

November 16, 2014

Charles Thrift
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International Institute for Sustainable Development

by email: cthrift@iisd.ca

Dear Charles,

Re: Green Economy Indicators

On October 8, Harvey Stevens, James Magnus-Johnston and Peter Miller of the Green Action Centre Policy Committee attended your Green Economy Indicators Workshop at the University of Winnipeg. As a follow-up to that workshop, they have developed the attached brief on the topic. We hope these thoughts are useful as you develop and refine an indicator framework and individual indicators for the Green Economy initiative.

If you wish to follow up this submission, I suggest you contact Harvey, James and Peter directly at the addresses below.

Sincerely,



Lisa Quinn, Chair (liquinn@hotmail.com)
Green Action Centre Policy Committee

CC:

Harvey Stevens (hstevens@mts.net)

James Magnus-Johnston (johnston.james@gmail.com)

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Summary of Observations and Conclusions

1. **Green economy goal.** *TomorrowNow* proposes, “Manitoba’s goal is to be one of the most sustainable places to live on earth” including the promise that “A strong, resilient green economy will be built to reduce environmental risks and ecological scarcities, while improving well-being and social equity for Manitobans.” Indicators can measure progress (or lack thereof) in achieving these goals.
2. **Indicator functions.** Indicators should serve not only governments but also a broader public to assist citizens, organizations and community leaders, as well as governments, to understand their environment and society and take action to improve them. Indicators help identify issues, worrying trends, causes and impacts, desirable outcomes and policy objectives, intervention options and outputs and serve to monitor and evaluate programs and initiatives.
3. **Indicator framework.** Indicators provide a portrait of the environment, society and economy and, over time, of trends, which may be desirable or not. Green economy policy and programming are designed to promote favorable trends in the direction of the *TomorrowNow* goal. Planning and measuring progress require an Indicator Framework that distinguishes desirable outcomes from outputs that affect these outcomes, ends and means, by key goal area.
4. **A rich set of indicators.** In order to cover the multiple functions of indicators beyond a few headlines and provide diagnostic power, a rich set of indicators is desirable. They must cover numerous environmental, social and economic phenomena and their causes and relationships in various sectors, both aggregated and disaggregated, and both in absolute terms and intensity ratios. [The 62 PEG indicators](#) for Winnipeg and their interactive format with 8 themes show one way a larger set of indicators can be made comprehensible. Indeed this set and format of indicators might readily be expanded province-wide to track “improving well-being and social equity for Manitobans.”
5. **But social welfare ≠ a green economy.** An economy with greater GDP, higher employment, better housing and improved health outcomes is not thereby greener. These social achievements may very well have been created at the expense of environmental quality and long-range sustainability. A complementary set of green economy indicators is needed.
6. **Green economy indicators.** Unlike independent social welfare indicators, these will (a) measure environmental quality and resources and (b) link human activities and outcomes back to the environment and resources. These should measure ecological and resource efficiency of welfare outcomes as well as absolute environmental impacts and resource depletions. Efficiency of products and processes, material and energy demand reduction, substitution of renewables for non-renewables in various sectors and waste reduction, reuse, recycling and composting will be part of that. Another set of measures should be harms and costs of extreme weather events and pollution, including the social cost of GHG emissions. A third set would measure investments in mitigation, resilience and adaptation. A fourth set would measure green economy enabling conditions (and their absence or opposites).

Proposed Indicator Framework for Measuring Progress in Achieving a Green Economy

INTRODUCTION

Tomorrow Now: Manitoba's Green Plan proclaims, "Manitoba's goal is to be one of the most sustainable places to live on earth". It proposes to pursue measures that are "good for our environment – good for our economy" and promises, "A strong, resilient green economy will be built to reduce environmental risks and ecological scarcities, while improving well-being and social equity for Manitobans".

In order to determine the degree to which Manitoba is achieving this goal, government needs to establish a program of monitoring the key indicators of the goal. In the context of the Green Economy Initiative, these indicators are measures of specific aspects of the natural and social environment of the province that indicate how well these environments are functioning in terms of desired end states. If measured over time, they indicate whether these environments are moving toward or away from the desired end state.

In developing an indicator framework, it is important to keep in mind the multiple functions it serves and insure that it is well-designed to meet them all. [A recent UNEP publication](#) describes the role of indicators for government policymakers in (a) issue identification, including worrying trends, causes and impacts; (b) policy formulation, including desired outcomes and policy objectives, and intervention options with output indicators; (c) policy impact assessment; and (d) policy monitoring and evaluation.

But indicators have a much wider role than the internal functions of government policy-making. [The PEG indicator project](#) for Winnipeg shows how an interactive set of indicators can assist citizens, businesses and organizations, as well as governments, to understand their city and take action to improve it. Citizens can hold their governments to account and community leaders and social entrepreneurs can advocate and choose to act on the same information that is useful to government. Indicators also provide an important foundation for social research and education. The slide "Designing a Green Economy" from the October 8th workshop points out that "government cannot enact or mandate a green economy" but can establish the right enabling conditions to encourage other actors to choose a greener path of development. Public information provided by indicators is one such condition. An interactive web portal with a rich set of indicators, like [mypeg.ca](#), can serve that purpose.

Finally, if we would hold government to account for not making empty promises, we should have some way to recognize whether or not, or the extent to which, they have adopted recognized kinds of broad enabling conditions that promote a green economy such as carbon pricing, absence of subsidies for motor vehicles, presence of green procurement policies and practices, existence of environmental/sustainability assessments for all government programs and policies, existence of a

cabinet-level green economy mandate which extends to crown corporations and government-funded institutions, buildings, programs and projects. All such measures should also be assessed as to scope, rigor and effectiveness.

CHARACTERISTICS OF AN ADEQUATE INDICATOR FRAMEWORK

Rather than a hodgepodge of separate measures of the functioning of the natural environment, economy and society, what is needed is a framework that links programs with indicators by key focus area and by type of indicator. There are several characteristics of an adequate indicator framework for tracking progress in achieving a green economy.

Include Measures of the Desired Outcomes and Those Outputs Linked Positively or Negatively to each Outcome

With any initiative to change the status quo, it is important to define the goals and objectives of the initiative and link the actions of the initiative to those goals and objectives. The result is a 'program logic model' which identifies the program inputs, actions and outputs with each of the desired goals. Accompanying such a logic model is a set of indicators or measures of these program elements. In program evaluation terms, the goals and objectives of the initiative are called the 'outcomes' while the results of the program are called the 'outputs'. To assess the success of the program then, one requires both outcome indicators and, for each outcome indicator, a set of output indicators that are known to affect the outcome.

