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Climate Change Canada

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# 2015 Progress Report of the Federal Sustainable Development Strategy

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# MINISTER'S MESSAGE

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It is with great pleasure that I present the *2015 Progress Report of the Federal Sustainable Development Strategy* (FSDS) to Parliament and Canadians.

In the spirit of transparency and accountability as required by the *Federal Sustainable Development Act*, this report provides information about the progress made under the 2013–2016 FSDS to further sustainable development in Canada.

This report offers us a snapshot of what we know today based on the best available scientific evidence. It also helps us see the sustainable development challenges ahead as we focus on Canada's contributions to the global sustainable goals of our time.

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# EXECUTIVE SUMMARY

The *2015 Progress Report of the Federal Sustainable Development Strategy* presents information on how the federal government is implementing the 2013–2016 Federal Sustainable Development Strategy (FSDS), including progress toward its goals and targets. Together with the FSDS, it supports the purpose of the *Federal Sustainable Development Act* by making environmental decision-making more transparent and accountable to Parliament.

This executive summary provides a high-level view as of 2015 of progress on each of the 2013–2016 FSDS goals and targets. The balance of the report provides additional information on the goals and targets.

2013–2016 FSDS Goals and Targets	Progress Statements
<b>ADDRESSING CLIMATE CHANGE AND AIR QUALITY</b>	
<b>GOAL 1</b> <b>Climate Change</b> —In order to mitigate the effects of climate change, reduce greenhouse gas (GHG) emission levels and adapt to unavoidable impacts.	<p>As of 2013, Canada’s anthropogenic GHG emissions were 23 Mt carbon dioxide equivalent (CO<sub>2</sub> eq) below 2005 levels. The Government of Canada continued to pursue a sector-by-sector approach to regulating GHG emissions. It also continued to help Canadians and businesses decrease their GHG emissions through actions such as supporting the development and deployment of innovative clean technologies.</p> <p>Over the past five years, understanding about adaptation has improved and progress has been made through broadened engagement and policies, plans and practices to increase resilience to climate change.</p>
<b>Target 1.1</b> <b>Climate Change Mitigation</b> —Relative to 2005 emission levels, reduce Canada’s total GHG emissions 17% by 2020.	<p>As of 2013, Canada’s GHG emissions level was 3.1% below the 2005 level of 749 Mt CO<sub>2</sub> eq.</p>
<b>Target 1.2</b> <b>Climate Change Adaptation</b> —Facilitate reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change through the development and provision of information and tools.	<p>The federal government continued to develop and share scientific knowledge and tools to help provinces and territories, communities, sectors and individual Canadians manage climate risks.</p>

2013–2016 FSDS Goals and Targets	Progress Statements
<p><b>GOAL 2</b></p> <p><b>Air Pollution</b>—Minimize the threat to air quality so that the air Canadians breathe is clean and supports healthy ecosystems.</p>	<p>Many threats to air quality have been reduced: the outdoor concentrations of sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), volatile organic compounds (VOCs) and peak concentrations of ground-level ozone (O<sub>3</sub>) have decreased substantially over the past two decades.</p> <p>National annual average concentrations of O<sub>3</sub> and annual average and peak concentrations of fine particulate matter (PM<sub>2.5</sub>)—the main components of smog—have remained relatively stable since 2000.</p>
<p><b>Target 2.1</b></p> <p><b>Outdoor Air Pollutants</b>—Improve outdoor air quality by ensuring compliance with new or amended regulated emission limits by 2020 and thus reducing emissions of air pollutants in support of Air Quality Management System (AQMS) objectives.</p>	<p>Some improvements are evident. New and amended regulations for air pollutants have contributed to continued decreases in emission levels of four key air pollutants: emissions of sulphur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs) and carbon monoxide (CO) were 28% to 63% lower in 2013 than in 1990.</p>
<p><b>Target 2.2</b></p> <p><b>Indoor Air Quality</b>—Help protect the health of Canadians by providing health-based guidance and tools to support actions to better manage indoor air quality.</p>	<p>The federal government continued to develop guidelines, mitigation measures, product standards and communication initiatives on indoor air quality.</p> <p>The indoor air health risk assessment for NO<sub>2</sub> was completed and formed the basis of the Residential Indoor Air Quality Guideline for NO<sub>2</sub> published in August 2015.</p> <p>The government also completed health risk assessments to support the development of draft Indoor Air Reference Level determinations for certain VOCs.</p>
<p><b>MAINTAINING WATER QUALITY AND AVAILABILITY</b></p>	
<p><b>GOAL 3</b></p> <p><b>Water Quality and Water Quantity</b>—Protect and enhance water so that it is clean, safe and secure for all Canadians and supports healthy ecosystems.</p>	<p>Over the past decade, freshwater quality and quantity in Canadian rivers has remained generally stable.</p> <p>In terms of drinking water quality, most boil water advisories were issued as precautionary measures during equipment maintenance or repair rather than due to detection of pathogens in treated water.</p>

2013–2016 FSDS Goals and Targets	Progress Statements
<p><b>Target 3.1</b>  <b>On-reserve First Nations Water and Wastewater Systems</b>—Increase the percentage of on-reserve First Nations water systems with low risk ratings from 27% to 50% by 2015. Increase the percentage of on-reserve First Nations wastewater systems with low risk ratings from 35% to 70% by 2015.</p>	<p>The percentage of on-reserve First Nations drinking water systems with low risk ratings increased from 27% in 2009–2011 to 57% in 2014–2015.</p> <p>Forty-eight percent of on-reserve First Nations wastewater systems had low risk ratings in 2014–2015 compared with 38% in 2009–2011.</p>
<p><b>Target 3.2</b>  <b>Drinking Water Quality</b>—Help protect the health of Canadians by developing up to 15 water quality guidelines/guidance documents by 2016.</p>	<p>Between 2013 and 2015, 10 new or updated drinking water quality guidelines/guidance documents were approved by provinces and territories, on track to achieve 15 by 2016.</p>
<p><b>Target 3.3</b>  <b>Great Lakes—Canadian Areas of Concern</b>—Take federal actions to restore beneficial uses for delisting five Canadian Areas of Concern (AOC) and to reduce the number of impaired beneficial uses in the remaining AOC by 25% by 2018.</p>	<p>Since 2010, no AOC have been delisted. However, a 2014 assessment revealed that ongoing action by the federal government and its partners has decreased the number of beneficial uses considered “impaired” by 33% (from 120 to 80) since each AOC was initially assessed.</p>
<p><b>Target 3.4</b>  <b>Great Lakes</b>—Contribute to the restoration and protection of the Great Lakes by developing and gaining bi-national acceptance of objectives for the management of nutrients in Lake Erie by 2016 and for the other Great Lakes as required.</p>	<p>In 2014, representatives of Canada, the U.S., Ontario and the eight Great Lakes States agreed to develop phosphorus reduction targets for Lake Erie by spring 2016. Public consultations were held in summer 2015 on a 40% reduction target for Lake Erie.</p>
<p><b>Target 3.5</b>  <b>St. Lawrence River</b>—Take federal actions to reduce pollutants in order to improve water quality, conserve biodiversity and ensure beneficial uses in the St. Lawrence River by 2016.</p>	<p>Phosphorus levels at the majority of water quality monitoring stations along the St. Lawrence River exceeded water quality guidelines more than 50% of the time during the period 2010–2012. Nitrogen levels exceeded water quality guidelines more than 50% of the time at only one site.</p>
<p><b>Target 3.6</b>  <b>Lake Simcoe and South-eastern Georgian Bay</b>—Reduce an estimated 2000 kg of phosphorus loadings to Lake Simcoe by 2017, which will support the Province of Ontario’s target to reduce phosphorus inputs into Lake Simcoe to 44 000 kg/year by 2045. Reduce an estimated 2000 kg of phosphorus loadings to south-eastern Georgian Bay watersheds by 2017.</p>	<p>Phosphorus reduction projects completed by March 2015 under the Lake Simcoe/South-eastern Georgian Bay Clean-up Fund are preventing approximately 4040 kg of phosphorus per year from entering the Lake Simcoe watershed.</p> <p>Similarly, stewardship projects are preventing an estimated 124 kg of phosphorus per year from reaching South-eastern Georgian Bay and its tributary rivers.</p>

2013–2016 FSDS Goals and Targets	Progress Statements
<p><b>Target 3.7</b>  <b>Lake Winnipeg Basin</b>—By 2017, reduce phosphorus inputs to water bodies in the Lake Winnipeg Basin, in support of the Province of Manitoba's overall plan to reduce phosphorus in Lake Winnipeg by 50% to pre-1990 levels.</p>	<p>As of March 2015, stewardship projects supported by the Lake Winnipeg Basin Stewardship Fund were preventing an estimated 14 800 kg of phosphorus per year from entering Lake Winnipeg and its tributary rivers.</p> <p>Phosphorus levels in Lake Winnipeg were 100% higher in 2013 than pre-1990: 0.1 milligrams of phosphorus per litre compared with 0.05.</p>
<p><b>Target 3.8</b>  <b>Marine Pollution—Releases of Harmful Pollutants</b>—Protect the marine environment by an annual 5% reduction in the number of releases of harmful pollutants in the marine environment by vessels identified during pollution patrol from 2013–2016.</p>	<p>With a 70% increase in patrol hours from 2009–2010, 44 spills by identified vessels were detected in fiscal year 2013–2014 compared with 21 in 2009–2010, an average annual increase of 20%.</p>
<p><b>Target 3.9</b>  <b>Marine Pollution—Disposal at Sea</b>—Ensure that permitted disposal at sea is sustainable, such that 85% of disposal site monitoring events do not identify the need for site management action (such as site closure) from 2013–2016.</p>	<p>Since 2004, the proportion of permitted disposal at sea sites requiring no management action has exceeded the 85% performance target, indicating that Canada's ocean disposal sites are being used sustainably.</p> <p>In 2013–2014, the government completed monitoring projects at 11 ocean disposal sites, or 12% of actively used sites.</p>
<p><b>Target 3.10</b>  <b>Agri-environmental Performance Metrics</b>—Achieve a value between 81 and 100 on each of the Water Quality and Soil Quality Agri-Environmental Performance Metrics by March 31, 2030.</p>	<p>The Soil Quality Agri-Environmental Performance Metric rose from 66 in 1981 to 77 in 2006 as farm management improved. Meanwhile, the Water Quality Agri-Environmental Performance Metric declined from 94 in 1981 to 78 in 2006.</p>
<p><b>Target 3.11</b>  <b>Wastewater and Industrial Effluent</b>—Reduce risks associated with effluent from wastewater (sewage) and industrial sectors by 2020.</p>	<p>Regulatory compliance reduces the risks of effluent released to the environment in rivers. The indicators measuring the quality of metal mining and pulp and paper effluent show stable or improved regulatory compliance.</p>
<p><b>Target 3.12</b>  <b>Water Resource Management</b>—Facilitate sustainable water resource management through the collection of data and the development and dissemination of knowledge from 2013–2016.</p>	<p>Provincial and territorial government clients rated the Government of Canada's hydrometric program 8 out of 10 on a performance satisfaction survey of their data dissemination.</p>



