

# Research Paper #9

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Review and Analysis of Best Practices in Public Reporting on  
Environmental Performance

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**REVIEW AND ANALYSIS OF  
BEST PRACTICES IN PUBLIC REPORTING ON  
ENVIRONMENTAL PERFORMANCE**

**A report to Executive Resource Group**

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## SYNOPSIS

“What gets measured, gets managed. What gets communicated, gets understood.”

—From a speech to the Society of Environmental Journalists in 1998 by Steve Percy, vice-president, BP America.

The goal of this report to the Executive Resource Group is to provide advice on best practices in public reporting on environmental performance. It is based on my experiences in more than three decades of writing, advising and teaching about environmental issues, particularly how to communicate environment and sustainability information. My ongoing files were updated with a scan of current practices using interviews, a review of reports and Internet research. The following is not a study of all environment and sustainability reporting systems, but a focused look at the state of the art with reference to some jurisdictions identified as leaders by myself and other experts.

### Key findings

- Over the past two decades environmental reporting has been evolving as a discipline. It was first developed by governments and non-government organizations, but industry is now becoming an important participant in the development and use of environmental reporting.
- State of the Environment (SOE) reporting is evolving from anecdotal stories to the use of indicators to track performance in specific sectors over time.
- Environmental reports are being broadened to show the interconnections among environmental, economic and social issues. This is called integrated environmental reporting and sustainability reporting.
- Public consultation and a multistakeholder approach in designing and producing reports is making them more user friendly and getting more participation in design and buy-in for the final products.
- There is a move from big, encyclopedic reports to shorter more focused reports, written to assist specific audiences.
- Environmental reporting is being built into decision-making systems. Governments and companies are using environment reporting systems to help improve performance and show how they are delivering on promises. This is being built into business plans by both government and industry.

- New technologies, particularly geographic information systems (GIS) and the Internet, are enabling a move away from top-down reports in which experts tell people what they think people should know. There are now information portals or gateways through which people can query the system with their questions, even going to environmental maps of their neighborhoods.

## **BACKGROUND ON ENVIRONMENTAL AND SUSTAINABILITY REPORTING**

Any successful endeavour needs to measure performance, and report to its stakeholders on how it is doing in meeting its goals. Especially since the 1980s, when the environment became front page news on a regular basis, there has been a growing demand for reliable information on environmental issues. People in government agencies, corporations and the public at large need information upon which they can base decisions that affect the wise use of and the protection of the environment.

Over the past couple of decades, systematic environmental reporting has been developed by countries, provinces, states, cities, non-government organizations and corporations. Such information has been collected into what are often called State of Environment (SOE) reports, which cover a range of environmental issues. In recent years, some governments and industries have sought to integrate environmental, economic and social impact reporting. These are sometimes called sustainability reports. They seek to show if the activities are sustainable from the different perspectives over the long term.

## **EMERGING TRENDS IN ENVIRONMENTAL PERFORMANCE REPORTING**

Following are some of the key trends in terms of process and content in the art of environmental reporting.

### **Integrated environmental reporting**

For decades, particularly since the 1920s and 1930s, societies have been evolving economic performance measures, such as Gross Domestic Product, the rate of inflation, level of interest rates, exchange rates, balance of payments, public sector borrowing and debt. These are considered essential tools with which to measure the state of our economies.

Since the 1970s, we have been developing a suite of environmental reporting systems and techniques. Some provide anecdotal information that helps identify emerging problems. Others include enough long-term data to show trend lines. These can track the development of issues and progress in dealing with problems. Environmental reporting systems have evolved frameworks, such as the Pressure-State-Impact-Response framework. Such reporting approaches show how pressures, such as consumption of natural resources and releases of pollutants, change the state of the environment and have impacts on ecosystems and humans, leading to responses, such as policy changes or shifts in consumption patterns that attempt to reduce the pressures and mitigate impacts.

A number of reporting specialists are working on integrated sets of measures that include ecological, economic and social factors in one package. The goal is to show the interconnections among what are now seen as separate sectors. Integrated environmental SOE reporting and assessment has been defined as a process of producing and communicating policy-relevant information on key interactions between people and the natural environment.

In its 1998 Sustainability Act, Manitoba went so far as to drop the term SOE reporting, and replace it with the term sustainability reporting.

The purpose of SOE reporting has been to provide timely, accurate and accessible information on ecosystem conditions and trends, their significance and society's responses to them. Sustainable development reporting goes beyond SOE reporting in that it links environmental conditions with socioeconomic factors, reflecting the interdependent relationship that exists between humans and their environment.

—State of the Environment Report for Manitoba, 1997, *Moving Toward Sustainable Development Reporting*

In the United Kingdom there is both a SOE report produced by the U.K. Environment Agency, which focuses on environmental issues, and a sustainability report, *Quality of life counts*, from the U.K. Department of the Environment, Transport and the Regions. The second report deals with a much broader suite of indicators, including environmental issues and socio-economic issues, such as GDP, employment levels, health, the state of housing stock, traffic levels and crime. In 2000, the Canadian government asked the National Round Table on the Environment and the Economy to work with Statistics Canada and Environment Canada to develop indicators that track sustainable development trends.

Not only governments but also major corporations are working from the more sectoral environmental reports (usually covering environment, health and safety performance) to integrated or sustainability reports. The Dow Jones economic reporting system recently added a Sustainability Index that it uses to rank companies for investment purposes.

It uses the following rationale:

“The concept of corporate sustainability has long been very attractive to investors because of its aim to increase long-term shareholder value. Sustainability-driven companies achieve their business goals by integrating economic, environmental and social growth opportunities into their business strategies. These sustainability companies pursue these opportunities in a proactive, cost-effective and responsible manner today, so that they will outpace their competitors and be tomorrow’s winners.

“Sustainability companies not only manage the standard economic factors affecting their businesses but the environmental and social factors as well. There is mounting evidence that their financial performance is superior to that of companies that do not adequately, correctly and optimally manage these important factors.”

See: <http://indexes.dowjones.com/djsgi/index/concept.html> for their description of Corporate Sustainability Concept.

In Canada, most of the big natural resources, chemical and energy companies consider good environmental reporting a necessity and a number have moved or are moving to sustainability reporting. Noranda Inc. publishes a “Sustainable development report” covering its environment, social and economic performance. Ontario Power Generation uses the title: Towards Sustainable Development Progress Report.