Link Programs to Outputs

In turn, government should create an inventory of its programs and policies aimed at greening the economy and determine which outputs are linked to each of them. This linking can be done at a conceptual level; i.e. given what the program produces or is intended to produce, it's clearly or likely affecting this output, and also at an empirical level via some kind of economic analysis. A by-product of this exercise will be the identification of gaps in programs and policies – outputs for which there are either no or insufficient programs or policies.

Appropriate Scoping of the Indicator Exercise

The purpose of the proposed Green Economy measures is to influence the economy as a whole. Thus, *outcome* indicators of how well the natural environment and economy, as a whole, are functioning are required. By comparison, the output indicators which measure the conditions determining those outcomes can be both at the broad level as well as specific to individual programs and policies.

Provide Global and Disaggregated Measures of Outcomes and Outputs by Sector of the Economy

When the initiative is broad-based and encompasses a number of discrete programs and measures such as Manitoba's *Green Economy* initiative, an adequate indicator framework must also allow for measurement across the key sectors of the economy and include measures of the key drivers of the outcomes. For example, with respect to the goal of reducing Greenhouse Gas Emissions, the outcome

indicator is tonnes of CO2 equivalent emitted annually. This outcome indicator needs to be reported globally and for each key sector of the economy; and, for each sector, the key outputs which are causing the level of emissions need to be measured on an annual basis. For example, for the transportation sector, there are four outputs which determine the level of CO2e emissions – the number of vehicles on the road, the average kilometers driven per vehicle, the average fuel efficiency of the vehicles and the carbon content of the fuels. If each of these outputs is measured on an annual basis, it becomes possible to identify which of the outputs is driving the change in the level of CO2e emissions.

Report at a High Level and Analyze by Sector and Driver

To limit the complexity of reporting, the reporting should focus on the trends at the aggregate level of the economy. However, within government, the focus should be at the sector and key driver level with the emphasis being on determining the extent to which its individual programs and policies are affecting the outputs and outcomes. Transparency will require that the measures of these indicators be available to the public in the form of electronic data bases in much the same way as the PEG Indicator project does so.

KEY OUTCOMES OF A GREEN ECONOMY

As the first principle for a green economy The *Manitoba Green Economy: External mid-term report to stakeholders* states it is that of “promoting and achieving environmental protection, social improvement and economic prosperity”. The sixth principle states that, to be sustainable, green activities must recognize the economic, environmental and social impacts of actions taken and ensure that all three are respected as part of a transition process. Thus, the three desired outcomes of the green economy initiative are:

- *Environmental Protection*
- *Social Improvement*
- *Economic Prosperity*

Environmental Protection

At a broad level, protection of the *natural* environment requires living within the carrying capacity of the ecosystems comprising it, remediating damages and increasing its resiliency and capacity to provide the desired eco system services. In turn, this specifically requires.

- Reducing the level of Greenhouse Gas Emissions from both production and consumption in Manitoba to acceptable levels;
- Improving the Quality of the Water in Rivers and Lakes and Wells;
- Improving the Quality of the Soil;
- Reducing nonrenewable resource depletion and unsustainable use of renewable;
- Reducing the amount of waste generated and landfilled;
- Protecting biodiversity and ecosystem health and integrity.

Social Improvement

At a broad level, *personal* well-being includes the notions of happiness and fulfillment, freedom from stress and behaviours which harm ones physical and mental health and the possession of those skills and resiliencies (human capital) that enable one to cope well with the stresses and challenges of everyday life and contribute to the development of society and the economy. The *social* determinants of personal well-being include the provision of financial and social supports to access a minimum standard of living and to participate fully in society. More specifically, the desired outcomes of social well-being include,

- Adequate levels of physical and mental health;
- Adequate levels of income/absence of poverty;
- Equitable distribution of income;
- Adequate level of education;

Economic Prosperity

While economic prosperity is the overall desired outcome, a key message of the Green Economy Initiative is that it has to be achieved in ways that protect the environment and ensure socially acceptable outcomes. Thus, the standard measure of economic prosperity such as real GDP per capita will not suffice, as it is typically correlated with poor environmental outcomes such as rising GHG emissions and increased waste production. It needs to be complemented by measures that reflect less demand on the environment, such as the carbon intensity of total production and measures which reflect the distribution of benefits.

- Rising real GDP per capita;
- Lower GHG emissions per unit of real GDP;
- Lower amount of waste per unit of real GDP;
- Distribution of Income.

KEY OUTPUTS ASSOCIATED WITH THE KEY OUTCOMES

Environmental Protection

Reducing GHG Emissions (CO₂e)

Sector-specific outputs that affect GHG emissions:

- Transportation* - Number of vehicles on the road by class of vehicle;
- Average distance driven by class of vehicle;
- Average Fuel economy by class of vehicle;

- Agriculture* -Tonnes of fertilizer applied to fields(average GHGs emitted by fertilizer)
- Number of head of livestock (average GHGs emitted per livestock)
- Litres of fuel consumed by agriculture sector by its carbon intensity;

Industry – Tonnes of GHG's produced in producing the goods and services.

Households- GHGs produced in heating and operating homes and personal appliances.

Reducing Pollutants Entering Rivers and Lakes

Factors that affect the amount of pollutants entering waterways include:

- Amount of Phosphorous being discharged by source and type – municipalities and agriculture operations.
- Amount of agricultural land being set aside for wetland and water retention;
- Number of farm operations with adequate manure treatment facilities.

Reducing Amount of Waste Being Generated and Recycled by Source and Type

Overall – Amount of Waste Being Generated per Capita and per unit of real GDP

Households – number of households covered by curbside recycling programs and amount of recycled materials collected per household

ICI Sector – Number of business operations using recycling programs and amount of waste generated which is recycled.

Social Well-Being

- Premature Mortality Rate (#deaths before age 75 per 1000 individuals under 75)
- Life satisfaction
- Self-perceived physical and mental health
- Rate and Depth of Low-income as measured by the after-tax LICO and MBM.
- Degree of Income Inequality and Polarization (GINI and FW Polarization Index)
- Education Attainment (% of 25+ Population with High School and Post-secondary Education).