2013–2016 FSDS Goals and Targets	Progress Statements
<b>PROTECTING NATURE AND CANADIANS</b>	
<p><b>GOAL 4</b></p> <p><b>Conserving and Restoring Ecosystems, Wildlife and Habitat, and Protecting Canadians</b>—Resilient ecosystems with healthy wildlife populations so Canadians can enjoy benefits from natural spaces, resources and ecological services for generations to come.</p>	<p>In 2010, 77% of Canadian wild species assessed in the General Status of Wildlife Species in Canada report were ranked “secure.” The number of protected areas and the total area protected in Canada continued to grow.</p>
<p><b>Target 4.1</b></p> <p><b>Species at Risk</b>—By 2020, populations of species at risk listed under federal law exhibit trends that are consistent with recovery strategies and management plans.</p>	<p>Of the 307 species at risk that had final recovery strategies or management plans as of May 2015, 112 had population-oriented goals reassessed. Of these 112 species, 43 (38%) showed population trends consistent with the goals of the recovery strategies.</p>
<p><b>Target 4.2</b></p> <p><b>Migratory Birds</b>—Improve the proportion of migratory bird species that meet their population goals.</p>	<p>Baseline information indicates that more than half of managed migratory bird species regularly found in Canada have population sizes within an acceptable range.</p>
<p><b>Target 4.3</b></p> <p><b>Terrestrial Ecosystems and Habitat Stewardship</b>—Contribute to the proposed national target so that by 2020, at least 17% of terrestrial areas and inland water are conserved through networks of protected areas and other effective area-based conservation measures.</p>	<p>10.3% of Canada’s terrestrial area (land and freshwater) is protected as of the end of 2014, and this percentage is expected to continue to increase.</p> <p>As of 2015, 80 700 square kilometres (km<sup>2</sup>) of habitat for waterfowl had been secured since 1990 and as of 2014, 1836 km<sup>2</sup> habitat for species at risk has been secured since 2000.</p>
<p><b>Target 4.4</b></p> <p><b>Improving the Health of National Parks</b>—Improve the condition of at least one Ecological Integrity Indicator in 20 national parks by 2015.</p>	<p>As of March 2015, management actions have resulted in improvements to at least one indicator of ecological integrity in 20 national parks.</p>
<p><b>Target 4.5</b></p> <p><b>Marine Ecosystems</b>—By 2020, 10% of coastal and marine areas are conserved through networks of protected areas and other effective area-based conservation measures.</p>	<p>From 1990 to 2014, protected coastal and marine areas increased from 0.32% of Canada’s marine territory to 0.9%.</p>

2013–2016 FSDS Goals and Targets	Progress Statements
<p><b>Target 4.6</b>  <b>Invasive Alien Species</b>—By 2020, pathways of invasive alien species introductions are identified, and risk-based intervention or management plans are in place for priority pathways and species.</p>	<p>No new invasive species were found to have become established in Canada in 2012 and 2013.</p> <p>The federal government is conducting pathway and species risk assessments, including assessments of weeds for potential quarantine and assessments of aquatic species for potential regulations.</p> <p>The government has developed risk-impact matrices for five groups of high-priority pathogens and completed an assessment of the risk posed by the invasive <i>Phytophthora ramorum</i> (commonly known as sudden oak death disease) to various Canadian tree species such as oak and larch.</p>
<p><b>Target 4.7</b>  <b>Environmental Disasters, Incidents and Emergencies</b>—Environmental disasters, incidents and emergencies are prevented or their impacts mitigated.</p>	<p>As of March 2015, 86% of federal institutions have assessed their strategic emergency plan and taken actions to address risks related to their area of responsibility.</p> <p>Of the 2449 facilities that implemented environmental emergency plans in 2014–2015, 21 had environmental emergencies (0.9%).</p>
<p><b>Target 4.8</b>  <b>Chemicals Management</b>—Reduce risks to Canadians and impacts on the environment and human health posed by releases of harmful substances.</p>	<p>The government is making progress in reducing environmental and health risks posed by releases of harmful substances:</p> <ul style="list-style-type: none"> <li>• As of 2013, mercury, lead and cadmium emissions to air have been reduced to about 10% of 1990 levels (emission reductions of 88%, 90% and 90% respectively).</li> <li>• Monitoring and surveillance of harmful substances in the environment shows that concentrations of polybrominated diphenyl ethers (PBDEs) in fish and sediment are decreasing, and that perfluorooctane sulfonate (PFOS) levels in water and in fish tissue are within guidelines for water quality and fish health, though in some areas they exceed safe levels for wildlife eating those fish.</li> <li>• As of March 31, 2014, 100% of new substances notifications received have been assessed under the Chemicals Management Plan.</li> </ul>

2013–2016 FSDS Goals and Targets	Progress Statements
<p><b>GOAL 5</b></p> <p><b>Biological Resources</b>—Efficient economic and ecological use of resources—Production and consumption of biological resources are sustainable.</p>	<p>From 1990 to 2013, annual timber harvest has been in the range of 47% to 85% of Canada's wood supply, and 48% of major fish stocks were considered healthy in 2014, an increase from 46% in 2011.</p>
<p><b>Target 5.1</b></p> <p><b>Sustainable Fisheries</b>—Improve the management and conservation of major stocks.</p>	<p>In 2014, 99% of 155 major fish stocks were harvested at sustainable levels, an increase from 90% in 2011.</p>
<p><b>Target 5.2</b></p> <p><b>Sustainable Aquaculture</b>—By 2020, all aquaculture in Canada is managed under a science-based regime that promotes the sustainable use of aquatic resources (including marine, freshwater and land-based) in ways that conserve biodiversity.</p>	<p>Integrated Management of Aquaculture Plans have been completed for British Columbia finfish and shellfish. The Plan for freshwater species is currently in development. National aquaculture science programs are in place to inform other regulatory processes under the <i>Fisheries Act</i> (for example, the <i>Aquaculture Activities Regulations</i>).</p>
<p><b>Target 5.3</b></p> <p><b>Sustainable Forest Management</b>—Contribute to the proposed national target so that by 2020, continued progress is made on the sustainable management of Canada's forests.</p>	<p>Through its participation on advisory boards and committees, Natural Resources Canada (NRCan) provides scientific expertise to stakeholders on how to address challenges related to maintaining the sustainability of forest ecosystems. In 2013–2014, 77 NRCan representatives sat on disturbances advisory boards and committees, up from 73 in the previous reporting period.</p>
<p><b>Target 5.4</b></p> <p><b>Sustainable Agriculture</b>—By 2020, agricultural working landscapes provide a stable or improved level of biodiversity and habitat capacity.</p>	<p>As of 2013–2014, more than 85% of ranges in the Community Pastures Program were rated good or excellent in terms of their capacity to support biodiversity and provide habitat for wildlife.</p> <p>Ninety-five percent of farms have taken action on their Environmental Farm Plan to improve agri-environmental risk assessment and risk mitigation.</p>

2013–2016 FSDS Goals and Targets	Progress Statements
<b>SHRINKING THE ENVIRONMENTAL FOOTPRINT—BEGINNING WITH GOVERNMENT</b>	
<b>GOAL 6</b> <b>Greenhouse Gas (GHG) Emissions and Energy</b> —Reduce the carbon footprint and energy consumption of federal operations.	<p>Overall GHG emissions from federal operations have been reduced since 2005.</p> <p>Responsible departments and agencies continue to work toward achieving their own GHG emissions reduction targets in support of the overall federal target of 17% by 2020–2021.</p>
<p><i>Target 6.1</i>  <b>GHG Emissions Reduction</b>—The Government of Canada will reduce GHG emissions from its buildings and fleet by 17% below 2005 levels by 2020.</p>	<p>In fiscal year 2013–2014, responsible departments and agencies have reduced GHG emissions from their buildings and fleets by 2.5%, relative to fiscal year 2005–2006.</p>
<b>GOAL 7</b> <b>Waste and Asset Management</b> —Reduce waste generated and minimize the environmental impacts of assets throughout their life cycle.	<p>The government has made progress on waste and asset management: 37 of 54 real property projects and existing Crown-owned buildings have achieved a high level of environmental performance, 85% of SMART green procurement targets have been achieved (or are on track to be achieved), and 100% of FSDS departments have developed an approach to maintain and improve the sustainability of workplace policies and practices.</p>
<p><i>Target 7.1</i>  <b>Real Property Environmental Performance</b>—As of April 1, 2014, and pursuant to departmental Real Property Sustainability Frameworks, an industry-recognized level of high environmental performance will be achieved in Government of Canada real property projects and operations.</p>	<p>Federal real property custodians continue to integrate environmental performance considerations into real property decision-making, supporting the government's pursuit of its GHG emissions reduction, waste and asset management, and water management targets, as well as utility cost savings.</p> <p>To date, 37 of 54 real property projects and existing Crown-owned buildings and 26 of 36 new construction and major renovation projects have achieved an industry-recognized level of high environmental performance since 2012–2013.</p>

2013–2016 FSDS Goals and Targets	Progress Statements
<p><b>Target 7.2</b>  <b>Green Procurement</b>—As of April 1, 2014, the Government of Canada will continue to take action to embed environmental considerations into public procurement, in accordance with the federal Policy on Green Procurement.</p>	<p>The federal government continues to make progress on implementing the Policy on Green Procurement; for example, more than 14 600 specialists in procurement and/or materiel management have completed training over the last three years.</p> <p>In addition, in 2013–2014, 96% of the 26 FSDS departments included support or contribution towards green procurement as an element in the performance evaluations of those managing procurement and materiel management.</p>
<p><b>Target 7.3</b>  <b>Sustainable Workplace Operations</b>—As of April 1, 2015, the Government of Canada will update and adopt policies and practices to improve the sustainability of its workplace operations.</p>	<p>The government has reduced the environmental impact of the federal workplace in a number of key areas. From 2011–2014, the federal government donated over 369 000 computers, laptops, monitors and printers to Computers for Schools (CFS) and increased the average ratio of employees to printing units from 4:1 to 8.5:1 (shedding an estimated 27 500 units).</p> <p>In addition, over 2 years, annual paper consumption dropped by about 540 million sheets, and the use of 20 000 toner cartridges was eliminated, saving the government approximately \$4.5 million.</p>
<p><b>Target 7.4</b>  <b>Greening Services to Clients</b>—By March 31, 2015, departments will establish SMART targets to reduce the environmental impact of their services to clients.</p>	<p>As this is a new and optional target, data is not yet available to provide a measure of progress.</p>
<p><b>GOAL 8</b>  <b>Water Management</b>—Improve water management in federal operations.</p>	<p>The government has added a new commitment to improve the management of water in its real property operations.</p>
<p><b>Target 8.1</b>  <b>Water Management</b>—As of April 1, 2014, the Government of Canada will take further action to improve water management within its real property portfolio.</p>	<p>All 15 custodial FSDS departments and agencies are making strides to improve water management in their real property operations and to identify priority areas for action.</p>

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# INTRODUCTION

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The *Federal Sustainable Development Act* (the Act) requires the Minister of Environment and Climate Change to table a Federal Sustainable Development Strategy (FSDS) every three years that makes environmental decision-making more transparent and accountable to Parliament.