## Indicators to measure change and progress

The early years of SOE reporting focused on gathering together as much knowledge as possible. The result was books hundreds of pages long. While they formed valuable reference works, they were so complex as to be almost impenetrable to anyone wanting a quick synopsis of key issues and trends. The demand for snapshots of critical issues and trends led to a flurry of indicator development. Indicators are ways of aggregating complex information to make it understandable. A simple environmental indicator could be a graph showing emissions of a given substance over time.

There are a number of examples of indicators, including the work of Environment Canada under the State of Canada's Environment InfoBase, available on the Internet at: <http://www.ec.gc.ca/soer-ree/english/>.

The Sustainability Reporting Program, an independent national system based in Toronto, has been building indicators into a sustainability framework. This Internet report is at <http://www.sustreport.org>.

The United Kingdom has a set of 15 "headline" indicators. The European Union has 2,300 experts working to boil down 60 indicators into a Sustainable Development Index with only 10 themes. The goal is to enable people to "assess whether overall, we are on an environmentally sustainable track." Another ambitious project called TEPI (Towards Environmental Pressure Indicators for the EU) seeks to calculate six priority pressure indicators in each environmental policy field, for all 15 EU Member States, and show the links between the pressures and the economic sectors.

One example of using indicators to measure progress is the Total Material Requirement (TMR). It counts the amount of primary materials that are extracted from nature for a country's economic activities. This provides a general indication of environmental pressures in terms of disturbance of nature and emission of wastes. The UN General Assembly and a number of countries and industries have endorsed eco-efficiency—getting the same or more service from the same or fewer amounts of material. They have used terms such as Factor Four (a four times efficiency gain) and even Factor 10. The TMR helps measure such gains by showing how much material a nation uses to generate its GDP.

## **Other attempts at providing information at a glance:**

### **Dashboard of sustainability**

An international group closely linked with the Winnipeg-based International Institute for Sustainable Development, has been working at clustering indicators that measure the status of the environment, the economy, and the social well-being of a nation. The goal is a visual display, analogous to a car's dashboard, to show critical trends. The goal is to "inform decision-makers, the media, and the general public on the status of a nation's progress toward, or away from, sustainability."

### **Ecological footprint**

Another innovative approach is called the Ecological Footprint. It is based on measurements of a number of critical resources used and wastes released. The result is an estimate of the amount of ecologically productive land and ocean needed to produce the resources consumed and to absorb the wastes discharged if this was done on an ecologically sound, long-term basis.

#### **Toronto's Ecological Footprint**

A report "How Big is Toronto's Ecological Footprint?" estimates that the average Torontonian needs 7.6 hectares of land per year, an area roughly equivalent to five city blocks, to support their activities. At this rate, the City's consumption per capita is roughly 3.8 times greater than what recent international studies consider to be sustainable.

Collectively, Toronto residents require about 20 percent of all the land in Ontario to support current consumption levels. This means that the city's population uses the productive output of a land area nearly 287 times larger than its political area to sustain itself.

The City Of Toronto Environmental Task Force  
Education And Awareness Workgroup Final Report  
September 27, 1999

Although only one way of calculating impacts, it has the benefit of being a relatively simple way of comparing impacts of various groupings of people, regions or nations.

## **Tailoring reports for different users**

Most of the early examples of SOE reporting were large compendia of environmental information. Users had to wade through hundreds of pages of facts and figures, trying to decide what were priority issues for them. One of the new trends is to try to tailor reports for different users. The Internet has made it easier to make information available on demand.

An example of an attempt to shape reports for different users is on the United Kingdom environment department web site, <http://www.environment.detr.gov.uk/sustainable/quality99/index.htm>.

The site says:

“We have also included here a number of selections or packages... aimed at particular audiences (e.g. business users, individuals), or particular sectors or at areas of interest (e.g. transport, agriculture and resource use).”

## **Multistakeholder approach and consultation**

One of the important shifts in the way environmental issues are managed has been that of greater involvement of stakeholders. The traditional management approach, whether in government or industry, was for experts to decide on the issues and communicate them to audiences. In more recent years, managers have been increasing the amount of consultation, particularly with key stakeholders. The consultations help managers find out what people value, and what they know, don't know and misunderstand about key issues. This knowledge helps the managers to make better informed decisions, and to communicate information that better meets the needs of audiences. The multistakeholder process was a major recommendation of the historic National Task Force on Environment and Economy, a 1980s group of Canadian environment ministers, business leaders and members of the non-government community.

Early SOE reports tended to be collections of information that scientists thought were important. SOE report managers have been moving from a top-down approach to one in which audiences and experts from other sectors are consulted during the design and preparation of reports. One of the major evolutions in the process of environmental reporting has been the widening of the list of people who get to advise on environmental reports.

This inclusive process is an important part of the international SOE reporting manual, *Capacity Building for Integrated Environmental Assessment and Reporting*, which is used by the United Nations Environment Programme to teach environmental reporting to governments around the world. Some

governments that are doing innovative environmental reporting, such as Manitoba and the United Kingdom, have built consultation into the design of their reporting programs. British Columbia has a less formal approach, but is also sounding public opinion. A number of heavy industries and resource companies rely on stakeholder input, often through formal committees, to help them design their communications, including environmental performance reports.

### **Technology and report formats: from paper to electrons**

Environmental reporting with its images and data tables, benefits greatly from electronic reporting, particularly online. The major benefit is that the organization producing the report does not have to provide a linear stream of ideas. Instead, it can present a menu, and the user can choose what to view. Environmental communicators are still learning how to adapt their information to the Internet, with its own set of rules for good presentation.

Virtually all serious environmental reports that are printed are also available electronically. Some are sold on CDs. Others are partly or even wholly available online.

The Sustainability Reporting Program, <http://www.sustreport.org>, decided to start only with an Internet report, both for reasons of cost and for flexibility of design.

### **User driven systems**

Some organizations have developed environmental information systems designed for the user to decide what they want to see. To borrow terminology from the Internet and computer worlds, there is a move from push technology, which is information other people want to you have, to pull technology, which is information you as a user want to get. These consumer-driven models rely on a combination of data and Geographic Information System (GIS) software that provides information in a spatial context.

### **Scorecard**

One example is the Scorecard web site, <http://www.scorecard.org/>, operated by the New York City-based Environmental Defense Fund. This site provides map-based information on a number of air, land, water and pollutant issues, allowing U.S. citizens to get information by clicking on maps or entering their postal ZIP code to get details about their community. It covers such topics as air pollutants, potential sources of land contamination, animal waste from factory farms, chemical releases from industry and watershed indicators.