Economic Prosperity

- ?? Spending on Mitigation Measures
- Number of Jobs Created in Biotechnology Sectors

LIST OF GREEN ECONOMY INDICATORS BY FOCUS AND TYPE¹

FOCUS	OUTCOME INDICATORS		OUTPUT INDICATORS	
	Indicator	Definition/Units	Indicator	Definition/Units
Environmental Protection	Total Greenhouse Gas Emissions	- Tonnes CO ₂ e	GHG Intensity	- Tonnes CO ₂ e/\$Billion Real GDP - Tonnes CO ₂ e/Person
			Energy Consumption by Type of Energy	% of Total PJ by Type of Energy (Fossil Fuel/Other)
			Fossil Fuel Consumption	- Total Amount (litres, PJ) - Intensity (PJ/GDP)
	Water Quality	- CCME Water Quality Index by ecozone - % hhlds with access to clean drinking water - Level of Eutrophication in Lakes	- Phosphorous emissions and/or concentrations by source and location - Municipal treatment of waste water - Agricultural fertilizer use and manure management practices. - Agriculture support for wetland preservation	- Existing measures - Number(%) of farm operations in compliance with regulations governing manure handling and fertilizer applications. - Total wetland acreage on farm properties
	Soil Quality	- Number of contaminated sites by volume of contaminants at each site - % amount of organic matter in soils being farmed.	- Number of active and decommissioned mining operations. - Number of acres of farmland with zero tillage and organic farming practices	

FOCUS	OUTCOME INDICATORS		OUTPUT INDICATORS	
	Indicator	Definition/Units	Indicator	Definition/Units
Environmental Protection	Waste Generation and Disposal	<ul style="list-style-type: none"> - Total Waste Produced per \$ real GDP and per capita by type and sector - % of total waste recycled – by type of material and sector 	<ul style="list-style-type: none"> - Coverage of households and business by recycling programs. - Use of composting by households and businesses 	<ul style="list-style-type: none"> - Number of households served by curbside recycling programs. - Number of businesses recycling waste by volume - Number of households with curbside composting.
Social Improvement	Physical and Mental Health	<ul style="list-style-type: none"> - Premature Mortality Rate; - Self-reported health and mental health Status; 	<ul style="list-style-type: none"> - Multiple socio-economic causes including lifestyle, low income, level of education 	
	Level of Education	<ul style="list-style-type: none"> - % of 25+ Pop. With Post-Sec. Education. 	<ul style="list-style-type: none"> - Enrolment in post-sec. training programs, including green jobs 	
	Low Income Status	<ul style="list-style-type: none"> - % of Pop. Low income and depth of low income 	<ul style="list-style-type: none"> - % of Pop.employed; - Average wage rate; - Level of transfer Payments. 	
Economic Prosperity	Total Value of Goods and Services Produced	<ul style="list-style-type: none"> - Real GDP per capita 	<ul style="list-style-type: none"> - Real GDP produced by green economy sectors 	
	Level of GHGs emitted per Unit of Real GDP	<ul style="list-style-type: none"> - Tonnes of CO₂e per \$Billion of Real GDP 	<ul style="list-style-type: none"> - Number of jobs in the green economy sectors 	
	Amount of Waste Produced per Unit of GDP	<ul style="list-style-type: none"> - Tonnes of Waste Produced per \$Billion of Real GDP 	<ul style="list-style-type: none"> - Average wage rate in green economy sectors 	

FOCUS	OUTCOME INDICATORS		OUTPUT INDICATORS	
	Indicator	Definition/Units	Indicator	Definition/Units
	Degree of Income Inequality	- GINI Index of Inequality and FW Index of Income Polarization by Income Type (Total/Market/After-tax)		

Note: ¹ These indicators should be measured on an annual basis and at as disaggregated a level as possible to determine the parts of the economy that are responsible for the changes, over time.

Supplemental Notes

The third slide of the October 8th workshop presentation identifies two sets of indicators to be created: (1) To track progress in the greening of Manitoba's economy over time, and compared to similar jurisdictions and (2) A set of indicators to track the success of the coming action plan. The foregoing brief outlines a systematic approach to an Indicator Framework that distinguishes between outcomes and outputs, ends and means, by key goal area. That structure gives a clear logic and coherence to the exercise, especially from the standpoint of the second objective of program implementation. Once such a framework has been agreed to, a detailed set of indicators can be developed. The above table ***LIST OF GREEN ECONOMY INDICATORS BY FOCUS AND TYPE*** is intended to be indicative of such a set, but, of course, subject to addition and modification.

These supplemental notes provide additional commentary, perspectives and references.

1. The workshop presentation suggested the total number of indicators should not exceed 20. Most participants who spoke to the point indicated that number was insufficient given that it was desirable to cover multiple environmental, social and economic phenomena and their causes in various sectors, both aggregated and disaggregated, and in absolute terms and in intensity ratios. Most folks agreed that a smaller number of headline numbers can be used for summary reporting, but these are inadequate for diagnosis of issues, planning and response. We agree that a rich set of indicators is needed.
2. The suggestion was made that public reporting of headline indicators could be made, but the other numbers would be used within various departments of government for further analysis. Green Action Centre believes that all the numbers should be publicly accessible so as to be useful to others, as described in our Introduction to this brief and the PEG example below.
3. There is a problem identifying standard socio-economic indicators with a green economy. Growth in GDP or jobs or housing does not make an economy greener. The problem is that an indicator like GDP, under our currently structured economy, tends to correlate with the browning of the economy and is not very well coordinated with measures of social wellbeing. For that reason there have been numerous proposals establishing composite indicators, like the Genuine Progress Indicator (GPI) or Index of Sustainable Economic Welfare (ISEW). We suggest two measures to address this issue.
 - a. Continue to track socio-economic wellbeing with established suites of welfare metrics such as those represented in [Winnipeg's PEG indicators](#). Indeed, given that the analysis, data links and an engaging interactive format have already been created for Winnipeg, it would seem to be relatively easy and cost-effective to expand this portal and database to the provincial scale. The interactive format also provides an alternative solution to limiting the indicator set to less than 20. It permits users to pull out comprehensible subsets of the 62 indicators grouped around 8 themes.
 - b. Supplement the provincially expanded PEG social indicators with a set of specific green economy indicators, which link welfare and jobs with environmental improvement rather than the currently embedded trade-offs of welfare vs. environment. In addition to eco-efficient welfare indicators that lower our footprint while improving wellbeing, it is

important at this stage of environmental deterioration to have indicators of socio-economic harm from, say, extreme weather, pollution and exotic species and pests as well as investments in resilience and adaptation. Note below the efforts of Environment Canada to produce specifically green economy indicators.

