is a need for further

research on the implementation of Balanced Scorecards that incorporate sustainable development issues. Existing academic efforts provide a starting point for this work.

- *Incorporating Sustainability Indicators into Individual and Business Unit Reviews.* Formal reviews of individual and business unit performance are common in most corporations. However, while there were a limited number of examples in the literature, report reviews and interviews, it is clear that the use of sustainable development indicators in performance appraisals of individuals and business units is largely unexplored. Given the impact formal performance appraisals can have in motivating individual and business unit performance, this is a significant gap and further research is required.
- *Clarifying the Content of Sustainable Development Reports.* The wide variety of indicators and information in the reports reviewed highlights the need for fundamental research on what should go in a sustainable development report. A key thrust in this effort would be research on the role of indicators in external communication and reporting. While the GRI and its sector supplements provide useful guidance on the creation of a sustainable development report, it does not yet provide a common framework analogous to that in annual reporting. Additional research on more prescriptive requirements is required. Increased independent verification of the reports could help address several related issues, such as the data management capabilities needed to generate accurate information and the comparability of information for companies in the same sector. A regularly updated and public access database for the indicators may also help in this regard. Therefore, the challenges and opportunities in the independent verification of sustainable development reports should also be explored.

Overall, it is clear that there are many challenges in using sustainable development indicators in corporate strategic management. As illustrated in the points above, these challenges are related to both supply- and demand-related issues. At the supply chain management level, few well-established indicators are available and there is a need for fundamental work on the development of meaningful indicators. However, at the Board and executive levels, a multitude of indicators already exist. The primary issue in those areas is in determining what needs to be done to broaden the use of the many existing sustainable development indicators.

The role of sustainable development indicators in corporate decision-making is still evolving. While many commendable initiatives have already been put in place, there are relatively few examples of how sustainable development indicators have been used in Board-level decision-making, corporate strategic management and supply chain management. The research presented in this paper highlights the need to focus on the specific uses of individual indicators by specific people from the very beginning of any indicator design and implementation process. The absence of such a focus undermines the ability of sustainable development indicators to influence decision-making in corporations.

The material presented in this paper is a part of an ongoing research program. While this paper does not provide solutions to the challenges listed above, it does provide a reference point for current best practices and identifies possibilities for future research. Subsequent steps will focus on exploring additional corporate examples, identifying priorities for action, identifying barriers to success and developing strategies to address the key priority areas. Each of these steps will involve consultation with corporate experts. It is anticipated that future research will yield additional insights into the role of sustainable development indicators in corporate decision-making.

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Appendix A – Corporate Sustainable Development Reports Reviewed

A summary of the reports reviewed is provided in Table A-1.

Table A-1 – Reports Reviewed	
Company	Sector
Bank of Montreal	Financials
Bank of Nova Scotia	Financials
Barrick Gold Corporation	Basic Materials
BCE Inc.	Telecommunications
Canadian Imperial Bank of Commerce	Financials
EnCana Corporation	Oil and Gas
Manulife Financial Corporation	Financials
National Bank of Canada	Financials
Nexen Inc.	Oil and Gas
Royal Bank of Canada	Financials
Sun Life Financial Corporation	Financials
Suncor Energy Inc.	Oil and Gas
Talisman Energy Inc.	Oil and Gas
TELUS Corporation	Telecommunications
Toronto-Dominion Bank	Financials
TransAlta Corporation	Utilities
TransCanada Corporation	Oil and Gas

As illustrated in Table A-1, a wide array of industries was represented in the sample. Of the 17 Canadian companies listed, eight were from the financial industry, five were from the oil and gas industry, two were from the Telecommunications industry, and there was one company from each of the basic materials and utilities industries. The names of the reports published included *annual accountability report*, *corporate responsibility*, *corporate social responsibility*, *our social responsibility*, *public accountability statement*, *report on sustainability*, *responsibility report* and *sustainability report*. In all cases, the most recent report, for the period covering 2006 or 2007, was reviewed.

Appendix B – Experts Consulted

Twenty-seven experts were invited to participate in the study. The experts were selected based on recommendations by the IISD Project Team, the corporations sampled from the report review and recommendations from the experts consulted. In all cases, invitations were sent by e-mail. Of the experts invited, 15 agreed to participate. The experts consulted over the course of the study are listed alphabetically in Table B-1.

Name	Title	Organization
Dr. Tima Bansal	Associate Professor	University of Western Ontario
Mr. Mark Brownlie	Principal	Responsibility Matters
Mr. Brian Doucette	Director, Environmental Excellence	Suncor
Mr. Daniel Gagnier	Chair of the Board	International Institute for Sustainable Development
Dr. Irene Herremans	Associate Professor	University of Calgary
Dr. Tony Hodge	President Associate	International Council on Mining and Metals IISD
Mr. Ron Nielsen	Executive in Residence	Dalhousie University
Mr. Joe Pach	Director, Environment and CSR Reporting	TELUS
Mr. Todd Scaletta	Director, Knowledge Management	CMA Canada
Dr. Christine Schuh	Associate Partner	PricewaterhouseCoopers
Mr. Peter Sinclair	Director, Corporate Responsibility	Barrick Gold
Ms. Coro Strandberg	Principal	Strandberg Consulting
Mr. Nelson Switzer	Director and Head, Corporate Responsibility	Direct Energy
Ms. Sue Todd	Principal	Solstice Sustainability Works
Dr. Mel Wilson	Associate Partner	PricewaterhouseCoopers

The consultations were conducted by telephone between September and November 2008. The consultations ranged from 20 to 90 minutes. To provide some structure to the consultations, the following questions were used as a template, and tailored slightly for each participant:

1. In your experience, what is the primary motivation for companies undertaking sustainability/CSR initiatives?
2. To what extent do you see performance measurement and reporting as a key lever in both improving corporate performance and achieving societal outcomes?
3. In your experience, how are sustainability indicators being used in corporate strategic management? Can you provide any examples?
4. In your experience, how are sustainability indicators being used in supply chain management? Can you provide any examples?

5. Are you aware of any corporate Boards that use sustainability and/or CSR indicators to inform their decisions? If so, can you provide examples?
6. How could the use of sustainability indicators in Board-level decision-making, corporate strategic management and supply chain management be improved?
7. What areas do you see for future work in sustainability measurement and assessment? What key challenges do you anticipate in these areas?

Appendix C – IISD Project Team

The members of the IISD Project Team are listed in Table C-1.

Name	IISD Title
Mr. Stephan Barg	Associate
Mr. Dennis Cunningham	Project Officer
Ms. Maryline Guiramand	Associate
Dr. Peter Hardi	Associate
Dr. László Pintér	Director, Measurement and Assessment Program
Mr. Darren Swanson	Senior Project Manager
Dr. Cory Searcy	Associate