### **U.K. Environment Agency**

A similar approach is used by the U.K. Environment Agency, <http://www.environment-agency.gov.uk/envinfo/index.htm>. Clicking on the 'What's in Your Backyard' button, <http://146.101.4.38/wiyby/html/introduction.htm>, links to a set of electronic tools that let people explore the site's environmental data, from the national level to the local environment. This allows people to view the country or various regions through maps coded to show such issues as, pollution, bathing waters, river and quality discharges to the sea. It also allows people to see their area by entering a postal code or a place name.

### **Reporting on ecosystems**

Governments have long tended to report on issues based on political boundaries. Environmental experts have been advocating reports that also relate to natural boundaries, such as watersheds or ecosystem classifications. This ecosystem based reporting is now starting to be adopted.

Canada and the United States have a State of the Great Lakes reporting process, which produces a biennial on the health of the Great Lakes basin ecosystem, as well as reporting on progress towards the goals of the Great Lakes Water Quality Agreement. Indicators on Great Lakes health are discussed in a biennial meeting involving a large number of participants from governments, businesses, non-government organizations, aboriginal and tribal groups, academics and others.

For the latest information, go to, <http://www.on.ec.gc.ca/solec/solec2000-e.html>

Similar ecosystem based reports are developed or being developed for regions such as the Fraser Valley, Georgia Basin on the U.S. and Canadian west coast, Chesapeake Bay and the Gulf of Mexico.

Environment Canada's Internet-based reporting system allows people to view a limited series of reports from a provincial boundary or large ecosystem scale at <http://www.ec.gc.ca/soer-ree/English/Regional/Regional.cfm>.

## **LEADERS IN DEVELOPING REPORTING SYSTEMS**

Following is a selection of organizations that are showing leadership in advancing the state of the art in environmental reporting.

### **European Union**

The European Union created the European Environment Agency “to establish a seamless environmental information system. This is done to assist the Community in its attempts to improve the environment and move towards sustainability, including the EU’s efforts to integrate environmental aspects into economic policies.”

Billing itself as “Europe’s gateway to environmental information,” <http://eea.eu.int/>, leads to a rich source of information about environmental reporting, and it links to 26 national environmental information connections on the Internet.

### **OECD**

The Organisation for Economic Co-operation and Development, with its 29 member countries, has a long record of environmental reporting, particularly its Environmental Performance Reviews of member nations, which have been done since 1991.

“The question of environmental performance—in other words, how far these commitments are actually met—is central to the environmental credibility of governments in the eyes of public opinion, other governments and the international community. The review of trends, policies and country performances, as well as the use of peer pressure to improve them, is a basic OECD function. Each review establishes the facts, uses environmental indicators and addresses around 60 recommendations to help the reviewed country consolidate achievements and make further progress.”

—OECD

The OECD also has an environmental indicators program, <http://www.oecd.org/env/indicators/index.htm>. Its role is to track environmental progress, ensure integration of environmental concerns into economic and sectoral policies (e.g., transport, energy and agriculture) to measure environmental performance and to help determine whether countries are on track towards sustainable development.

### **Global Reporting Initiative**

The Global Reporting Initiative (GRI) is an international project to create a common framework for voluntary reporting of the economic, environmental, and social impact of organization-level activity, particularly by corporations. Founded by the United Nations Environment Programme and the Coalition for Environmentally Responsible Economies, it includes representatives from businesses, accountancy, human rights, environmental, labour, and governmental organizations.

The organization has published draft Sustainability Reporting Guidelines, which are being tested by a variety of companies and other organizations. The goal is a common framework by which to judge performance in economic, environmental, and social sectors. The GRI web site is at, [www.globalreporting.org](http://www.globalreporting.org).

## LEADING EXAMPLES OF REPORTING

Over the past couple of decades, a large number of organizations, ranging from the UN to local governments, from global corporations to non-government organizations, have produced their take on environmental issues and trends. I have selected the following as good examples of innovators.

For a quick link to a wide range of high level SOE reports, please see the UN SOE Gateway at <http://www.grida.no/soe/>.

### Global

Two Washington-based non-government organizations stand out as leaders in the development of modern environmental reporting:

#### **Worldwatch Institute**

<http://www.worldwatch.org>

Founded in 1974 by U.S. foundation money, Worldwatch began the *State of the World* series in 1984. In 1992, it started producing *Vital Signs*, a yearly look at critical trends under such headings as food, energy, agricultural resource, atmospheric, economic, transportation, communications, social and military sectors.

Worldwatch has long been considered a leader in identifying critical emerging issues, particularly in the food sector. The *Vital Signs* series was a major step in the development of integrated indicators. This work is supplemented by books, papers, a magazine, a web site and CDs.

#### **World Resources Institute**

<http://www.wri.org/>

Created in 1982 by a major U.S. foundation grant, the World Resources Institute (WRI) has become a global leader in assembling data-rich environmental reports. Every two years it publishes about a 400-page book, the most recent titled *World Resources 2000-2001*, an assessment of the health of global ecosystems. Each report is backed with large amounts of environmental, economic and social data. In recent years, WRI's biennial report has been produced in collaboration with the United Nations Development Programme, the United Nations Environment Programme and The World Bank.

In an attempt to make this mass of information more relevant to peoples' needs, WRI has partnered with other organizations to analyze ecosystems from the perspective of how they are doing in producing a range of goods and services, including:

- Food and fiber production
- Provision of pure and sufficient water
- Maintenance of biodiversity
- Storage of atmospheric carbon
- Provision of recreation and tourism opportunities

A recent study, *Pilot Analysis of Global Ecosystems*, looked at both current and future capacity to produce these goods and services. For example, it examined both current marine fish production and the condition of the fish stocks that contribute to this catch. It is an attempt to examine the sustainability of current patterns of ecosystem use.

According to WRI "This 'goods and services approach' makes explicit the link between the biological capacity of ecosystems and human well-being—between the condition of ecosystems and their potential to support human development."

### **UN system**

A number of UN agencies, including the United Nations Environment Programme (UNEP), UN Development Program (UNDP), UNICEF, Food and Agriculture Organization, World Bank, World Health Organization and World Meteorological Organization publish reports that deal with major environmental and sustainability issues.

UNEP started the Global Environment Outlook (GEO) report series in 1995 and it is now published on a biennial cycle. While still very much a SOE report it seeks to "reach beyond traditional state of the environment reporting and incorporate assessments of policies and emerging issues as an integral part of the sustainable development decision-making cycle." The GEO page is at, <http://www.unep.org/unep/eia/geo/reports.htm>.

The UNDP has been publishing Human Development Reports since 1990. It introduced a new way of measuring development by combining indicators of life expectancy, educational attainment and income into a composite human development index, the HDI. It says the HDI, which ranks Canada at the top and Sierra Leone at the bottom, helps people see relative states of human development around the world.