The Act also requires the Minister to table a report before Parliament every three years on the federal government's progress in implementing the FSDS.

Together, the FSDS and the Progress Report provide a whole-of-government view of progress towards environmental sustainability.



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## ADDRESSING CLIMATE CHANGE AND AIR QUALITY

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# Addressing Climate Change and Air Quality

Greenhouse gas (GHG) concentrations in Earth's atmosphere are increasing, trapping more heat and changing our climate. A wide range of impacts are under way: shrinking Arctic sea ice, thawing permafrost, rising sea levels, increased risks of severe weather, including heat waves, floods and droughts. These effects pose increasing global risks to human health and safety, the economy, infrastructure, and wildlife.

## **GOAL 1: CLIMATE CHANGE**

In order to mitigate the effects of climate change, reduce GHG emission levels and adapt to unavoidable impacts.

### **Progress Statements**

As of 2013, Canada's anthropogenic GHG emissions were 23 Mt carbon dioxide equivalent (CO<sub>2</sub> eq) below 2005 levels. The Government of Canada continued to pursue a sector-by-sector approach to regulating GHG emissions. It also continued to help Canadians and businesses decrease their GHG emissions through actions such as supporting the development and deployment of innovative clean technologies.

Over the past five years, understanding about adaptation has improved and progress has been made through broadened engagement and policies, plans and practices to increase resilience to climate change.

### **Remaining Challenges**

In 2009, the Government of Canada committed under the Copenhagen Accord to reduce Canada's GHG emissions by 17% below 2005 levels by 2020.

The Government has committed to work with provincial and territorial leaders to develop a pan-Canadian framework for addressing climate change. At the 21st session of the Conference of Parties, the Government joined other countries in committing to limit global average temperature rise to well below two degrees Celsius, and to pursue efforts to limit the increase to 1.5 degrees.



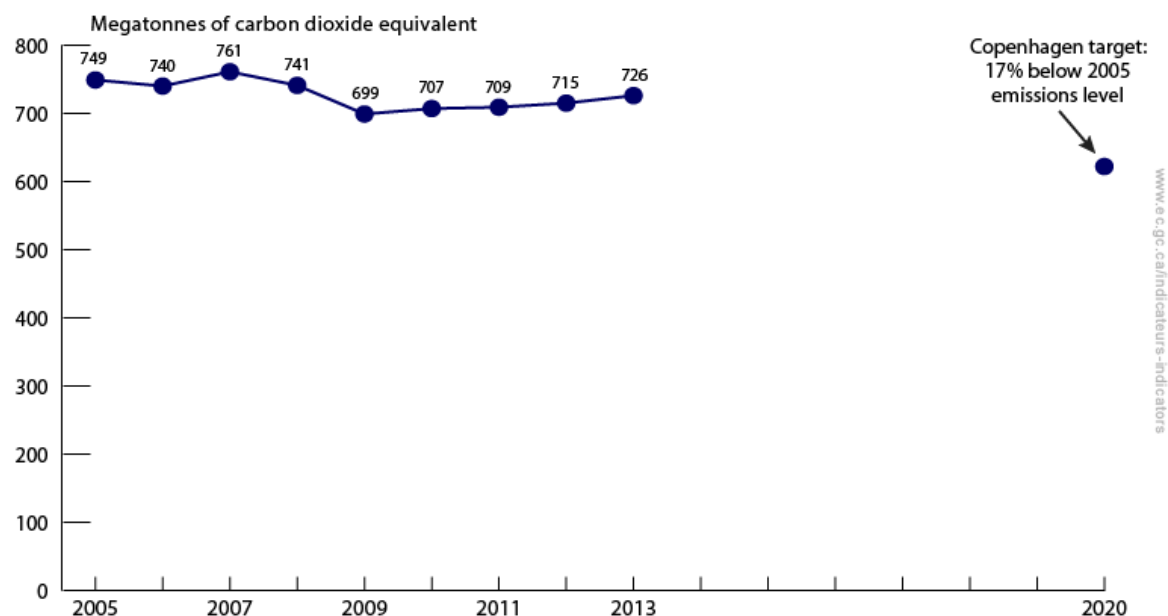
## What we know

Canada's total GHG emissions level in 2013 was 726 Mt CO<sub>2</sub> eq, or 3.1% (23 Mt CO<sub>2</sub> eq) below the 2005 level of 749 Mt CO<sub>2</sub> eq (see Figure 1). This change was driven by decreases in emissions from the electricity generation sector and from emissions-intensive and trade-exposed industries. The steep decline between 2008 and 2009 was partly due to the global economic downturn.

Canada's level of emissions intensity, or GHG emissions per unit of gross domestic product, was 14% lower in 2013 than in 2005, while GHG emissions per capita decreased from 23.2 tonnes in 2005 to 20.7 tonnes in 2013. These improvements are attributable to factors such as more efficient industrial processes, a shift to a more service-based economy, and reductions in the emissions associated with energy generation—for example, due to fuel-switching from coal and oil to lower-emitting sources like natural gas and non-emitting sources such as hydro, wind and solar.

*Learn more: visit the Canadian Environmental Sustainability Indicators ([CESI](http://www.ec.gc.ca/indicators-indicateurs)) website.*

**Figure 1: National greenhouse gas emissions, Canada, 2005 to 2013**



# CLIMATE CHANGE MITIGATION

Climate change is a global problem that requires sustained action by all, including individuals, businesses and governments at all levels and in all countries. Mitigating climate change means reducing our emissions of GHGs and other climate-warming pollutants such as black carbon.

Canada is working alongside other countries to advance international efforts to combat climate change. Within Canada, the federal government is committed to providing national leadership on climate change mitigation, working with provinces and territories to price carbon, reduce our GHG emissions, and meet our international commitments.

## ***Target 1.1: Climate Change Mitigation***

Relative to 2005 emission levels, reduce Canada's total GHG emissions 17% by 2020.

### **Progress Statement**

As of 2013, Canada's GHG emissions level was 3.1% below the 2005 level of 749 Mt CO<sub>2</sub> eq.

## **What we know**

The world reached a historic milestone in December 2015 with the adoption of the Paris Agreement, which aims to strengthen the global response to the threat of climate change. The agreement commits Canada and 194 other countries to limit global average temperature rise to well below 2 degrees Celsius, and to pursue efforts to limit the increase to 1.5 degrees.

Parties to the Paris Agreement will establish national GHG emissions reduction targets, update them every five years, and take action to achieve them. The agreement also includes commitments to strengthen climate change adaptation, provide support to developing countries, and regularly assess and report on progress.

Meeting Canada's international commitments requires action by all levels of government. The federal government is committed to working with provinces and territories to develop a new pan-Canadian climate change framework that will include national GHG emissions reduction targets based on the best economic and scientific analysis.

Within this common framework, the federal government will support provinces and territories in designing and implementing climate change policies that reflect their unique circumstances, including carbon pricing policies.

## **Activity under the 2013–2016 FSDS**

The federal government has worked to mitigate climate change through international collaboration, regulatory initiatives, voluntary initiatives within the rail, marine and aviation sectors, and investments to advance the development and use of clean technology.

## Working with international organizations and partners

Canada continues to work with its global partners to address climate change. For example, Canada played an active and positive role in negotiating the Paris Agreement under the United Nations Framework Convention on Climate Change.

Canada also participates in other international organizations and initiatives that are helping to reduce global GHG emissions. For example:

- Canada is a founding partner and major financial contributor to the [Climate and Clean Air Coalition](#) (CCAC), an international, voluntary initiative aimed at reducing short-lived climate pollutants (SLCPs) such as black carbon. Since 2012, the CCAC has launched 11 sector-based and cross-cutting initiatives to reduce SLCP emissions in the near term, including reducing black carbon emissions from heavy-duty diesel vehicles and engines and mitigating SLCPs from the municipal solid waste sector. In 2015, the federal government contributed \$35 million to reduce SLCPs, of which \$25 million will help to reduce SLCPs through mitigation actions with key partner countries, including through projects to reduce black carbon emissions to benefit the Arctic.
- Canada chaired the Arctic Council in 2013–2015. Under Canada's chairmanship, the Arctic Council took action on SLCPs through the Task Force for Action on Black Carbon and Methane. The Task Force secured an agreement by Arctic States and participating Observer States to take enhanced, ambitious, national and collective action to accelerate the decline in overall black carbon emissions and significantly reduce overall methane emissions.

One way in which Canada helps to advance global efforts to address climate change is by supporting mitigation and adaptation in developing countries, including through climate finance. For example:

- In 2014, Canada pledged \$300 million to the [Green Climate Fund](#), a global fund that provides support to developing countries to reduce their GHG emissions and to adapt to the impacts of climate change. This funding builds on Canada's previous investment of \$1.2 billion under the [Fast-Start Financing Initiative](#) that has supported adaptation, clean energy, and sustainable forestry and agriculture projects in more than 65 developing countries to date.
- In 2015, Canada committed to contribute \$150 million to the G7 African Renewable Energy Initiative, a plan to bring 10 gigawatts (GW) of renewable energy to the continent by 2020 and scale that up to 300 GW by 2030. Improving access to affordable energy services can play an important role in relieving poverty and tackling climate change.
- Also in 2015, the federal government pledged a contribution of \$50 million to the G7 Initiative on Climate Risk Insurance to help people in developing countries protect themselves against the economic consequences of more intense and increasingly frequent natural catastrophes like severe flooding, droughts or heavy storms. Canada also participates in the Caribbean Catastrophe Risk Insurance Facility. Since its inception in 2007, the Facility has made 13 payouts totalling approximately US\$38 million to 8 member governments for hurricanes, earthquakes and excess rainfall.

## Working with North American partners

Canada works with the U.S. and other North American partners to reduce GHG emissions and promote clean energy. For example:

- Canada and the U.S. are cooperating on reducing GHG and air pollutant emissions in the oil and gas sector.
- Canada participates in the Canada–U.S. Clean Energy Dialogue (CED). The Third CED Report to Leaders (2014) noted that the CED has supported over 50 initiatives advancing joint research and development of clean energy technologies in the areas of carbon capture and storage, electricity grid, marine energy, advanced biofuels and bioenergy, advanced transportation, advanced buildings and communities, and energy efficiency.
- Canada collaborated with the U.S. on energy efficiency and alternative transportation fuels projects to support market development and broader international efforts. These included strengthening ENERGY STAR labelling for equipment and appliances, accelerating the adoption of the ISO 50001 Standard for Energy Management Systems in industry, and supporting the deployment of natural gas vehicles.
- The federal government and the U.S. Environmental Protection Agency are working with stakeholders to develop a Canada–U.S. Voluntary Action Plan to Reduce Greenhouse Gas Emissions from Locomotives.
- Canada collaborates with the U.S. through the Regulatory Cooperation Council (RCC) to facilitate more aligned approaches to regulation. Under the RCC, Natural Resources Canada and the U.S. Department of Energy have published a Regulatory Partnership Statement and Annual Work Plan as part of a commitment to better align Canadian and U.S. energy efficiency standards and foster greater cross-border natural gas vehicle deployment by aligning existing codes and standards.