- c. Indicators based on a count of “green” vs. “brown” jobs are problematic. A car salesman’s job becomes greener to the extent that new fleet emissions are reduced. It becomes greener still if they sell an electric bike with a car and encourage the purchasers to leave the car in the garage whenever possible. A more nuanced approach to sectors is illustrated by the attached paper “On the Employment Effects of Climate Policy.” At a global level, economy-wide ratios like GDP/GHG or jobs/GHG can be used.
4. If the goal is to establish Manitoba as a leader in sustainability, it is important to include sustainable/unsustainable consumption indicators reflecting global impacts of our consumption. This is perhaps most easily done for our GHG footprint. E.g. exporting manufacture of our consumer goods to China increases our consumption GHG footprint from inefficient coal burning electricity generation in China even though local emissions might be reduced. A global footprint analysis also allows for offsetting positive contributions from Manitoba through hydro exports displacing fossil fuel generated electricity and emissions.

Examples of GHG footprint accounting

- a) See attached article on who pollutes and this link: http://www.cgdev.org/blog/who-pollutes-most-surprises-new-us-database-kevin-ummel?utm_source=141021&utm_medium=cgd_email&utm_campaign=cgd_weekly&utm_&&
 - b) See also Minneapolis’s example at <http://www.ci.minneapolis.mn.us/www/groups/public/@citycoordinator/documents/webcontent/wcms1p-092812.pdf> based on the online CoolClimate Household calculator developed at the University of California at Berkeley, as described on p. 66 (<http://coolclimate.berkeley.edu/carboncalculator>). Unfortunately the calculator’s database is restricted to US municipalities, but it provides a model for a similar endeavor.
5. Finally we call attention to the innovative analytic work in this area at Environment Canada and extensive federal data sources. We should ask how we can package this and make it accessible and useful to Manitobans. James Magnus-Johnston reports the following on his conversations with John Cuddy and Marc Andre on initiatives at Environment Canada.

a. Behavioural work -- it sounds like they're doing some pioneering trial and error with behavioural frameworks by attempting to use and gather data on responses to initiatives and policy shifts. At the firm/household level, they use the "green household behaviour survey" by the OECD, and cross-reference that with StatsCan's biannual survey.

b. Adaptation metrics -- they are in the process of setting targets but don't have an indicator yet. The NRC has an adaptation platform, including an output-based measurement system, an output target, as well as measurement of climate finance and mitigation ("resilience"). We should check in to find out where this goes in the future.

c. Measuring the transition to the green economy -- after some time attempting to measure this,

they have found this idea to be (in their words) deeply flawed. Using the OECD's "green growth" framework, it distorts the idea of a greener economy because the line drawing between brown/green is arbitrary. Besides, the green economy is not something to arrive at, but a continued process. They tried to measure job shifts, and used data from Employment and Social Development Canada, but then stopped due to the false dichotomy between a green/brown job (they found more often than not you could tick both green/brown boxes, so to speak).

d. Data availability -- suggested using StatsCanada (specifically the Canadian Environmental Sustainability Indicators), as well as adapting some of the OECD "green growth" indicators, including productivity, quality of life, policy responses, etc. (see attached).

They kindly allowed me **access to an internal document** that outlines how Environment Canada is working with the OECD on developing new indicators. I haven't had an in-depth look at it yet, but at a glance there appears to be a lot of good stuff in there. See attached "WREI Canada Round Table."

Country contributions to the annual Round Table should be sent to the OECD Secretariat (myriam.linster@oecd.org) **before 22 October 2014** to ensure an early distribution to all delegates.

CANADA

LEGAL FRAMEWORK FOR ENVIRONMENTAL INFORMATION

1. Does your country have a legal basis for environmental information and reporting, including statistics?

YES NO

Titles of relevant legal texts:

- ◆ Auditor General Act
- ◆ Canadian Environmental Protection Act
- ◆ Department of the Environment Act
- ◆ Statistics Act
- ◆ Federal Sustainable Development Act

2. Does your country have a legal basis for public access to environmental information?

YES NO

Titles of relevant legal texts:

- ◆ Access to Information Act
- ◆ Auditor General Act
- ◆ Canadian Environmental Protection Act
- ◆ Department of the Environment Act
- ◆ Species At Risk Act
- ◆ Fisheries Act
- ◆ Federal Sustainable Development Act
- ◆ Convention on Biological Diversity
- ◆ United Nations Framework Convention on Climate Change
- ◆ Statistics Act

INSTITUTIONAL ARRANGEMENTS FOR ENVIRONMENTAL INFORMATION

	Lead Agency	Other Agencies involved
environmental data and statistics	Environment Canada	Only the main departments are listed here: - Agriculture and Agri-Food Canada - Fisheries and Oceans Canada - Health Canada - Natural Resources Canada - Statistics Canada
environmental indicators	Environment Canada	- Agriculture and Agri-food Canada - Health Canada - Natural Resources Canada - Statistics Canada
environmental reporting & assessment	Environment Canada	Only the main departments are listed here: - Agriculture and Agri-Food Canada - Fisheries and Oceans Canada - Health Canada - Natural Resources Canada
environmental accounting	Statistics Canada	- Environment Canada - Fisheries and Oceans Canada - Agriculture and Agri-Food Canada - Natural Resources Canada
green growth & sustainable	Environment Canada / Health Canada	- Agriculture and Agri-Food Canada

development indicators	/ Statistics Canada	- Fisheries and Oceans Canada - Natural Resources Canada
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1. ENVIRONMENTAL DATA/STATISTICS

The Canadian Environmental Sustainability Indicators (CESI) program, supplemented by a number of department-based, activity-specific indicators, is the primary vehicle for tracking and measuring progress for Canada's Federal Sustainable Development Strategy (FSDS), and responds to commitments under the *Canadian Environmental Protection Act*, the *Canada Water Act* and the *Department of the Environment Act* to report to Canadians on the state of the environment. CESI makes comprehensive and objective information on environmental trends readily accessible with the aim to bring scientific information forward into policy development processes and public discussion. The CESI set now includes over 40 indicators and some new indicators continue to be developed. This expansion builds on the existing foundations of environmental indicators and reporting and is mostly driven by the need to measure outcomes related to the goals and targets of the FSDS. The CESI program depends on consistent longer term data and collaborative efforts to continue to encourage the maintenance and enhancement of environmental monitoring and data collection. (<http://ec.gc.ca/indicateurs-indicators/>).