## **National**

A large number of countries, including many less-industrialized nations, have been working on environmental reporting systems. I chose the United Kingdom as a prime example of a country that is showing leadership and innovation.

### **United Kingdom**

The United Kingdom has two reporting systems, both online.

#### **State of environment reporting**

The U.K. Environment Agency has an environmental information page, <http://www.environment-agency.gov.uk/envinfo/>, that serves as a gateway to a series of links, both broad and focused.

The State of the Environment Report online, [http://www.environment-agency.gov.uk/state\\_of\\_enviro/index3+.html](http://www.environment-agency.gov.uk/state_of_enviro/index3+.html), is itself a gateway into a number of ways of seeing environmental information.

It contains the following welcome:

“The Agency believes in open and easy access to environmental information, to allow you to make decisions as to the quality of your environment.”

Ed Gallagher  
Chief Executive

It also provides a link to a user-driven system called What's in your backyard, described in the 'User driven systems' section.

#### **U.K. headline indicators**

Another piece of innovative and influential work, called Headline Indicators, started in 1998. This project is headed by U.K. Department of the Environment, Transport and the Regions, and has support from the Prime Minister.

It draws from a national sustainable development strategy that says:

“We need increased prosperity, so that everyone can share in higher living standards and job opportunities in a fairer society. But sustainable development is more than just economic growth. The quality of growth matters, as well as the quantity. Some forms of growth are more sustainable than others. There are environmental limits to some economic activities: processes that result in greenhouse gas emissions, for example. The Government has to set a framework: not to constrain

economic activity but to channel it into more sustainable patterns, to make sure that the price of growth is not environmental decline or social injustice. We must achieve economic growth alongside improvements in the other indicators.”

The government consulted with experts and the public on how to measure progress, identifying four key areas:

- Social progress which recognizes the needs of everyone.
- Effective protection of the environment.
- Prudent use of natural resources.
- Maintenance of high and stable levels of economic growth and employment.

It now has a list of 15 Headline Indicators, drawn from a set of 147 indicators that provide a broader information base. The most recent set of indicators was published in December 1999 as: “Quality of life counts—indicators for a strategy for sustainable development for the United Kingdom: a baseline assessment.” It is online at, <http://www.environment.detr.gov.uk/sustainable/quality99/index.htm>.

The United Kingdom has succeeded, where others are still trying, in paring down a daunting list of important issues to a short list that is relatively easy to comprehend. It includes such classic measures as GDP, education levels, life expectancy, crime levels, wild bird populations, greenhouse gas emissions and waste disposal.

## Canada's experience

Canadian government agencies provide huge amounts of environmental information. A number of departments produce public reports covering their sectors. Two departments can be considered leaders in covering a broad range of issues.

### Environment Canada

Environment Canada's first SOE report, a two-volume document produced in collaboration with Statistics Canada, was released in 1986. At the time, there was no established system for continuous environmental reporting in Canada. That year the government authorized Environment Canada and Statistics Canada to establish an ongoing SOE reporting program, with support from other federal agencies.

The next report, in 1991, was designed for a nonscientific audience of interested Canadians. It sought to answer four questions:

- What is happening in Canada's environment? (environmental conditions and trends)
- Why is it happening? (link to human activities)
- Why is it significant? (environmental, social, and economic consequences)
- What are Canadians doing about it? (management responses to environmental change)

The 750-page book had 27 chapters covering human activities, environmental components, regional case studies, and priority issues. It sold 5,000 copies in three months, and most of the 20,000 printed copies had been sold or distributed within five years.

By then, the reporting process included a Public Advisory Committee on SOE Reporting, drawn from nongovernmental organizations, and participation from eight federal agencies.

In 1996, there was a third report, again 750 pages, which was this time also released on CD and on the Internet. It can be found at: [http://www1.ec.gc.ca/cgi-bin/folioisa.dll/soerengp/query=\\*/toc/{@1}?expand{@1}](http://www1.ec.gc.ca/cgi-bin/folioisa.dll/soerengp/query=*/toc/{@1}?expand{@1}).

This report again covered a wide range of issues and perspectives, including ecozones, lifestyles and critical environmental issues. The report put an increasing emphasis on sustainability. Although Environment Canada was the lead agency, it was published as a Government of Canada report.

During this period, Environment Canada was seen as a world leader, and one of their experts wrote a manual on SOE reporting for global use, produced by the United Nations Environment Programme.

In late 1997, the State of the Environment Directorate was closed as part of Environment Canada budget cuts. The department retained a much reduced environmental reporting operation under the Indicators and Assessment Office. Although a small operation, this unit has been doing excellent work in developing an integrated indicators system for Canada. On the Internet, this appears as the State of Canada's Environment InfoBase, <http://www.ec.gc.ca/soer-ree/english/>.

This is broken into four categories:

- Ecosystem Status and Trends
- Early Warning Advisories
- State of the Environment (SOE) Reports
- National environmental indicator series

The indicator series is available online at: <http://www.ec.gc.ca/soer-ree/English/National/IndWelc.cfm>.

It is available online and as a printed series of occasional issue papers, covering:

- Ecological Life-Support Systems
- Human Health & Well-Being
- Natural Resources Sustainability
- Pervasive Influencing Factors

The SOE web site also provides access to regional environment reports. These include material from the 1996 SOE, work by Environment Canada regional offices, and reports by provinces. The link is at: <http://www.ec.gc.ca/soer-ree/English/Regional/Regional.cfm>.

### **Statistics Canada**

Although less well known than the Environment Canada work, Statistics Canada has been producing the Human Activity and the Environment series in roughly five-year intervals since 1978. It is led by the Environment Accounts and Statistics Division. The goal of this division is "to provide users in government, business, and the public at large with consistent, comprehensive, timely and relevant statistics with which to study the relationship between the environment and human activity.

When the latest edition of Human Activity and the Environment was released in June 2000, it was promoted this way:

"The report provides a statistical picture of Canada's environment with special emphasis on human activity and its relationship to natural systems—air, water,

soil, plants and animals. Analysis and interpretation support the statistics and help readers make sense of these complex interactions.”

They advertise it as a way to:

- Understand the relationships between our population, socio-economic activities and the environment.
- Augment research when preparing reports, essays, and analysis on environmental impacts.
- Compare environmental performance both internationally and provincially.
- Forecast profit margins of resource-based industries.
- Weigh benefits and costs of urbanization.
- Keep abreast of public support for protection policy measures.