The federal government has worked with North American and other partners to address the world's most potent GHGs: hydrofluorocarbons (HFCs). HFC emissions are expected to increase substantially in the next 10 to 15 years if left unchecked. In 2015, support rose for a phase-down of HFCs with four amendment proposals under the Montreal Protocol, including the North American Proposal. Domestically, the federal government published a Notice of Intent in December 2014 to regulate the manufacture and import of HFCs used in commercial refrigeration systems, foam-blowing agents, vehicle air-conditioning units and consumer aerosols.

## Clean energy

Canada has one of the cleanest electricity systems in the G7 and one of the cleanest in the world, with over three quarters of its electricity supply emitting no GHGs. Canada has taken action to further enhance the sustainability of its energy system, including through regulation and investment in clean technologies.

In 2012, Canada published regulations that apply strict emission limits to coal-fired generation, effectively banning construction of new traditional coal-fired electricity generation units and requiring the phase-out of existing coal-fired units without carbon capture and storage. The *Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations*, which came into effect on July 1, 2015, sets a stringent performance standard for new and existing coal-fired electricity generating units and units that have reached the end of their economic life.

These regulations encourage utilities to transition towards lower emitting technologies, such as high-efficiency natural gas power plants, coal-fired power plants equipped with carbon capture and storage technology, and renewable energy.

To improve industrial productivity and competitiveness, Canada was the first country in the world to adopt the ISO 50001 energy management standard for industry, which establishes an energy management framework for all types of organizations. Companies implementing the standard have reported a drop in energy use of up to 20%, saving them money and improving their ability to compete in global markets.

The federal government has implemented programs that support the development and deployment of clean energy technologies. For example:

- The federal government continued its investment in the ecoENERGY Innovation Initiative, providing \$268 million over five years (2011–2016) to support research, development and demonstration projects to produce and use energy in a cleaner and more efficient way. A total of 300 projects together leverage over \$215 million for clean energy research, including private sector investments.
- The ecoENERGY for Aboriginal and Northern Communities Program supports Indigenous and northern communities in meeting community energy needs and reducing GHG emissions through the integration of proven renewable energy and energy efficiency technologies into community buildings.
- The \$1.4 billion ecoENERGY for Renewable Power and the \$330 million Wind Power Production Incentive programs supported the production of up to 15 terawatt-hours of renewable electricity in fiscal year 2015–2016.
- The ecoENERGY Efficiency program collectively contributed over 36 petajoules of energy savings in 2014–2015, exceeding its commitment of 25–32 petajoules as a result of higher than anticipated program activity uptake. This program supported training workshops on energy-efficient products and practices for over 900 individuals in the buildings sector, 345 in the housing sector, and over 1800 in the industrial sector.
- Under the Marine Renewable Energy Enabling Measures program, the government is developing policy options for administering tidal, current and wave energy projects in the federal offshore.

The federal government has also supported climate change mitigation and clean energy by funding Sustainable Development Technology Canada (SDTC), a foundation operating at arm's length from government. In 2014, 66 projects funded by SDTC that were completed that year provided GHG emissions reductions of 4.5 megatonnes, the equivalent of taking 525 000 homes off the grid.

## **Transportation**

In the transportation sector, a number of key initiatives have laid the groundwork for substantial and ongoing progress. They include regulatory initiatives, voluntary approaches, and investment in research and development.

The federal government continues to develop and implement regulations to limit GHG emissions from the transportation sector.

- In March 2013, the federal government published the final *Heavy-Duty Vehicle and Engine Greenhouse Gas Emission Regulations*. These regulations establish mandatory GHG emission standards for new on-road heavy-duty vehicles and engines beginning with the 2014 model year, aligned with those in the U.S. The regulations will reduce GHG emissions from 2018 model year heavy-duty vehicles by up to 23%.
- In 2014, the government published a Notice of Intent to develop regulations to further reduce GHGs for the post-2018 model year for on-road heavy-duty vehicles and engines. Building on existing regulations, the federal government published the final *Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations* in 2014. These regulations support actions to reduce GHG emissions from new cars and light trucks, for 2017 model year vehicles and beyond.

The government also promotes the adoption of energy-efficient practices and clean technologies for transportation.

- The ecoENERGY Efficiency for Vehicles program aims to reduce energy use and emissions from transportation in Canada. It offers fuel-efficient driver training, provides energy information to vehicle consumers, and encourages freight companies to make their operations as energy-efficient as possible. Over 189 000 fleet and novice drivers received training in 2014–2015, and it is expected that the overall five-year transportation target will be achieved, based on the current rates of driver participation.
- In 2015, the SmartWay Transport Partnership program had over 32 000 trucks registered (representing over 25% of all on-road freight activity in Canada). Participation in SmartWay, which is increasingly requested by manufacturers and retailers, helps Canadian freight companies reduce fuel costs and transport goods in the most efficient way possible. It also helps them gain access to business from over 255 North American companies who require that the fleets they hire are participating in SmartWay to maximize efficiency in their supply chains.
- The government launched the ecoENERGY for Alternative Fuels program in April 2011 to help advance the deployment of natural gas in transportation by supporting education and outreach efforts as well as much-needed codes and standards. The program activities represent the federal government's contribution to implementing recommendations from the multi-stakeholder 2010 Natural Gas Use in the Canadian Transportation Sector Deployment Roadmap.
- The ecoENERGY for Biofuels program is a nine-year program that will invest close to \$1 billion by 2017 in operating incentives to producers of renewable alternatives to gasoline and diesel in support of the *Renewable Fuels Regulations*. In March 2015, the program had 21 active contribution agreements, representing a built production capacity of over 1800 million litres of ethanol and over 210 million litres of biodiesel. Beyond ecoENERGY for Biofuels, the government is exploring advanced biofuels such as bio-jet fuel that have the potential to reduce GHGs from a life-cycle perspective.
- Through the Canadian Council of Ministers of the Environment, federal, provincial, and territorial governments approved the Mobile Sources Working Group's (MSWG) action plan (September 2013) to address emissions from the transportation sector. The action plan builds on the existing range of policy and regulatory initiatives across governments that are aimed at reducing air pollutant and GHG emissions from the mobile sources sector, and outlines the basis of the MSWG's work over the next three years.

- Testing and evaluation of advanced vehicle technologies by the ecoTECHNOLOGY for Vehicles program (eTV) supports the development of vehicle regulations, codes and standards. The eTV is a five-year (2011–2016), \$38 million clean transportation initiative that aims to facilitate the safe and timely introduction of fuel-efficient, low-emission vehicle technologies in Canada. In 2014–2015, the eTV program delivered 16 testing and evaluation activities to support the development of advanced technology vehicle codes, protocols, guidelines and related instruments.
- In the marine sector, the [Shore Power Technology for Ports](#) contribution program (\$27.2 million) supports projects that provide an alternative to running diesel auxiliary engines. This helps to reduce air emissions, particulates and GHGs from marine vessels, while supporting the competitiveness of Canadian ports. Recent accomplishments include three contribution agreements for the Port of Halifax, the Port of Montreal and BC Ferries; and negotiation of two additional agreements with Port Metro Vancouver.
- Natural Resources Canada (NRCan) has provided important research results to industry to enable greater use of aluminum in vehicles, which directly impacts fuel efficiency. For example, NRCan developed a novel shear test method that enables the computational design of lightweight vehicle structures.
- To ensure that the technologies needed for emission reductions are safe and that they provide their intended environmental benefits in Canada, the government has initiated several evaluation and testing projects to examine the performance or safety of new clean transportation technologies: for example, natural gas use in marine vessels, emissions measurement for aircraft, alternative fuels for trains and aircraft, the safety of electric vehicles.

The federal government works with the Canadian rail industry to encourage voluntary emission reductions from the Canadian rail sector. The *2013 Locomotive Emissions Monitoring Program Report* noted that the rail industry is achieving positive results.

The government also works with the Canadian aviation industry to improve the GHG intensity of aviation. An Action Plan sets an ambitious target to improve the fuel efficiency of Canadian air carriers by an average of 2% per year until 2020, from a 2005 baseline. The 2013 Annual Report prepared under the Action Plan was released in December 2014 and reported that between 2005 and 2013, the domestic aviation sector realized a 1.2% average annual (or an 8.7% cumulative annual) improvement in fuel efficiency.

At the International Civil Aviation Organization, work focuses on measures such as the development of a CO<sub>2</sub> emissions standard for new aircraft and a global market-based measure for consideration by the International Civil Aviation Organization's Assembly in 2016. This effort should support the international civil aviation sector's aspirational goal of carbon-neutral growth by 2020.

Work is also under way at the International Maritime Organization on measures to improve the energy efficiency of international maritime shipping. Progress has included the adoption of the Energy Efficiency Design Index, which requires ships above 400 gross tonnage (GT) built after 2015 to comply with increasingly stringent efficiency standards, as well as the Ship Energy Efficiency Management Plan, which requires ships above 400 GT to monitor their energy efficiency.

## Other sectors

In addition to energy and transportation, the federal government is taking action to reduce GHG emissions from other sectors such as agriculture, mining and buildings.

For example, the government has extended the terms and conditions of the \$5.4M per year [Agricultural Greenhouse Gases Program \(AGGP\)](#) for five years beginning April 1, 2016. The program helps Canadian farmers improve access to practices that reduce GHGs. For example, under the current program, researchers at McGill University were awarded close to \$2 million to determine the effects on nitrous oxide, CO<sub>2</sub> and methane emissions, and carbon sequestration in relation to different irrigation and drainage management practices on horticultural crop production in Eastern Canada. The University of Guelph received almost \$3 million under the AGGP to study GHG mitigation strategies in feeding, manure management and cropping systems.

In the mining sector, the government continued to make progress through the Green Mining Initiative, which supports sustainable mining practices as well as the development and commercialization of green mining technologies. For example, a ventilation-on-demand demonstration project was completed at a Sudbury nickel mine site. This project helped reduce the mine's energy usage, results that could be replicated in other mines.

In the building sector, the ecoENERGY Efficiency for Buildings program provides technical, policy and financial support to National Research Council Canada to upgrade the 2011 National Energy Code of Canada for Buildings. The updated code will be published in 2015 to ensure improved minimum performance for new buildings, which will make up 25% of the building stock in 2020. Meanwhile, five provinces and one charter city, representing 69% of projected new floor space in Canada, have adopted the National Energy Code of Canada for Buildings, while the other provinces and two territories are currently examining its adoption (or the adoption of an equivalent code).