Environment Canada has a number of monitoring and inventory programs in place to ensure access to environmental quality information for its scientific and legislative programs. Some examples of activities to upgrade and improve monitoring and data are outlined below.

Air quality monitoring stations are located across Canada and are managed by provinces, municipalities, territories and Environment Canada. Many of these stations are organized under the National Air Pollution Surveillance (NAPS) program, a cooperative arrangement among the federal government, provinces and territories that has existed since 1969. The goal of the NAPS program is to provide accurate and long-term air quality data of a uniform standard throughout Canada. NAPS has continued with programs of upgrades of the monitoring equipment, of their measurements analysis methods and processes to support international agreements, national programs and public information tools such as the Air Quality Health Index (AQHI) and CESI. These included, recent upgrades of the particulate matter monitoring network and enhancement of the Canada-wide air monitoring database. (<http://www.ec.gc.ca/rnsps-naps/>)

Fresh water quality data used for the calculation of the freshwater quality indicator in CESI are obtained from existing water quality monitoring programs across the country. These programs are managed by federal departments, provincial departments, and under federal-provincial agreements. The most recent CESI indicator on freshwater quality (released in 2014) is calculated using a set of 172 core sites selected to be representative of surface freshwater quality across Canada and the human pressure exerted on it. Additional local sites were used along with the core sites to populate the CESI interactive mapping tool. A subset of 101 stations in 16 drainage regions was selected from the core network to assess changes in the Water Quality Index (WQI) through time. This subset corresponds to all core stations with data available from 2003 to 2011. (<http://www.ec.gc.ca/indicateurs-indicators/>)

The Water Survey of Canada monitors over 2500 hydrometric stations throughout Canada through different partnerships. This network forms the basis for data included in the hydrological database (HYDAT) and available daily water levels and water flow data were used for the CESI water quantity indicators released in 2014 (<http://www.ec.gc.ca/indicateurs-indicators/>).

The National Pollutant Release Inventory (NPRI) is Canada's legislated, publicly-accessible inventory of pollutant releases (to air, water and land), disposals and transfers for recycling. The NPRI includes information reported by facilities and published by Environment Canada under the authority of Sections 46 – 50 of the *Canadian Environmental Protection Act, 1999* (CEPA 1999). For the latest reporting year (2012), over 8000 facilities reported to the NPRI on more than 300 listed substances or substance groups. NPRI provides the main input to Canada's comprehensive inventory of air pollutant emissions. The Air Pollutant Emission Inventory (APEI) covers key air pollutants contributing to smog, acid rain or poor air quality, selected heavy metals and persistent organic pollutants. APEI includes a subset of the NPRI facility-reported data, along with emission estimates for other sources such as motor vehicles, residential heating and agriculture. The APEI is the basis for Canada's annual submission of information on air pollutant emissions in Canada under the Convention on Long-range Transboundary Air Pollution (<http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=F98AFAE7-1>).

Environment Canada uses the data from the NPRI and the APEI to inform Canadians about pollutants that affect their health and the environment; identify priorities for action; develop and track progress on air quality management strategies, policies and regulations; and fulfil Canada's domestic and international reporting obligations. The data are available through an

online data search tool for the public to use, for example to better understand which substances are being released into their communities (<http://ec.gc.ca/inrp-npri/donnees-data/index.cfm?lang=En>). Over the next few years, the NPRI will be considering changes to reporting thresholds and other requirements to increase the comprehensiveness of information reported to the program and alignment with other Departmental programs, as well as continuing efforts to better understand and meet the needs of NPRI data users. (<http://www.ec.gc.ca/inrp-npri/>)

Environment Canada is responsible for the development, publication and reporting of Canada's national inventory of greenhouse gas emissions covering anthropogenic emissions by sources and removals by sinks. The national greenhouse gas inventory is updated and submitted to meet the annual international reporting obligations under the United Nations Framework Convention on Climate Change (UNFCCC). Environment Canada consults and works jointly with key federal and provincial partners along with industry stakeholders, research centres and consultants to support the compilation of the national inventory and to continuously improve the quality of the underlying variables and scientific information. As new information and data become available and more accurate methods are developed, previous estimates are revised to provide consistent and comparable trends in emissions and removals. The latest inventory, submitted in 2014, provides data covering 1990 to 2012 and includes details on improvements that have been implemented or are planned (<http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=1357A041-1>). Canada's 2014 UNFCCC Submission is available from: http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php).

Environment Canada's Greenhouse Gas Emissions Reporting Program (GHGRP) annually collects and publishes greenhouse gas (GHG) emissions information from facilities subject to the reporting criteria under the authority of Sections 46-50 of the *Canadian Environmental Protection Act, 1999*. The GHGRP applies to all facilities that emit the equivalent of 50,000 tonnes or more of GHGs in carbon dioxide equivalent units per year and requires the reporting of CO₂, CH₄, N₂O, SF₆ and a number of HFCs and PFCs. Key objectives of the program are to provide Canadians with consistent information on GHG emissions, to validate estimates presented in the National Greenhouse Gas Inventory, and to support regulatory initiatives. The data are also shared with provinces and territories. Facility greenhouse gas emissions reporting contributes to the development, implementation and evaluation of climate change policies and strategies by providing a more precise picture of the sources and amounts of greenhouse gas emissions from Canada's largest emitters. More information on the GHGRP and the latest data publicly available can be found at: <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=040E378D-1>.

Protected areas data are updated continuously as jurisdictions provide data (<http://www.ccea.org/tools-resources/carts/>) and the CESI program reports annually on trends in protected areas (<http://tinyurl.com/protected-areas-canada>).