The latest version comes as a 332-page book and a CD. The content is a mix of statistics and background that makes it a cross between a SOE report and an atlas. The book-CD package sells for \$75. Information about the report is available at, <http://www.statcan.ca/english/ads/11-509-XPE/package.htm>.

### **Other federal work on environmental information**

Two pieces of work funded under the February 2000 federal budget will affect environmental reporting in Canada. The National Round Table on the Environment and the Economy and Environment Canada get \$9 million over three years. Part of that is to work with Statistics Canada to develop indicators that measure environmental performance in conjunction with economic performance. The budget speech said “these environmental indicators could well have a greater impact on public policy than any other single measure we might introduce.” Environment Canada will also use some of the money to develop a new Canadian Information System for the Environment.

## Provincial and State

Two provinces, Manitoba and British Columbia, stand out as leaders in Canada. Florida was chosen as an interesting example because of its approach to public accountability, called environmental performance reporting.

### Manitoba

Manitoba did four SOE reports, in 1991, 1993, 1995 and 1997. In the latest report, called *State of the Environment Report for Manitoba, 1997: Moving toward sustainable development reporting*, the province was trying to move to sustainability reporting. The Prairie ecozone was selected as a pilot project to develop a reporting format and indicators for sustainable development.

The ecozone chapter deals with sustainable development issues in four categories: the natural environment, the economy, community assets and human life. Key issues in these categories were identified in a consultative process that involved a focus group of prairie stakeholders. The work was done using data from numerous provincial and federal sources. It involved a partnership between the province and the Winnipeg-based International Institute for Sustainable Development (IISD).

The report covered such issues as trends in soil quality and quantity, domestic water quality, trends in fertilizers and manure management, as well as such general information as economic, population and energy trends. It presents such tools as a Barometer of Sustainability, a graphic way of comparing trends in different sectors.

The move to sustainability reporting followed adoption of a provincial sustainable development strategy in 1994, which laid out a framework for sustainability in Manitoba. The 1997 report said that measuring progress toward sustainability was essential so: "Resources can be managed in a sustainable way by monitoring progress toward objectives by using indicators that communities understand and accept."

The report can be found online at, <http://www.gov.mb.ca/environ/pages/soe97/>.

The 174-page report developed both indicators, and indices, which combine indicators, in order to:

- Facilitate the assessment of Manitoba's long term economic, environmental, human health and community well-being.
- Facilitate the establishment and adjustment of provincial economic, environmental, human health and community goals, objectives, targets and policies.
- Provide a measure of performance in achieving goals, objectives, targets and policies.

- Provide the framework for the preparation of a provincial sustainable development report.

The goal was to measure:

- Natural resources
- Human made capital
- Community assets
- Individual well-being

Manitoba Conservation, the department in charge of SOE/sustainability reporting is working with the provincial Round Table on Environment and Economy. The 1998 Manitoba Sustainable Development Act replaced SOE reporting with sustainability reporting.

Manitoba is holding public consultations, both through meetings and online at the indicators web site, <http://www.susdev.gov.mb.ca/indicators/>, where people can identify their favorites.

It asks people to choose indicators under three fields:

- Environmental Dimension
- Economic Dimension
- Human Health & Social Well-Being Dimension

The sustainability reporting work is complex, but it has attracted people in different departments. For example the health department is seeking to develop regional health indicators. The goal is to link the Human Health and Social Well-being indicators with indicators in other sectors, such as environmental and economic trends.

Manitoba is seeking to produce its next sustainability report by 2002. As Manitoba prepares for the next printed report, it is looking at how to make an easy-to-read public version. In addition, the department wants to produce versions tailored to different audiences. One goal is to help government see how they are doing in meeting their goals for environmental quality.

Manitoba charged \$20 a copy for its first two SOE reports, and distributed the second two reports free. The last report had a press run of 5,000 copies.

## British Columbia

British Columbia released its latest report, *Environmental Trends in British Columbia 2000*, in April. It was the latest in a series of reports started in 1993. This is a classic SOE report, but refers to a sustainability goal. The aims of the B.C. report are to:

- Provide a comprehensive analysis of environmental conditions and trends, and to measure progress towards sustainability.
- Contribute to informed and open decision-making.
- Contribute to public awareness about environmental health.
- Serve the public's right to know by providing access to scientific information about the environment in a concise and easily understandable fashion.

The 54-page document is an indicators report, covering 15 subjects, ranging from toxic contaminants to species at risk, and from water use to Green Economy. Modeled on the *Vital Signs* reports from Worldwatch, the B.C. report provides a mix of text and graphics. The 8,500 printed copies of the report are distributed free. A policy decision was made to have a print report to encourage the report to be used in decision-making.

The report is also available as a PDF file on the Internet at, <http://www.elp.gov.bc.ca/sppl/soerpt/>. (PDF refers to Adobe Acrobat's portable document format.) That site also gives online access to the indicators. The web-based report allows more information to be disseminated, according to the head of the unit.

The impetus for the provincial SOE reporting came from the former head of communications for the B.C. British Columbia Ministry of Environment, Lands and Parks. Although the report was not required as part of a departmental business plan, the impact of the report has moved the ministry to make reporting on environmental outcomes one of its goals.

The latest report was the result of a mix of consultation and the use of available data. The ministry decided to produce the report in a relatively short time to stimulate a public discussion on critical issues. Since its release, the report has led to a flurry of discussion about issues, such as air pollution. The head of SOE reporting has been meeting regularly with people, and feels their advice will shape the selection of future indicators.

In the future, the reporting system will become more of a sustainability reporting system.

There are also links with reporting systems in other parts of government. The provincial Medical Officer of Health is working on a new report on health in the province, and it contains a focus on the environment. The province is also developing a forestry report, which will draw from environmental indicators.

## Florida

Florida's environment department, which has a mission of "more protection, less process," has a very strong focus on performance measurement in its environmental reporting. Its goal is to "detect and address important environmental problems while providing an account of the agency's record to Florida's taxpayers."

The current reporting system is online on the departmental web site, <http://www.dep.state.fl.us/ospp/>, as The Secretary's Quarterly Performance Report: Performance Measurement in the Department of Environmental Protection. Here you are greeted by a message signed by Florida's Secretary for Environmental Protection. It talks about "making environmental programs more fully accountable to the people they serve."

The quarterly reports were started in 1997 as a "step towards more accountable government." The web site boasts that it has been "recognized as a key innovation in American government by Harvard University's Kennedy School of Government, the Ford Foundation, and the Council for Excellence in Government."