In August 2013, NRCan launched the ENERGY STAR Portfolio Manager Benchmarking Tool for Buildings, developed by the U.S. Environmental Protection Agency and adapted for the Canadian context. As of the end of fiscal year 2014–2015, over 10 500 Canadian buildings representing 17% of floor space were registered with the tool to save money and attract higher rents.

In the residential sector, the ecoENERGY Efficiency for Housing program provides advice to homeowners on the best retrofits to save energy on their homes and is a means for homebuyers to recognize more energy-efficient homes. In 2014–2015, over 17 000 EnerGuide, ENERGY STAR and R-2000 labelled new homes were built in Canada, saving owners on their energy costs. This brought the total number of efficient new homes that have been built since the initiatives' inception to over 70 000. ENERGY STAR qualified homes and R-2000 homes consume on average 20 to 50% less energy than typical homes. Additionally, over 65 000 EnerGuide home evaluations were undertaken in 2014–2015. Since the inception of the program, 1 in 20 homes in Canada have benefited from an evaluation.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for climate change may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: Environment and Climate Change Canada (ECCC) (lead), Agriculture and Agri-Food Canada (AAFC), Atlantic Canada Opportunities Agency (ACOA), Canada Economic Development for Quebec Regions (CED), Department of Finance Canada (FIN), Global Affairs Canada (GAC), Indigenous and Northern Affairs Canada (INAC), Innovation, Science and Economic Development Canada (ISED), Natural Resources Canada (NRCan), Transport Canada (TC), and Western Economic Diversification Canada (WD).*



# CLIMATE CHANGE ADAPTATION

Canada's climate is changing, and the impacts have been observed across the country and around the globe. This includes effects on air quality from the changing climate. The economic impacts of these changes are difficult to assess, but are likely significant. Even if GHG emissions stopped increasing today, the climate would continue to change. As a result, adaptation is a necessary complement to global measures to reduce GHG emissions. It involves making adjustments in our decisions, activities and thinking because of observed or expected changes in climate.

Canada is still at an early stage of integrating climate change impacts into decision-making and implementing adaptation measures. The federal government will work to provide support for provincial, territorial and local governments, public health officials, civil society, and individual Canadians to share knowledge about climate change and its impacts, build awareness about the need to reduce GHGs, and provide information about adaptation measures.

## ***Target 1.2: Climate Change Adaptation***

Facilitate reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change through the development and provision of information and tools.

### **Progress Statement**

The federal government continued to develop and share scientific knowledge and tools to help provinces and territories, communities, sectors and individual Canadians manage climate risks.

## **What we know**

Adaptation indicators can be as diverse as climate change impacts, spanning a range of health and economic outcomes. While the federal government continues to work toward a meaningful summative indicator of adaptation, several departmental indicators associated with programs under the Clean Air Agenda Adaptation Theme provide a snapshot of progress to date. For example:

- Community-based Heat Alert and Response Systems (HARS) have been established in at-risk communities across Canada. Provincial HARS are operational or in development in Manitoba, Alberta and Ontario, in addition to existing HARS in British Columbia's Lower Mainland region and in Quebec.
- Health Canada funded 59 community-based research, vulnerability assessment and adaptation projects in First Nations and Inuit communities in Northern Canada between 2012–2013 and 2015–2016.
- By 2014–2015, NRCan had released 83 new knowledge products and leveraged more than \$11 million in non-federal funding through the national Adaptation Platform.
- Indigenous and Northern Affairs Canada's (INAC) Climate Adaptation and Resilience Program funded 40 community and territorial projects in 2013–2014 to help individuals and communities in Canada's north reduce their vulnerability to climate change. Eighteen of the projects supported 25 Indigenous and northern communities.

- The Northern Infrastructure Standardization Initiative, led by INAC and the Standards Council of Canada, supported the completion of four standards for northern infrastructure in 2014–2015, with a fifth expected to be completed in 2015–2016.

*Learn more: see the [Departmental Sustainable Development Strategies](#) of the listed responsible departments and agencies for this Target.*

## Activity under the 2013–2016 FSDS

Health Canada expanded efforts to develop community-based HARS in at-risk communities with the development of provincial-level systems, such as the system in Manitoba. Existing community-level partnerships in Ontario have been merged under a new initiative to establish a province-wide consistent approach to HARS, to be fully operational by 2016. Establishment of a provincial system in Alberta is also under way, with a pilot project launched in 2014. The system is expected to be operational by 2016.

Through the national Adaptation Platform, the federal government facilitates the development and exchange of knowledge and tools on themes such as coastal management, mining and energy. In 2014–2015, the platform delivered more new products to help Canadians adapt to a changing climate, including the national-scale assessment [Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation](#). The government is also modelling the impacts of climate change on forests and the forest sector, developing adaptation tools and tracking indicators of forest change.

The federal government funds projects to support Indigenous and northern communities in planning for adaptation measures and making decisions to protect community health and safety. The government also provides up to \$500 000 per year (between 2012–2013 and 2015–2016) to each territorial government to support communities in managing climate risks. Federal funding helps individuals and communities build capacity in climate change and health research as well as in adaptation planning in areas such as food security, traditional harvesting and medicine, safe route accessibility, and emergency preparedness.

The Northern Infrastructure Standardization Initiative is supporting pan-Northern consultation, decision-making and technical expert committees engaged in the development of infrastructure standards to consider impacts on the thermosyphons, community drainage, permafrost on existing foundations and snow loading on roofs. All four standards were completed in 2014–2015 and are available to the public on the Canadian Standards Association Group website. A fifth standard is currently under development which will be completed in 2015–2016. This initiative also engages with stakeholders, partners and collaborators to share climate change geoscience expertise and tools on northern infrastructure requirements and constraints, enabling stakeholders with knowledge to make informed decisions relating to climate change.

Through the Northern Transportation Adaptation Initiative, the federal government is addressing transportation challenges in the North related to permafrost degradation and Arctic marine shipping in partnership with territorial and provincial governments, university researchers, the private sector, and others. This initiative is designed to improve understanding of climate impacts on transportation throughout the North and to facilitate better and more integrated transportation planning and adaptation measures. For example, it includes a multi-year project to investigate

techniques for constructing and operating a new public highway in a permafrost environment in northern Canada. In addition, Transport Canada (TC) and NRCan are co-leading an assessment of climate risks and adaptation practices for the Canadian transportation sector.

The federal government is using Inuit Traditional Knowledge and advanced spatial modelling with remote sensing techniques to develop detailed ecological maps and predict how plants and animals might respond to different climate change scenarios. In 2014–2015, this work was expanded to include three additional national parks (Vuntut, Tuktut Nogait and Auyuittuq). Mapping for two other northern national parks (Sirmilik and Quttinirpaaq) will be completed in 2015–2016.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (lead), Fisheries and Oceans Canada (DFO), Health Canada (HC), INAC, NRCan, Parks Canada (PC), Public Health Agency of Canada (PHAC), Standards Council of Canada (SCC–CCN), TC.*

# AIR POLLUTION

Pollutants from domestic and international sources negatively affect air quality. Poor air quality can have a significant impact on human health, the environment and our economy.

Elevated air pollutant levels can cause significant damage to the environment, buildings and infrastructure. For example, ozone can damage trees, crops and other vegetation, leading to reduced harvest yields, extinction of sensitive plants and reduced wildlife populations as a result of lower production of seeds and fruits. It can also damage materials such as rubber and plastics.

## GOAL 2: AIR POLLUTION

Minimize the threats to air quality so that the air Canadians breathe is clean and supports healthy ecosystems.

### Progress Statements

Many threats to air quality have been reduced: the outdoor concentrations of sulphur dioxide ( $\text{SO}_2$ ), nitrogen dioxide ( $\text{NO}_2$ ), volatile organic compounds (VOCs) and peak concentrations of ground-level ozone ( $\text{O}_3$ ) have decreased substantially over the past two decades.

National annual average concentrations of  $\text{O}_3$  and annual average and peak concentrations of fine particulate matter ( $\text{PM}_{2.5}$ )—the main components of smog—have remained relatively stable since 2000.

### Remaining Challenges

National annual average  $\text{O}_3$  and  $\text{PM}_{2.5}$  concentrations have shown little change since 2000.

Continued collaborative work with provinces and territories is needed to set stringent air quality standards, monitor emissions, and provide incentives that lead to cleaner air and healthier communities.

Outdoor air pollution continues to harm the health of Canadians, leading to higher medical costs, reduced productivity and quality of life, and premature death.

Air quality in homes and other buildings can be compromised by chemical and biological contaminants, some of which have serious health effects. For example, radon, a naturally occurring radioactive gas, is the second leading cause of lung cancer after smoking. Ongoing work is needed to ensure that all Canadians have access to information on indoor air contaminants, their impact on health, and how to reduce them.

## What we know

National average outdoor concentrations of PM<sub>2.5</sub>, O<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub> and VOCs are indicators for this goal.

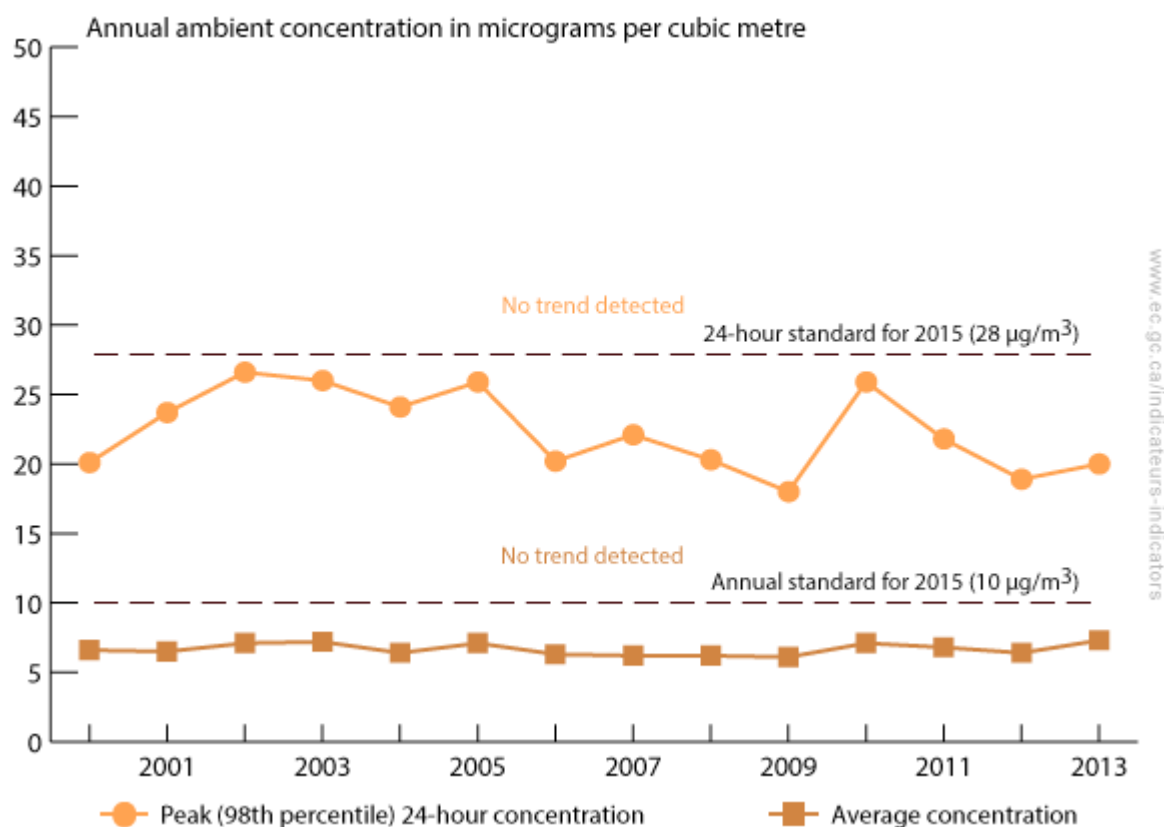
Outdoor average concentrations of most major air pollutants were lower in 2013 than in 1999 (or 2000 for PM<sub>2.5</sub>). The exceptions were average and peak PM<sub>2.5</sub> concentrations and average O<sub>3</sub> concentration where there was little change.