In July of 2011, Environment Canada released an integrated world-class monitoring plan for the oil sands region. This Plan gives specific monitoring details for air quality, biodiversity and water and priorities for implementation for each of these components. The Government of Canada is working with the Province of Alberta on implementing the plan. Several oil sands monitoring stations have been put in place and implementation will continue to be phased in until 2015 to ensure installation of necessary infrastructure, incremental enhancement of activities and appropriate integration with existing monitoring activities in the region. The Canada-Alberta Oil Sands Environmental Monitoring Information Portal provides access to information related to the program, including maps of the monitoring region, details of the monitoring sites, most up-to-date data and data analysis, interpretation and results. As more data becomes available, the portal will evolve with new updates and features and become more comprehensive. (<http://www.jointoilsandsmonitoring.ca/pages/home.aspx?lang=en>)

The Value of Nature to Canadians Study (VNCS) is an umbrella for numerous deliverables, each of which contributes to understanding of the value (or importance) of nature to Canadians. The most recent deliverable under this study was the 2012 Canadian Nature Survey. This fact-based (rather than opinion/attitude) survey produced results from all 13 provinces and territories that are statistically representative at a margin of +/- 2% nationally. It collected data on Canadians' awareness of key concepts including biodiversity, ecosystem services, and species at risk; about Canadians' participation in a wide range of nature-based activities at distances of greater than and less than 20 km from their homes, and their associated commitments of time and money to do so. Activities reflect recreation, leisure, education, conservation, and subsistence. Analysis includes primary tabulation of responses for each question, thematic and demographic cross analyses. Data are anticipated to support many environmental management decisions and inform Statistics Canada work on environmental statistics and national indicators relating to biodiversity and

sustainability. The final report was released in 2014 (<http://www.biodivcanada.ca/default.asp?lang=En&n=2A0569A9-1>).

Statistics Canada has been producing environment statistics since the mid-1970s. The mandate of the Environment program at Statistics Canada is to collect, develop, compile, analyze and publish environmental data, emphasizing their integration with socio-economic data. The program comprises four major elements: environmental surveys, environmental accounts and indicators, spatial data infrastructure and reporting.

Statistics Canada's environmental survey program currently includes eight established biennial surveys and several other surveys paid for by clients, as outlined below.

The biennial Survey of Environmental Protection Expenditures, established in 1990, collects information on expenditures made by industry in response to environmental legislation, conventions or voluntary environmental agreements. The next data release is planned for March 2015.

The Survey of Environmental Goods and Services is a biennial survey of revenues from domestic and export sales of environmental goods and services. The survey covers firms manufacturing goods in the traditional environmental sectors (such as sewage treatment) as well as those involved in manufacturing goods for the production of renewable energy. The next data release is planned for December 2014. Waste management statistics are gathered through two biennial surveys, one that targets private sector waste management firms and another covering the public sector. These surveys collect statistics on the physical amounts of wastes disposed and diverted, including recycled materials and non-hazardous wastes, and the next data release is planned for April 2015.

The biennial Industrial Water Survey provides information about the quantities of water consumed and costs, sources, treatments and discharge of water used for manufacturing, mining and power generating industries. Results for 2013 are due to be released in summer 2015.

The Households and the Environment Survey (HES) which is conducted biennially, gathers information on recycling and waste reduction practices, energy and water conservation practices, the use of recycled products, and the use and disposal of potentially hazardous household substances. Select results from the 2013 survey were released in September 2014, with more releases due in November 2014, and March and April 2015. A supplemental HES survey, which collects data on the physical quantities of energy used in Canadian homes, is sent to the same recipients as the Households and the Environment Survey. Results for 2013 are due to be released in August 2015.

The objective of the biennial Agricultural Water Use Survey, conducted for the first time in 2007, is to gather information on water use, irrigation methods and practices, and sources and quality of water used for agricultural purposes on Canadian farms. Results from the third iteration of the survey which collected 2011 data were released in December 2013.

The Survey of Drinking Water Treatment Plants is a census of drinking water plants in Canada serving 300 or more people, and asks for information on volumes of water treated, type of treatment, financial aspects of the operation, as well as raw (source) water quality. The initial survey covered a three-year reporting period (2005-2007). Select data were released in October 2009, and a survey report was published in December 2009. The survey questionnaire for 2011 was designed to collect one year of data on treatment costs, processes used and source (raw) water quality. Collection of data for 2013 took place in early 2014 and the results are expected to be released in spring 2015.

The Farm Environmental Management Survey is conducted in conjunction with Agriculture and Agri-Food Canada, to ensure that agriculture programs reflect the changing way resources are being managed on today's farms. This survey, which started in 2001, is on a five year cycle, and focuses on both livestock and crop operations. It will allow the establishment of base lines and the development of updates for an expanded set of agri-environmental indicators, and generate the information to design effective and well targeted policy and program responses. Data for 2011 were released in October 2013.

The Hazardous Waste Management Industry Survey, conducted in conjunction with Environment Canada, collected data on the amount of selected hazardous wastes handled by businesses in the Canadian Hazardous Waste Management industry. The data will be used to compile a national-level estimate of the amount of selected hazardous wastes that are processed at Canadian facilities. The data will also be used by Environment Canada to fulfill international reporting requirements under the Basel Convention. Data collection took place in spring 2013 and the data were released in March 2014.

2. ENVIRONMENTAL INDICATORS

Canada has provided regular and consistent indicators to track performance on key environmental issues including climate change and air quality, water quality and availability, and protecting nature. The environmental indicators are based on objective and comprehensive information and convey environmental trends in a straightforward and transparent manner. Indicator results are linked to their key social and economic drivers and information. Through the CESI program, indicators are prepared by Environment Canada with the support of other federal government departments, such as Health Canada, Statistics Canada, Natural Resources Canada, Agriculture and Agri-Food Canada, Fisheries and Oceans Canada, as well as provincial and territorial governments. Indicator results provide key information on progress towards the goals and targets of Canada's Federal Sustainable Development Strategy (FSDS).

The CESI set includes over 40 environmental sustainability indicators as of November 2014. The CESI initiative will add about 10 indicators to accommodate coverage of the new FSDS (2013-2016) (see <http://www.ec.gc.ca/indicateurs-indicators>). The CESI initiative will continue to develop indicators to accommodate new and adjusted goals and targets in the next cycle of the FSDS and to provide context with respect to socio-economic linkages to environmental issues. CESI indicators will continue to be used in progress reporting for the FSDS as well as for providing transparent information to the public and in government performance and international reporting.