The current Secretary's message says that the report will stay in electronic form as it evolves. One goal is to "design information products tailored to meet the needs of our many users: citizens, legislators, environmental activists, and the business community." Another is to design a report with "a leaner information flow, more attuned to environmental protection than regulatory process." It also boasts that readership grew from barely more than 1,000 to nearly 20,000.

The report, available online as a 68-page PDF file, summarizes the performance-related information. It covers such issues as air, water, waste management, habitat conservation, public health and environmental law enforcement statistics.

It is organized in four sections:

Tier 1: *Environmental and Public Health Outcome Indicators* that track long-term trends in the condition of Florida's natural resources, public health and general environmental quality.

Tier 2: *Behavioral and Cultural Measures* that track compliance rates, best management practices, volunteerism and other behaviors that impact environmental quality.

Tier 3: *Department Outputs and Activities* that track the traditional measures of program performance, such as numbers of inspections, numbers of compliance assistance activities, or numbers of violations.

Tier 4: *Resource Efficiency Measures* that track the agency's budget, the cost of services, and the cost effectiveness of interventions used to solve environmental problems.

The current report is rather bland in presentation, but the department says the reporting system is evolving and will be modified, based on feedback from users. The attractive part of the Florida report is the approach of regular performance measurement. It says: "the essence of program performance could be described with a hierarchy of quantifiable measures modeled after program goals and objectives."

This is a jurisdiction to watch. It promises to release a new generation of reports starting early in 2001.

## **Local**

People relate to issues most readily at the local level. There are a number of good local environmental, sustainability and quality of life reports. One excellent source of information about sustainability reporting at the community level is the Sustainable Measures program, <http://www.sustainablemeasures.com/>.

Two good examples of local sustainability reporting follow.

### **Sustainable Seattle**

Sustainable Seattle, a volunteer citizen's organization that has tracked long-term trends in community health since 1992, has a list of 40 indicators. The group defines sustainability as the long-term health and vitality of cultural, ecological, economic, and social systems.

The head of the reporting program said that as few as two key indicators could give a good sense of the state of the region. Wild salmon runs in the Cedar River watershed provide information on a series of issues, ranging from watershed management and logging to pollution to over-fishing. The asthma hospitalization rate for children was the other key signal. It is taken as a surrogate for a number of air pollution and health issues, and for an indication of poverty, because the greatest increases in recent years were found among poor and minority children. Two other key indicators were Vehicle Miles Traveled and Fuel Consumption, and Ethnic Diversity of Teachers.

The organization provides a limited amount of information on its web site, [www.scn.org/sustainable/](http://www.scn.org/sustainable/), but sells its report.

## **Sustainable Calgary**

As in Seattle, a group of citizens formed Sustainable Calgary in 1996 with a mission “to promote, encourage and support community level actions and initiatives that move Calgary towards a sustainable future.” The State of Our City Project published its first report in 1998. “The goal of this project is to develop the necessary tools and processes to help our city move towards a sustainable future.” The report is online at, <http://www.telusplanet.net/public/sustcalg/>. Indicators in the 1998 report cover: economy, resources use, natural environment, community and health and education.

A number of other cities around the world have or are developing environmental, sustainability or quality of life reports.

## **Corporate**

Companies have long communicated their performance through the Annual Report, which usually deals with economic and organizational issues. Over the past decade, pressed by non-government organizations and by government regulations, they have tried to account publicly for their environmental performance.

Many companies now issue environmental or often environment, health and safety reports. These reports typically deal with such issues as emissions, performance against regulations or self-imposed targets, relations with stakeholders in regions where operations have environmental impacts, and the health and safety record of their operations.

In recent years, a growing number of companies have adopted the concept of sustainable development. Some refer to it as applying eco-efficiency principles to reduce waste and inefficiency in production processes, thus saving money and protecting the environment at the same time. This brings other benefits, such as less criticism from environment groups, less regulation by governments and increased shareholder value and employee approval. Companies also talk of showing social sustainability by shaping their development to bring more benefits to people living around their operations. This is an approach used by a number of primary resource and chemical companies.

Two examples of good corporate reporting:

### **Canadian Chemical Producers' Association**

The Canadian Chemical Producers' Association (CCPA) represents 75 chemical with over 200 plants, which collectively produce more than 90 per cent of all chemicals in Canada. As part of its Responsible Care initiative, the CCPA has been publishing *Reducing Emissions* reports on pollution from its members. In its latest report in 1999, it boasts that, on average, a unit of chemical is produced with 71 per cent less chemical emissions than in 1992. This voluntary initiative produces a report on paper and on the Internet detailing the members' environmental performance. Its reports are available as PDF files from, <http://www.ccpa.ca>.

### **Noranda Inc.**

Toronto-based Noranda Inc., a mining and metals company that is one of the world's largest producers of zinc and nickel, has had an environmental policy since 1965, an environmental audit since 1985 and published its first environmental report in 1990. In 1995, it adopted Sustainable Development Principles, and in 1998 selected eight key indicators "to show our progress in responding to sustainable development challenges." In 1999, the title was changed to *Sustainable development report*. It is organized in three sections: environment, social and economic.

The latest report describes the change in approach this way:

"In 1990, environment, safety and health were primarily about regulatory compliance, pollution and industrial hygiene. Increasingly, however, we are being called to account not only for what we do but also how we do it. Accordingly, we need to measure the extent to which our operations enhance economic development, ensure environmental protection and promote social equity.

"With this report we are attempting to report on our progress based on eight indicators of sustainable development: sulphur dioxide emissions in our copper business, metal emissions to air, energy consumption (which implies to a large extent greenhouse gas emissions), minimizing our footprint, community dialogue, safety, profitable growth and environmental capital expenditures."

Noranda's recent reports are available in print or on the Internet at <http://www.noranda.com/>.

## CONCLUSIONS

The past three decades have seen environmental issues catapulted from the domain of the research scientist or ecologist to the front pages of the media, and onto the cabinet and boardroom tables of governments and corporations. As decision-makers struggled to grasp with the science, and the economic, social and political implications of the findings, they have looked for good information. They need it for policy development, and for communication with key stakeholders and the public at large—people who are voters and consumers of products.

This has driven an evolution in thinking about environmental reporting. While such reporting was first seen as simply a way of identifying and categorizing environmental problems, it is now becoming a way of measuring performance—both by governments and companies—in responding to these challenges. A good example is Florida's quarterly environmental performance report, which has the stated goal of "making environmental programs more fully accountable to the people they serve."

As decision-makers call for ever better information, scientists, information specialists and communicators have been working for at least two decades on developing a more systematic approach to environmental performance reporting. This work was originally led by people in governments and academe. Canada has been a pioneer in the field, based on early work by Statistics Canada and Environment Canada.