The annual average concentration of PM<sub>2.5</sub> in ambient air in Canada in 2013 was 16% higher than in 2012, while the annual peak (98<sup>th</sup> percentile) 24-hours concentration was 6% higher than in 2012. Both average and annual peak concentrations were below the 2015 standards, and no significant increasing or decreasing trend was detected (see Figure 2).

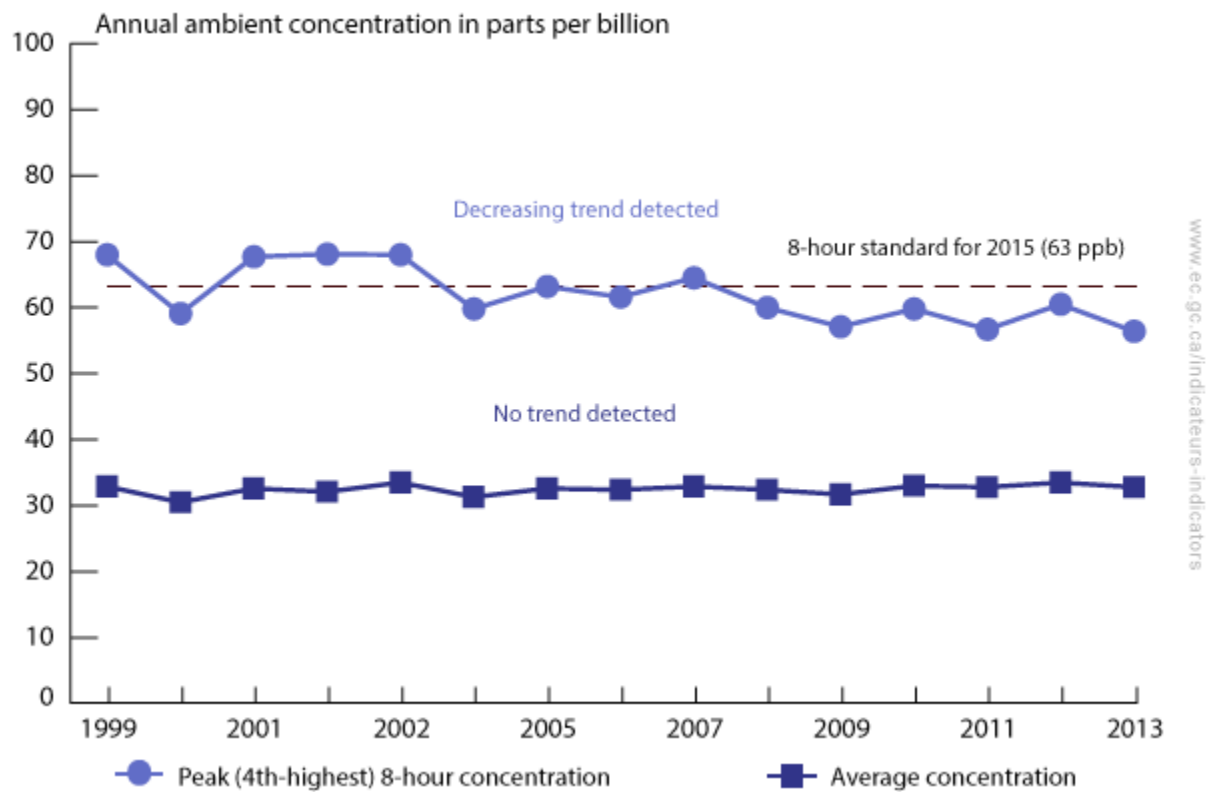
In 2013, the annual average concentration of O<sub>3</sub> in ambient air in Canada was 2% lower than the 2012 value, and the annual peak (fourth-highest) eight-hour O<sub>3</sub> concentration was 7% lower. A trend was not detected in the annual average concentrations between 1999 and 2013. From 1999 to 2013, peak concentrations of O<sub>3</sub> decreased by 0.8 parts per billion per year on average (see Figure 3).

Learn more: visit the [CESI](http://www.ec.gc.ca/indicateurs-indicators) website.

**Figure 2: Fine particulate matter concentrations, Canada, 2000 to 2013**



**Figure 3: Ozone concentrations, Canada, 1999 to 2013**



# OUTDOOR AIR POLLUTANTS

Air pollution problems such as smog and acid rain result from the presence and interactions among various air pollutants in the atmosphere. These air pollutants are released through natural processes and human activities such as transportation (for example, cars and trucks), the burning of fuels for electricity and heat production, industrial processes, and the use of certain products (for example, paints and solvents). Pollutant levels are influenced by many factors, such as proximity to local emissions sources, weather conditions, and winds that carry air pollutants over long distances.

Exposure to air pollution has been linked to a number of adverse effects on health such as onset or worsening of breathing difficulty, development of chronic lung disease, heart attacks and strokes. These health effects contribute to lost productivity, increased visits to doctors and emergency rooms, increased hospital admissions, and premature mortality.

## **Target 2.1: Outdoor Air Pollutants**

Improve outdoor air quality by ensuring compliance with new or amended regulated emission limits by 2020 and thus reducing emissions of air pollutants in support of Air Quality Management System (AQMS) objectives.

### **Progress Statements**

Some improvements are evident. New and amended regulations for air pollutants have contributed to continued decreases in emission levels of four key air pollutants: emissions of sulphur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs) and carbon monoxide (CO) were 28% to 63% lower in 2013 than in 1990.

## **What we know**

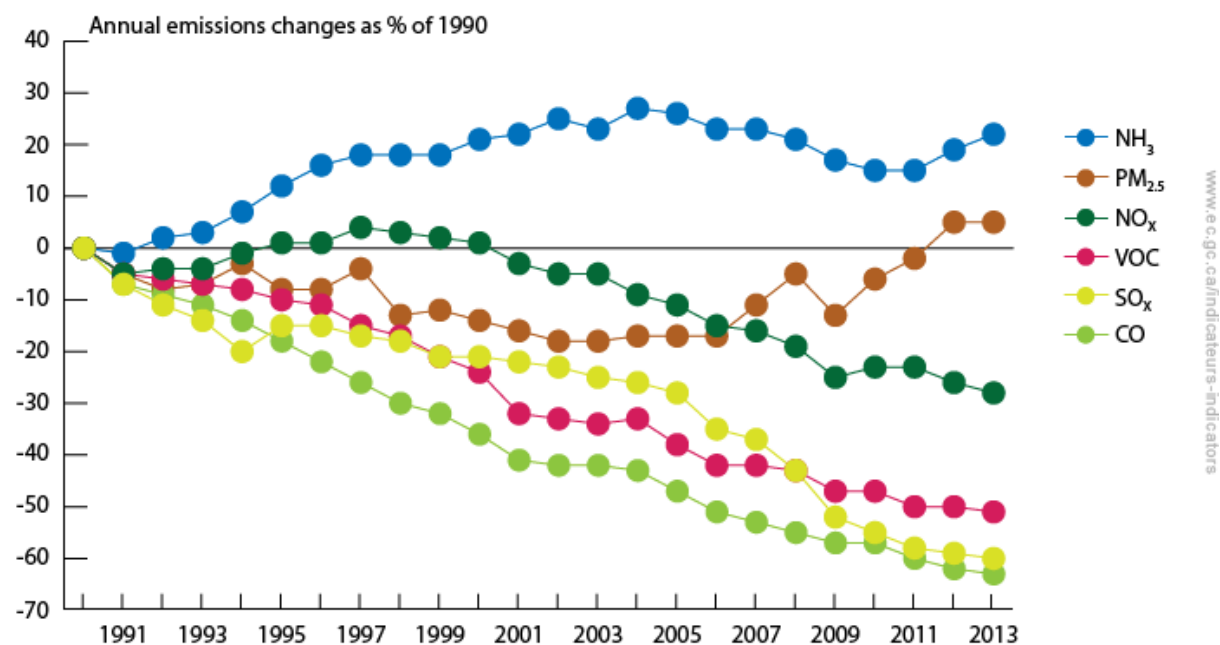
Except for ammonia (NH<sub>3</sub>) and PM<sub>2.5</sub> emissions, which were 22% and 5% higher than in 1990 respectively, emission levels of key air pollutants were 28% to 63% lower in 2013 than in 1990 (see Figure 4).

The Air Health Indicator (AHI) provides an overview of the public health impacts attributable to outdoor air pollution in Canada. Figure 5 shows the proportion of deaths from heart- and lung-related diseases (cardiopulmonary mortality) attributable to exposure to O<sub>3</sub> and PM<sub>2.5</sub>.