3. ENVIRONMENTAL REPORTING AND ASSESSMENT

Canada's environment reporting, at the national level, is supported through the CESI program which reports regularly on issues of key concern to Canadians. Reporting occurs primarily through the CESI website that ensures national, regional, local and international trends are readily accessible and transparently presented to all Canadians through the use of graphics, explanatory text, interactive maps and downloadable data. Indicator results are linked to their key social and economic drivers and information is provided on how the issues are influenced by consumers, businesses and governments. Each indicator is accompanied by a technical explanation of its calculation.

A Progress Report on the 2010-2013 Federal Sustainable Development Strategy (FSDS) published in February 2013 presented the progress of 27 federal departments and agencies towards achieving the goals and targets set out in the first cycle of the FSDS (2010-2013). This report was supported by 36 CESI indicators and highlights of key actions from selected implementation strategies of the FSDS departments and agencies. The information presented included: (1) Trends over time, such as emission levels of greenhouse gases and air pollutants, the release of pollutants into water, and the sustainability of biological resources, such as wood supply; (2) Measures of status, such as of major fish stocks, species at risk and availability of water; and, (3) Baselines established to track progress in key areas, such as exposures to chemicals. In keeping with the approach of "plan-do-check-improve" geared at making environmental decision-making more transparent and accountable over time, the report points to challenges and underscores opportunities to further improve environmental sustainability. This was an important step in supporting the development of the 2013-2016 FSDS and future progress reports. (<http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=23E4714E-1>)

Human Activity and the Environment (HAE) is an annual publication produced by Statistics Canada that focuses on a current environmental issue. The latest information and statistics are gathered from many sources to produce an in-depth analytical article. The 2013 HAE publication "Measuring Ecosystem goods and services in Canada" was dedicated to summarizing key results of the Measuring Ecosystems Goods and Services (MEGS) project, a collaborative effort between Statistics Canada and five policy departments, including Environment Canada. The objectives of the project were to research, consolidate data and build knowledge on ecosystems and ecosystem goods and services in Canada; to study alternatives for assessing and tracking ecosystem quality; and to assemble the information required to support the process of valuation. These objectives were accomplished by investigating spatial standards and classifications, standardizing existing spatial data, developing pilot ecosystem accounts, and investigating methods for valuation of ecosystem goods and services. Also released was a HAE "Teachers Kit", a series of lessons aimed at the education sector to teach about ecosystems, ecosystems goods and services (EGS), and EGS valuation. The 2014 HAE is on the topic of agriculture in Canada, from the perspective of ecosystem goods and services.

EnviroStats is an occasional publication from Statistics Canada. The articles published in *EnviroStats* use statistics to illustrate topical environmental issues. The publication is intended for a general readership rather than an expert audience. The last issue, released in March 2014,

contained a study looking at uptake and disposal of compact fluorescent lights by Canadian households.

The State of Canada's Birds 2012 report was released giving a picture of the current health of Canada's bird populations. The report describes trends in the status of Canada's birds, the major threats they face and conservation solutions that benefit them. The report was a collaboration between Environment Canada and Environmental Non-Government Organizations on behalf of the North American Bird Conservation Initiative Canada (NABCI Canada). Data used in the report comes from multiple bird monitoring programs (<http://www.stateofcanadasbirds.org>). The results from the report formed the basis for the indicator "Trends in Canada's Migratory Bird Populations" in CESI (<http://www.ec.gc.ca/indicateurs-indicators>).

Environment Canada publishes greenhouse gas emissions projections annually through its *Canada's Emissions Trends* report. The analysis presented in this report incorporates the most up-to-date statistics on drivers of emissions available at the time that the technical modelling was completed (e.g. historic emissions, economic and population growth, mix of energy supply), and is based on scenarios of emissions projections using a detailed, proven Energy, Emissions and Economy Model for Canada. The report presents projections of emissions in Canada by economic sector to the year 2020. Canada's third annual report was released in fall 2013.

4. ENVIRONMENTAL ACCOUNTING

Statistics Canada's environmental accounts are collections of data describing: 1) the size of Canada's natural resource stocks and their contribution to national wealth; 2) the extraction of these same resources and their disposition among businesses, households, governments and the rest of the world; 3) the generation of various wastes (liquid, solid and gaseous) by industries, households and governments and the management of these wastes; and 4) the expenditures made by businesses, households and governments for the purposes of protecting the environment.

The environmental accounts are based on the United Nations System of Environmental-Economic Accounts (SEEA) which are, to the greatest extent possible, compatible with the economic data of the System of National Accounts (SNA). They were developed in response to the need to better monitor the relationship between economic activity and the environment.

The Natural Resource Stock Accounts (NRSA) measure quantities of natural resources *in situ* (crude oil and bitumen, natural gas, coal, metals, non-metallic minerals, timber and land) and the annual changes in these stocks due to natural processes and human activity. These accounts, many of which are recorded using both physical and monetary units, form the basis of the estimates of Canada's natural resource wealth. Natural resource assets, including land, represented more than 42% of Canada's national wealth in 2011. Data on Canada's natural resource wealth for 2013 are expected to be released in December 2014.

As a result of the successful completion of the MEGS (Measuring Ecosystem Goods and Services) project, the program received funding to develop and produce two new environmental accounts: the landscape account and the water yield account. Both are slated to be released annually, starting in 2015-16. The accounts are informed by international standards and classifications (such as the United Nations System of Environmental and Economic Accounting Central Framework – UN-SEEA-Central Framework) and helping to inform other initiatives (such as the UN-SEEA Experimental Ecosystem Accounts).

The Material and Energy Flow Accounts (MEFA) estimate the flows of raw materials, energy and pollutants between the economy and the environment. Three components of the MEFA have been developed to date – greenhouse gas emissions, energy use and water use. Each of these accounts is structured around the framework of the input-output tables, providing opportunities for various sorts of environment-economy analysis. Data on Canada's greenhouse gas emissions and energy use for 2009-2011 were released in July 2014, and incorporated the new classifications and other changes following the implementation of SNA 2008 in the national input-output accounts. A bridge table reconciling the SEEA-based accounts with the UNFCCC reporting requirements was included with the greenhouse gas account. Water use accounts for 2011 were released in early 2014. The next update of the accounts (now called the Physical Flow Accounts in accordance with the SEEA) will be in December of 2014.