A number of governments in Canada and abroad have been building reporting systems that seek to knit together information from environmental, economic and social sectors. They need this to provide a big picture of what is happening, and to show the interconnections among sectors. This is called integrated or sustainability reporting. The United Kingdom is a leader in developing this kind of reporting at the national level, while the Manitoba Government is a leader at the provincial scale. The OECD is providing leadership in helping develop reporting frameworks. The allocation of special funding for the development of Sustainable Development Indicators in Canada's federal budget of February 2000 is a signal that this kind of reporting is seen as important from an economic perspective. Manitoba has mandated sustainability reporting.

In recent years, industry has been under ever closer scrutiny over its environmental performance, and its experts have joined the work of developing environmental performance reports. Companies such as Noranda, Ontario Power Generation, Dow, DuPont, Shell and many others who have been on the environmental front lines, are now producing reports that are clear and candid. The companies are using reports as a way of identifying environmental challenges, making commitments for better performance and reporting publicly on how they are doing.

There is a developing convergence of approaches. For example, a private water authority in the United Kingdom is modelling its performance reporting on the sustainability reporting system evolved by the U.K. Government. In Canada, people from government and corporate sectors have expressed an interest in the possibility of a forum to share approaches to environmental performance reporting.

Think tanks such as the Winnipeg-based International Institute for Sustainable Development have been important players, helping both to develop advanced indicators and teaching materials on environmental reporting.

While no single number adequately sums up overall performance in such diverse sectors as the economy, environment and social sectors, there is work on presenting small suites of critical indicators. This kind of work is helping to sharpen the focus on the interconnections among economic decisions and personal choices and their impacts on the environment. New technologies, particularly geographic information systems linked to maps and user-driven databases, are giving people clearer pictures of issues relevant to them.

It is this sort of information that will help people make decisions that provide economic benefits while avoiding unnecessary and costly environmental side effects.

In summation, there are a number of findings from this research sub-contract. They are as follows:

### **Key findings**

- Over the past two decades environmental reporting has been evolving as a discipline. It was first developed by governments and non-government organizations, but industry is now becoming an important participant in the development and use of environmental reporting.
- State of the Environment (SOE) reporting is evolving from anecdotal stories to the use of indicators to track performance in specific sectors over time.
- Environmental reports are being broadened to show the interconnections among environmental, economic and social issues. This is called integrated environmental reporting and sustainability reporting.
- Public consultation and a multistakeholder approach in designing and producing reports is making them more user friendly and getting more participation in design and buy-in for the final products.
- There is a move from big, encyclopedic reports to shorter more focused reports, written to assist specific audiences.

- Environmental reporting is being built into decision-making systems. Governments and companies are using environment reporting systems to help improve performance and show how they are delivering on promises. This is being built into business plans by both government and industry.
- New technologies, particularly geographic information systems (GIS) and the Internet, are enabling a move away from top-down reports in which experts tell people what they think people should know. There are now information portals or gateways through which people can query the system with their questions, even going to environmental maps of their neighborhoods.

## APPENDICES

### Methodology

In preparing this review of public reporting on environmental performance, I drew from my own experience, going back to the 1960s. Since 1966, I have reported on environmental and sustainability issues for the news media, written four books on the environment, including a handbook on environmental reporting for journalists, developed a course on environmental journalism, advised on and reviewed SOE work at the national and international levels, and taught and advised on an international course on Integrated Environmental Assessment and Reporting.

For this project, I looked at government, non-government and corporate reporting in categories known as environmental, integrated environmental and sustainability reporting. I relied on my collection of reports, dating from the 1980s, and updated that with an extensive review of reports and reporting systems through the Internet. I looked at examples in Canada and abroad, including reports at the local, provincial/state, national and international scales.

I used a research assistant to collect material on environmental reports.

I sent a questionnaire to survey nine experts in the field by e-mail, and conducted interviews with a number of the key experts:

David Bell  
Director, York Centre for Applied Sustainability  
York University

James Bernard  
Advisor to U.S. EPA on SOE reporting

Tammy Gibson  
Manager, SOE  
Manitoba Conservation

Anne Kerr  
Manager, Indicators and Assessment Office  
Ecosystem Conservation Service  
Environment Canada

Carolyn O'Neill  
Great Lakes Environment and Economics Office  
Environment Canada, Ontario region

László Pintér

Project Manager  
International Institute for Sustainable Development

John Reed  
Principal  
Office of the Commissioner of the Environment and Sustainable Development  
Auditor General of Canada

Risa B. Smith  
Head, State of Environment Reporting  
B.C. Ministry of Environment, Lands and Parks

I also discussed reporting at the municipal level with Joanna Kidd of the Lura Group, who worked on a report for York Region.

I received e-mail and documentary information from:

Jane Barr  
SOE Project Coordinator  
North American Commission for Environmental Cooperation

Murray Cameron  
Managing Editor, Human Activity and the Environment  
Environment Accounts and Statistics Division  
Statistics Canada

Elizabeth Dowdeswell  
Former Executive Director, United Nations Environment Programme

## References

### Copies of reports

Copies of the following reports were submitted under separate cover as part of this report:

British Columbia Ministry of Environment Lands and Parks, *Environmental Trends in British Columbia 2000*, Victoria, B.C. 2000.

Canadian Chemical Producers' Association, *Reducing Emissions*, Ottawa, 1999.

Government of Canada, *The State of Canada's Environment—1996*, Ottawa, 1996.

Keating, Michael and the Canadian Global Change Program, *Canada and the State of the Planet*, Oxford University Press, Canada, 1997.

Manitoba Environment, *State of the Environment Report for Manitoba, 1997*, Winnipeg, 1997.

Noranda Inc., *Sustainable development report*, Toronto, 1999.

United Nations Environment Programme, *Global Environment Outlook 2000 (GEO-2000)*, Earthscan Publications, London.

World Resources Institute et al., *World Resources* (New York: Oxford University Press, published biennially).

Worldwatch Institute, *State of the World* (Washington, DC: Norton, published annually).

Worldwatch Institute, *Vital Signs* (Washington, DC: Norton, published annually).

Other print reports worth reading:

United Nations Development Programme, *Human Development Report* (Oxford: Oxford University Press, published annually).

Wackernagel, Mathis, and William Rees, *Our Ecological Footprint* (Gabriola Island, B.C., and Philadelphia: New Society, 1996).