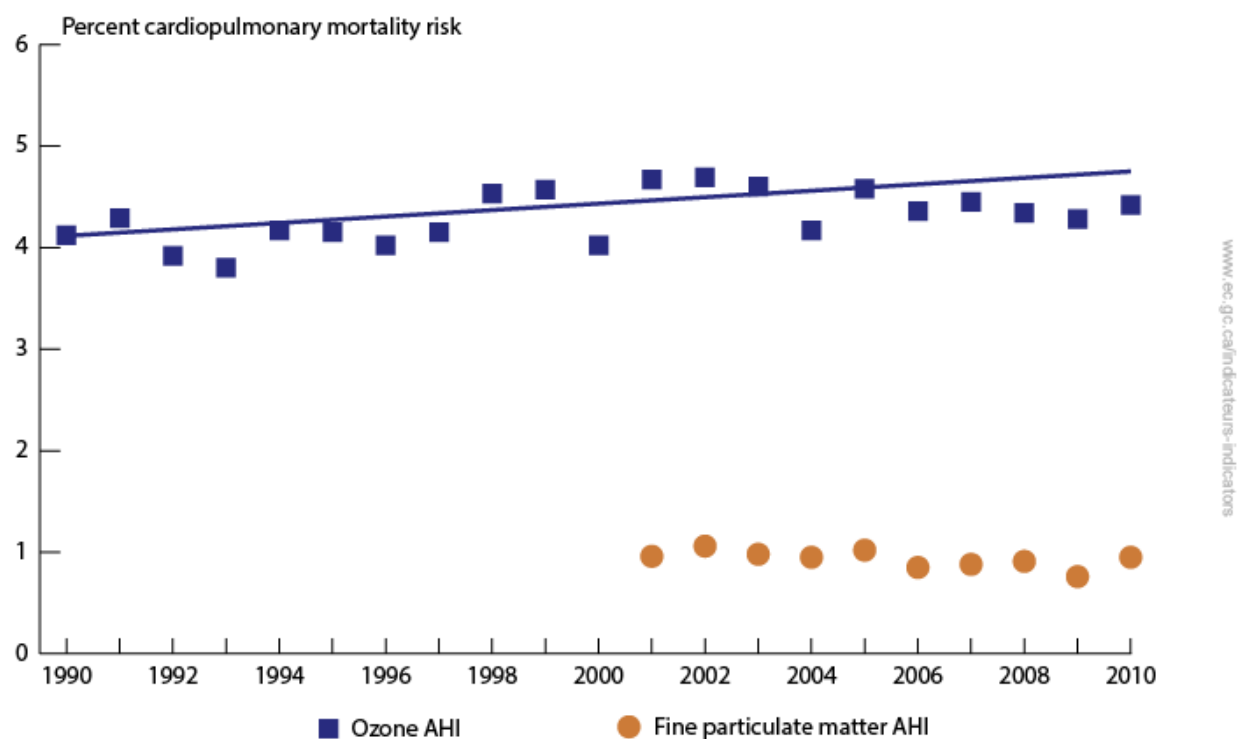
For short-term exposure during the warm season from April to September, the O<sub>3</sub> component of the AHI model indicates a slight increasing trend since 1990 and suggests that about 5% of cardiopulmonary mortalities were attributable to ozone exposure overall at the national level. The PM<sub>2.5</sub> component of the AHI suggests neither an increasing nor decreasing trend between 2001 and 2010. About 1% of cardiopulmonary mortalities could be attributable to PM<sub>2.5</sub> exposure. It should be noted that the adverse health impacts of long-term exposure are in general greater than those of short-term exposure.

*Learn more: visit the [CESI](#) website.*

**Figure 4: Air pollutant emissions, Canada, 1990 to 2013**



**Figure 5: Cardiopulmonary mortality risk attributable to air pollutants, Canada, 1990 to 2010**





## Activity under the 2013–2016 FSDS

The federal government is taking action to improve outdoor air quality through collaborative and regulatory initiatives informed by science-based information and tools.

### Collaborative initiatives

The federal government continues to work collaboratively with provinces, territories and stakeholders, including industry and non-governmental organizations, to implement the Air Quality Management System (AQMS). A comprehensive approach developed in collaboration with these stakeholders, the AQMS delivers air quality benefits for all Canadians by establishing base-level industrial emissions requirements for industrial sectors and equipment types, and new outdoor air quality standards to drive further air quality improvements across the country.

As part of implementing the AQMS, in 2013 the federal government established new Canadian Ambient Air Quality Standards for PM<sub>2.5</sub> and O<sub>3</sub> (the major components of smog) for 2015, which become more stringent in 2020. These standards are more stringent and comprehensive than the previous Canada-wide Standards for these pollutants.

The federal government continued to collaborate with provinces and territories to implement the Air Quality Health Index (AQHI) with the goal of providing 80% of the Canadian population with access to this information. As of March 2015, the AQHI was available to 23.1 million Canadians (69% of the population) in 10 provinces and 1 territory, representing an increase of 4% over 2013–2014. The service expanded to 5 additional locations and is now available at 84 locations across Canada. The AQHI is a communications tool that helps the public make decisions to protect their health by limiting short-term exposure to air pollution and adjusting their activities during periods when health risks are elevated.

The government also continued to conduct scientific research to monitor and model air quality, characterize air pollutants, and assess impacts on health. This research contributed to approximately 450 journal articles over the past 4 years.

The government also worked with its international partners to address harmful transboundary air pollution. For example, under the Canada–U.S. Air Quality Agreement, Canada and the U.S. completed joint scientific and technical analyses to assess the transboundary transport of particulate matter (PM). Canada also continued to work with the U.S. and other international partners to address PM and other air pollutants under the Gothenburg Protocol to the Convention on Long-Range Transboundary Air Pollution.

### Regulatory initiatives

The federal government has developed regulatory and other instruments to address air pollution from various sources:

- The proposed *Multi-Sector Air Pollutants Regulations* were published in June 2014 for public comment and will establish nationally consistent industrial emission requirements for industrial boilers and heaters, stationary spark-ignition engines, and kilns at cement manufacturing facilities. These regulations are projected to result in health benefits valued at approximately \$9.1 billion over the next 20 years.

- The federal government published draft codes of practice for public comment for the asphalt, aluminum and iron, steel and ilmenite sectors on the *Canadian Environmental Protection Act, 1999* Environmental Registry website.
- *Final Regulations Amending the On-Road Vehicle and Engine Emission Regulations and Sulphur in Gasoline Regulations* were published in July 2015 to establish more stringent air pollutant emission standards for light vehicles for the 2017 and later model years, and to lower sulphur limits for gasoline. Once fully phased in, these standards are expected to reduce smog-forming air pollutants from new vehicles by approximately 80% compared to the previous standards and reduce the allowable average sulphur content of gasoline by nearly 70%.
- Amendments made to the *On-Road Vehicle and Engine Emission Regulations* in February 2013 make it mandatory for heavy-duty engines of the 2014 and later model years to monitor emission-related components via on-board diagnostic systems.
- The federal government continued to engage within the International Maritime Organization to address air pollutant emissions from maritime shipping through the development of new international standards, as well as through the implementation of an Emission Control Area (ECA). The ECA applies to North American coastal waters south of 60° latitude out to 200 nautical miles and requires vessels to burn low-sulphur marine fuels or apply alternative compliance options that achieve similar emission reductions. The ECA also requires new vessels constructed after January 1, 2016, to comply with NO<sub>x</sub> emission standards that are achievable with advanced engine and after-treatment technologies or use of alternative fuels. These measures reduce SO<sub>x</sub> emissions by 96%, PM by 67% and NO<sub>x</sub> by 28% in 2020.
- A sulphur limit of 1000 milligrams per kilogram (0.1%) for the production, import or sale of diesel fuel for use in large marine vessels took effect on June 1, 2014, and a sulphur limit of 0.1% for the use of diesel fuel in marine vessels took effect on January 1, 2015. These requirements enable the implementation of the North American ECA domestically.
- The federal government is collaborating with international partners to reduce air pollutant emissions from aviation. Transport Canada participates through the International Civil Aviation Organization in developing a non-volatile particulate matter standard for aircraft engines. The federal government is also working with the U.S. Federal Aviation Administration to eliminate lead in piston aircraft fuel.
- The Fleet Averaging Regulatory Regime was developed to reduce sulphur oxides emissions from Canadian vessels operating on the Great Lakes and St. Lawrence Seaway. It is supported by amendments made in May 2013 to the *Vessel Pollution and Dangerous Chemicals Regulations* under the *Canada Shipping Act, 2011*.
- The federal government is developing new air pollutant emission regulations under the *Railway Safety Act* that will align with existing U.S. standards. Through the 2011–2015 Memorandum of Understanding between the federal government and the Railway Association of Canada, Canadian railways are encouraged to continue to voluntarily conform to U.S. emissions standards until Canadian regulations are introduced.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (lead), AAFC, ACOA, CED, FIN, HC, TC, WD.*

# INDOOR AIR QUALITY

Clean air is essential for good health, and this is especially true when it comes to indoor air. Canadians spend close to 90% of their time inside: at home, at work and in recreational environments. A lack of ventilation—especially in air-tight buildings—is a key factor in the quality of indoor air.

Indoor air pollutants include chemical pollutants such as gases and particles from combustion appliances, tobacco smoke, household and personal care products, building materials, radon, and outdoor air. They can also include biological contaminants such as mould and house dust mites.

Radon is of particular concern: as a naturally occurring radioactive gas that cannot be seen, smelled or tasted, it can get into homes undetected. It is the second leading cause of lung cancer after smoking and the leading cause of lung cancer for non-smokers. When radon escapes from the ground into the outdoor air, it is diluted to low concentrations and is of no concern to health. However, when radon enters an enclosed space, like a home, it can accumulate to high levels and become a health hazard.

## **Target 2.2: Indoor Air Quality**

Help protect the health of Canadians by providing health-based guidance and tools to support actions to better manage indoor air quality.

### **Progress Statements**

The federal government continued to develop guidelines, mitigation measures, product standards and communication initiatives on indoor air quality.

The indoor air health risk assessment for NO<sub>2</sub> was completed and formed the basis of the Residential Indoor Air Quality Guideline for NO<sub>2</sub> published in August 2015.

The government also completed health risk assessments to support the development of draft Indoor Air Reference Level determinations for certain VOCs.

## **What we know**

Health Canada completed an indoor air health risk assessment for nitrogen dioxide that formed the basis of the Residential Indoor Air Quality Guideline for nitrogen dioxide. The Department also completed health risk assessments to support the development of draft Indoor Air Reference Level determinations for certain volatile organic compounds.

## **Activity under the 2013–2016 FSDS**

Scientific research, outreach and education efforts by the federal government provide Canadians with the necessary health-based guidance to reduce exposure to indoor air pollutants.

The National Radon Program has been broadened to include work with private industry and stakeholders to assess and validate new radon mitigation technologies and to ensure Canadians have access to tools and services to address their health risk from indoor radon exposure. For example, HC conducted a field study of 50 homes to evaluate the efficacy of active soil depressurization radon mitigation systems with indoor mounted fans and side-wall discharge in Canadian climatic conditions.

Radon-related provisions were also included in building codes and are being promoted and adopted by the provinces and territories. New radon mitigation resources were developed along with communication products for Canadians to use in identifying and reducing radon exposure in their homes. Specifically, HC is encouraging provinces and territories to adopt the radon-related provisions to the 2010 National Building Code that require engineers, architects and builders to consider radon protection measures in the design of new buildings and include new prescriptive measures on providing a rough-in for a radon mitigation system.