5. GREEN GROWTH AND SUSTAINABLE DEVELOPMENT INDICATORS

The Government of Canada is committed to working towards achieving sustainable development in Canada. As a central part of the Government's sustainable development approach, the Federal Sustainable Development Strategy (FSDS) provides an integrated, whole-of-government picture of actions and results to achieve environmental sustainability, as well as effective measurement, monitoring and reporting to track and report on progress to Canadians.

The *Federal Sustainable Development Act* (FSDA) became law on June 26, 2008. The purpose of the Act is to make environmental decision-making more transparent and accountable to Parliament. The legislative obligations of the FSDA require the Minister of the Environment to develop and maintain systems and procedures to monitor progress on implementation of an FSDS, and to report on it every three years. The FSDS includes goals, targets, and implementation strategies in the following theme areas: Addressing Climate Change and Air Quality; Maintaining Water Quality and Availability; Protecting Nature and Canadians; and Shrinking the Environmental Footprint: Beginning with Government.

Environmental indicators, through the CESI program, provide the means by which the Government of Canada reports on FSDS results and demonstrates a cycle of improvement and assesses the FSDS. High-quality environmental indicators are used to report on the goals and targets in the first three theme areas. Indicators have been selected based on their policy relevance, utility, and soundness, as well as the availability of high-quality data for monitoring.

In addition to their specific role in supporting the implementation of the FSDS, environmental indicators also provide more general insight into the environmental dimensions of sustainable development by enabling Canadians to access information on how the values of key environmental sustainability indicators - for example, ground-level ozone and fine-particulate concentrations - vary across regions and are linked to economic sectors, household and institutional behaviours and health and wellbeing issues. The environmental indicators will also be an essential aspect of assessing overall progress towards sustainable development.

6. COMMUNICATION TOOLS

- ◆ Environment Canada <http://ec.gc.ca>
- ◆ Federal Sustainable Development Strategy and Progress Report <http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=C2844D2D-1>
- ◆ Canadian Environmental Sustainability Indicators <http://www.ec.gc.ca/indicateurs-indicators>
- ◆ Statistics Canada, <http://www.statcan.gc.ca/>
- ◆ Canada's 2014 Greenhouse Gas Inventory; <http://www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=83A34A7A-1>
- ◆ National Pollutant Release Inventory: <http://www.ec.gc.ca/inrp-npri/>
- ◆ The Air Pollutant Emissions Inventory: <http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=F98AFAE7-1>
- ◆ Canadian Council of Ministers of the Environment (CCME) <http://www.ccme.ca/ourwork/>
- ◆ The Canadian Sustainability Indicators Network (CSIN): <http://www.csin-rcid.ca/>
- ◆ State of the Great Lakes Report 2011 and Lakewide Management Plan Annual Reports: <http://www.binational.net/>
- ◆ Monitoring the State of the St. Lawrence, new indicator fact sheets: <http://www.planstlaurent.gc.ca>
- ◆ The Commissioner of the Environment and Sustainable Development: http://www.oag-bvg.gc.ca/internet/English/cesd_fs_e_921.html
- ◆ The Sustainable Forest Management Working Group of the Canadian Council of Forest Ministers (CCFM) <http://www.ccfm.org/english/coreproducts-sfmwg.asp>
- ◆ Environmental Sustainability of Canadian Agriculture: Agri-Environmental Indicator Report Series - Report #3 <http://www.agr.gc.ca/eng/?id=1295901472640>
- ◆ The Air Quality Health Index <http://www.ec.gc.ca/cas-aqhi/default.asp?lang=En&n=CB0ADB16-1>

7. RELEVANT REFERENCES

- ◆ Canadian Environmental Sustainability Indicators <http://www.ec.gc.ca/indicateurs-indicators>
- ◆ Statistics Canada, Agricultural Water Use in Canada, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16-402-X&lang=eng>
- ◆ Statistics Canada, Canada's Natural Resource Wealth, <http://www.statcan.gc.ca/daily-quotidien/120906/dq120906a-eng.htm>
- ◆ Statistics Canada, Energy use and greenhouse gas emissions, <http://www.statcan.gc.ca/daily-quotidien/140702/dq140702d-eng.htm>
- ◆ Statistics Canada, Environment Accounts and Statistics Product Catalogue, <http://www.statcan.gc.ca/pub/16-257-x/16-257-x2013000-eng.htm>
- ◆ Statistics Canada, Environment Accounts and Statistics Analytical and Technical Paper Series, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16-001-M&lang=eng>
- ◆ Statistics Canada, Environmental Protection Expenditures in the Business Sector, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16F0006X&lang=eng>
- ◆ Statistics Canada, EnviroStats, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16-002-X&lang=eng>

- ◆ Statistics Canada, Farm Environmental Management Survey, <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5044&lang=en&db=imdb&adm=8&dis=2>
- ◆ Statistics Canada, Human Activity and the Environment, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16-201-XWE&lang=eng>
- ◆ Statistics Canada, Households and the Environment, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=11-526-XWE&lang=eng>
- ◆ Statistics Canada, Households and the Environment: Energy Use, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=11-526-S&lang=eng>
- ◆ Statistics Canada, Industrial Water Use, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16-401-X&lang=eng>
- ◆ Statistics Canada, Survey of Environmental Goods and Services, <http://www.statcan.gc.ca/daily-quotidien/130605/dq130605c-eng.htm>
- ◆ Statistics Canada, Survey of Drinking Water Plants, <http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16-403-XWE&lang=eng>
- ◆ Statistics Canada, Waste Management Industry Survey: Business and Government Sectors, <http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16F0023XWE&lang=eng>
- ◆ Statistics Canada, Water Use in Canada, by sector, <http://www.statcan.gc.ca/daily-quotidien/140702/dq140702d-eng.htm>
- ◆ Federal Sustainable Development Strategy and Progress Report <http://www.ec.gc.ca/dd-sd/default.asp?lang=En&n=C2844D2D-1>

8. FUTURE OBJECTIVES, OTHER MAJOR PROJECTS

In order to develop its environmental statistics program, Statistics Canada has established a conceptual framework for the program in consultation with stakeholders and data users, which is based on the concept of natural capital and is consistent with the SEEA. The framework is now being used to identify and prioritize data gaps in environmental statistics. The prioritized data gaps will guide Statistics Canada's developmental efforts in this area.

The CESI program is undertaking an internal and third-party external review to help identify priorities for development and improvement.