## Web references

Environment Canada. State of Canada's Environment InfoBase  
This is Canada's main national online source of environmental information from the federal government.  
<http://www.ec.gc.ca/soer-ree/english/>

International Institute for Sustainable Development  
A Winnipeg-based centre that has expertise in environmental and sustainability reporting. Performance Measurement Reporting web page.  
<http://iisd.ca/about/prodcat/perfrep.htm#capacity>

Manitoba Department of Conservation  
The province has produced environmental and is now working on sustainability reporting. The report that started this move is online.  
<http://www.gov.mb.ca/environ/pages/soe97/>

Manitoba sustainability indicators project  
<http://www.susdev.gov.mb.ca/indicators/>

B.C. British Columbia Ministry of Environment, Lands and Parks  
The latest SOE report was published in the spring, and focuses on 15 indicators.  
<http://www.elp.gov.bc.ca/sppl/soerpt/>

Survey of state-level environmental reporting in the United States.  
In May 2000, the Resource Renewal Institute undertook a 50-state survey of environmental agencies to determine the availability of comprehensive state of the environment reports. This research was undertaken as part of the development of a State of the States report. It is at,  
<http://www.rri.org/envatlas/nam/usa/soereports.html>.

Sustainable Development in the United States: An Experimental Set of Indicators  
A Progress Report Prepared by the U.S. Interagency Working Group on Sustainable Development Indicators  
<http://www.sdi.gov>

Florida Department of Environmental Protection  
The Secretary's Quarterly Performance Report: Performance Measurement, is an interesting approach to environmental reporting.  
<http://www.dep.state.fl.us/ospp/>

Measuring Sustainable Development:  
Application of The Genuine Progress Index To Nova Scotia  
This is an attempt to develop an index to measure the general well-being of a society. It has been funded by a number of sources, including Environment Canada.  
<http://home.istar.ca/~cliffe/gpi/download.html#top>

United Nations Environment Programme  
SOE Gateway  
Access to a very wide range of reports  
<http://www.grida.no/soe/>

Global Environment Outlook  
A biennial report on environmental trends based on national and regional reports.  
<http://www.unep.org/unep/eia/geo/reports.htm>

European Environment Agency  
Billed as "Europe's gateway to environmental information," this site leads to a rich source of information about environmental reporting and it links to 26 national environmental information connections on the Internet.  
<http://eea.eu.int/>

European Environment Information and Observation Network (EIONET)  
Links to 26 national environmental information connections on the Internet.  
<http://eionet.eea.eu.int/index.shtml>

EU State of the Environment Reporting Information System  
<http://service.eea.eu.int/seris/index.shtml>

Toward environmental pressure indicators for the EU  
<http://www.e-m-a-i-l.nu/tepi/firstpub.htm>

OECD Environmental indicators program  
<http://www.oecd.org/env/indicators/index.htm>

#### Global Reporting Initiative

An international project to create a common framework for voluntary reporting of the economic, environmental and social impact of organization-level activity, particularly by corporations.  
[www.globalreporting.org](http://www.globalreporting.org)

#### State of the Great Lakes reporting

A biennial on the health of the Great Lakes basin ecosystem, as well as reporting on progress towards the goals of the Great Lakes Water Quality Agreement.  
<http://www.on.ec.gc.ca/solec/solec2000-e.html>

#### United Kingdom

##### U.K. Environment Agency

A series of electronic tools to seek environmental information in any part of the country.  
<http://www.environment-agency.gov.uk/envinfo/index.htm>

##### U.K. Department of the Environment, Transport and the Regions

Quality of life counts - indicators for a strategy for sustainable development for the United Kingdom: a baseline assessment.  
<http://www.environment.detr.gov.uk/sustainable/quality99/index.htm>

#### Environmental Defense Fund, Scorecard web site

This site provides map-based information on a number of air, land, water and pollutant issues, allowing U.S. citizens to get information by clicking on maps or entering their postal ZIP code to get details about their community.  
<http://www.scorecard.org/>

#### Sustainability Reporting Program

Canada's independent report on critical sustainability issues and trends.  
<http://www.sustreport.org>

#### Worldwatch Institute

Publishes State of the World series of books, as well as reports.  
<http://www.worldwatch.org>

#### World Resources Institute

Produces a wide range of information, including the biennial World Resources Report, a compendium of global environment and development statistics, in collaboration with UN agencies.

<http://www.wri.org>

#### Sustainable Measures program

A site providing ideas and advice on community based sustainability reporting.

<http://www.sustainablemeasures.com/>

#### Sustainable Seattle

A volunteer citizen's organization that tracks long-term trends in community health.

[www.scn.org/sustainable/](http://www.scn.org/sustainable/)

#### Sustainable Calgary

A volunteer organization that published a report on The State of Our City.

<http://www.telusplanet.net/public/sustcalg/>

#### Canadian Chemical Producers' Association

This organization, representing 75 chemical manufacturing industries, publishes a report called *Reducing Emissions*.

<http://www.ccpa.ca>

#### Noranda Inc.

Noranda, one of the world's biggest zinc and nickel producers, has a long history of environmental reporting, and now labels its work as sustainability reporting.

<http://www.noranda.com/>

#### Ontario Power Generation

Ontario's major power generator has been evolving its environmental performance reporting system, and now publishes reports titled:

Towards Sustainable Development Progress Report.

<http://www.ontariopowergeneration.com/environmental/apr.asp>

## **Electronic files**

(The following files were compiled by Michael Keating, and will be supplied if requested in Word for Windows or Adobe Acrobat PDF file format, depending on source material.)

SOEScan.doc

A survey of a number of SOE reports in Canada and abroad.

EcoEffic.doc

An article by Domingo Jiménez-Beltrán, Executive Director, European Environment Agency, on development of an indicator of materials consumption in Europe and attempts to measure eco-efficiency.

EUIndics.doc

Towards a European Set of Environmental Headline Indicators draft, jointly prepared by European Environment Agency and Eurostat.

EurSDI.doc

A case study on the design of indicators of sustainable development from the European Commission.

Flarpt.doc

Excerpts from the Florida Department of Environmental Protection web site on its environmental performance report.

IndicCR.doc

A report on a meeting international experts on indicators for sustainable development held in Costa Rica in 1999.

ManSOE.doc

Excerpts from Manitoba's web SOE report, explaining how it is trying to evolve from environmental to sustainable development reporting.

UKRept.doc

Background material on the United Kingdom's Headline Indicators of sustainability for a quality of life barometer for the nation.

UKSDStr.doc

More detailed material on the U.K. indicators of sustainable development.

MeasSD.pdf

Measuring sustainable development: review of current practice, a paper for Industry Canada by experts from the International Institute for Sustainable Development.