The federal government also conducted public opinion research and surveyed households in 2013 to gain insight into Canadians' knowledge, awareness, attitudes and behaviours regarding radon. This research also helped evaluate the effectiveness of the National Radon Program over the last five years and supported the design of a national radon outreach campaign. Canada's second National Radon Action Month, November 2014, part of a collaborative, multi-stakeholder radon outreach campaign, successfully raised awareness about the risks and health impacts of radon exposure as well as reduction strategies. The federal government also developed fact sheets to accompany residential indoor air quality guidelines that are designed to help reduce risk of exposure. They include information for public health professionals on health effects and sources of pollutants in Canadian homes and how to reduce personal exposures.

HC continued to test federal buildings for radon levels, including public buildings in First Nations communities. Since the program began in 2007, 17 500 buildings have been tested for radon to ensure the health and safety of Canadians and to demonstrate the importance of testing radon levels and reducing them where the Canadian Guideline is exceeded.

A process for creating voluntary consensus-based standards was initiated to address emissions from composite wood materials. These standards will focus on VOC emissions and be developed through the Canadian Standards Association and a multi-stakeholder group comprising government, industry and non-governmental organizations.

Finally, a *Code of Practice for 2-Butanone, Oxime* (Butanone Oxime) was published in June 2014 outlining specific information for labels of interior and dual-use consumer alkyd paint and coating products in order to help reduce inhalation exposure to these substances.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found on their websites and in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: HC (lead), NRC, Statistics Canada (StatCan).*



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## MAINTAINING WATER QUALITY AND AVAILABILITY

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# Maintaining Water Quality and Availability

Clean and abundant freshwater is fundamental to human health, the environment and the economy. Canada is a water-rich country, with an estimated 7% of the world's renewable freshwater supply. However, about 60% of the supply flows northward, while most of the population is located in southern regions. Changes in temperature, rainfall and snowfall can cause water quantities in rivers, lakes and reservoirs to rise and fall throughout the year, resulting in flooding or water shortages.

In Canada, natural resource sectors such as thermal power generation, agriculture, oil and gas, and mining account for an estimated 86% of total water use. Water is also used for manufacturing and municipal purposes (for example, drinking water).

Water quality degradation affects both aquatic life and human uses of water. For example, higher concentrations of nutrients may result in uncontrolled plant growth and reduce the amount of dissolved oxygen available for fish and other aquatic animals. They can also foster the growth of algae, some of which can cause health effects in humans and animals. Degraded water quality can also undermine economic activities such as fisheries, tourism and agriculture.

## **GOAL 3: WATER QUALITY AND WATER QUANTITY**

Protect and enhance water so that it is clean, safe and secure for all Canadians and supports healthy ecosystems.

### **Progress Statements**

Over the past decade, freshwater quality and quantity in Canadian rivers has remained generally stable.

In terms of drinking water quality, most boil water advisories were issued as precautionary measures during equipment maintenance or repair rather than due to detection of pathogens in treated water.

### **Remaining Challenges**

High levels of phosphorus and nitrogen from sources such as industry, agriculture and urban development continue to affect ecosystems in Canada's lakes and rivers—for example, in the Great Lakes, Lake Simcoe and South-eastern Georgian Bay, Lake Winnipeg, and the St. Lawrence River. These nutrients support algal blooms that can affect water quality, create toxins, deprive aquatic life of oxygen and result in shifts of species in the food web.

There were 44 releases of harmful pollutants in the marine environment by identified vessels in 2013–2014, which exceeds the target of 17 releases per year by 2017. Marine pollution harms ocean creatures, ecosystems and resources.

While the agri-environmental performance index on soil quality improved between 1981 and 2006, the water quality agri-environmental performance index declined. This suggests that farming operations in Canada are likely having a greater impact on water quality than in the past.

## What we know

Overall, national freshwater quality remained relatively stable between 2003–2005 and 2010–2012. In general, freshwater quality in Canadian rivers is fair to good. However, there are regional water quality issues, particularly near city centres, and in agricultural areas (see Figure 6).

Between 2002 and 2011, water quantity in Canada's drainage regions generally remained at normal levels. Higher-than-normal water quantity was observed in three drainage regions in 2011, a particularly wet year across the south-central prairies. In the same year, 18 drainage regions were classified as having normal water quantity, and 1 had lower-than-normal water quantity (see Figure 7).

In 2013, 74% of boil water advisories for which data were available were issued on a precautionary basis due to problems with drinking water equipment or processes. By contrast, 8% of boil water advisories were issued due to detection of *E. coli* in drinking water, and 18% were related to other microbiological water quality parameters, such as the detection of total coliform bacteria or unacceptable turbidity levels (see Figure 8).

To date, six provinces and territories and five First Nations regions have fully implemented or are currently preparing to implement the water advisories system.

*Learn more: visit the [CESI](#) website.*

**Figure 6: National freshwater quality indicator, Canada, change between 2003–2005 and 2010–2012**

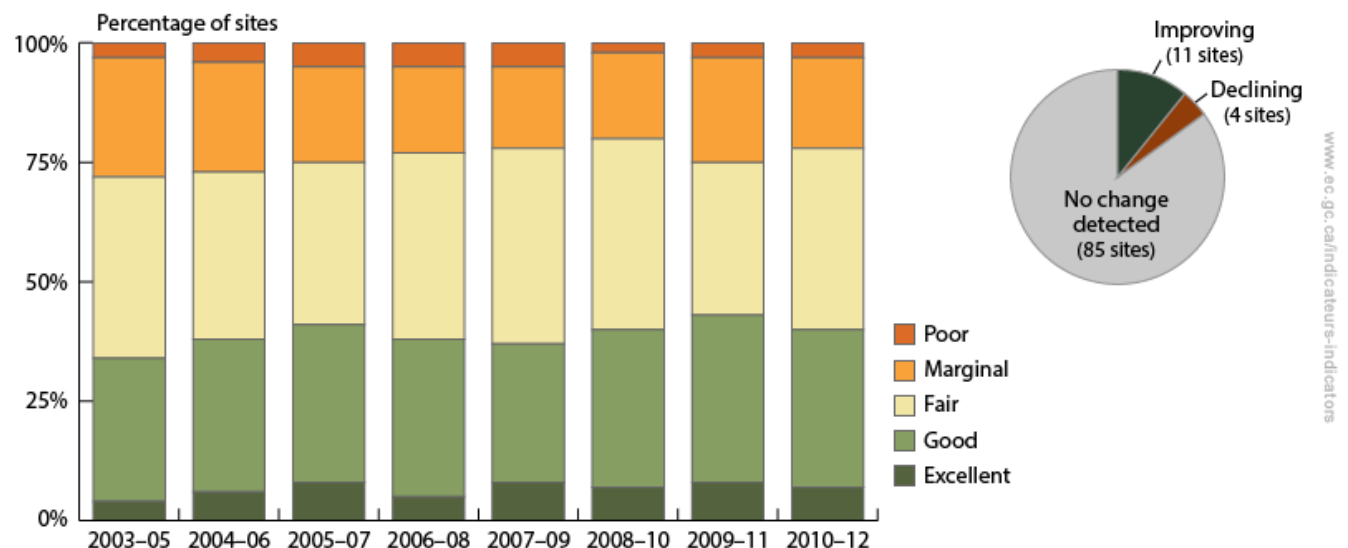
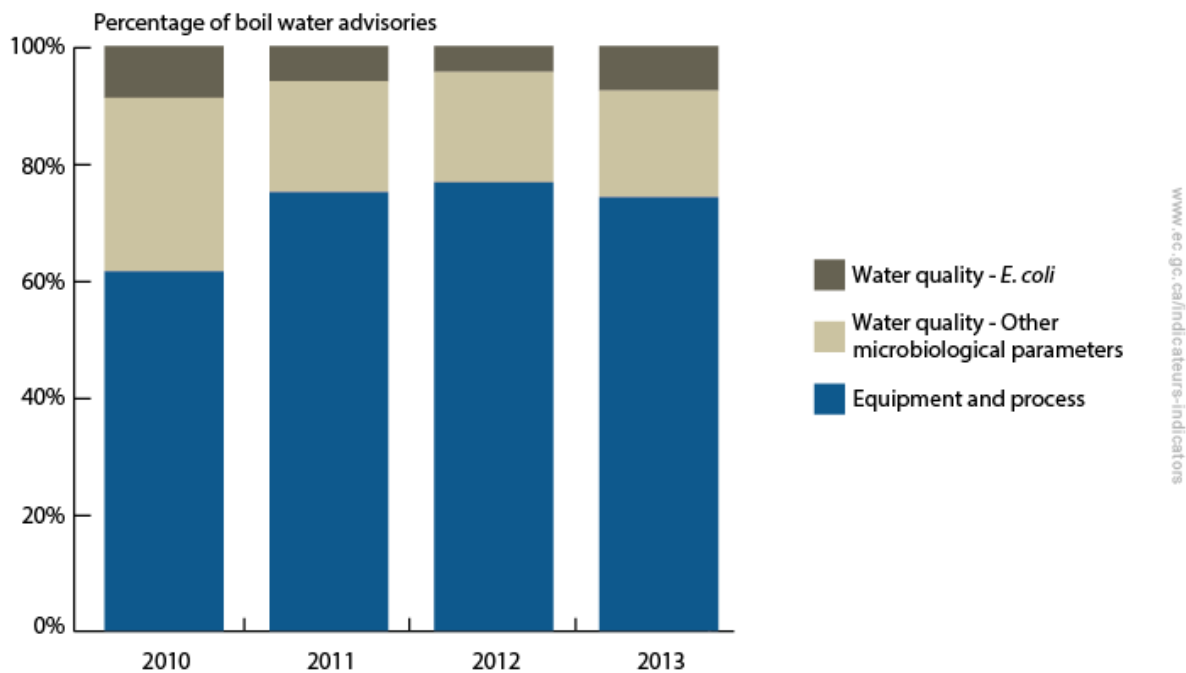


Figure 7: Water quantity in Canada’s drainage regions, 2002 to 2011



Figure 8: Causes of boil water advisories, Canada, 2010 to 2013





# ON-RESERVE FIRST NATIONS WATER AND WASTEWATER SYSTEMS

As with all communities, health in First Nations communities relies on effective water and wastewater treatment and the identification in a timely manner of potential public health risks from drinking water. On reserve lands, First Nations communities own, operate and manage their drinking water and wastewater systems.

The [Safe Drinking Water for First Nations Act](#) came into force on November 1, 2013, enabling the federal government to develop, in partnership with First Nations, enforceable federal regulations to ensure access to safe, clean and reliable drinking water, the effective treatment of wastewater, and the protection of sources of drinking water on First Nations lands.

## ***Target 3.1: On-reserve First Nations Water and Wastewater Systems***

Increase the percentage of on-reserve First Nations water systems with low risk ratings from 27% to 50% by 2015. Increase the percentage of on-reserve First Nations wastewater systems with low risk ratings from 35% to 70% by 2015.

### **Progress Statements**

The percentage of on-reserve First Nations drinking water systems with low risk ratings increased from 27% in 2009–2011 to 57% in 2014–2015.

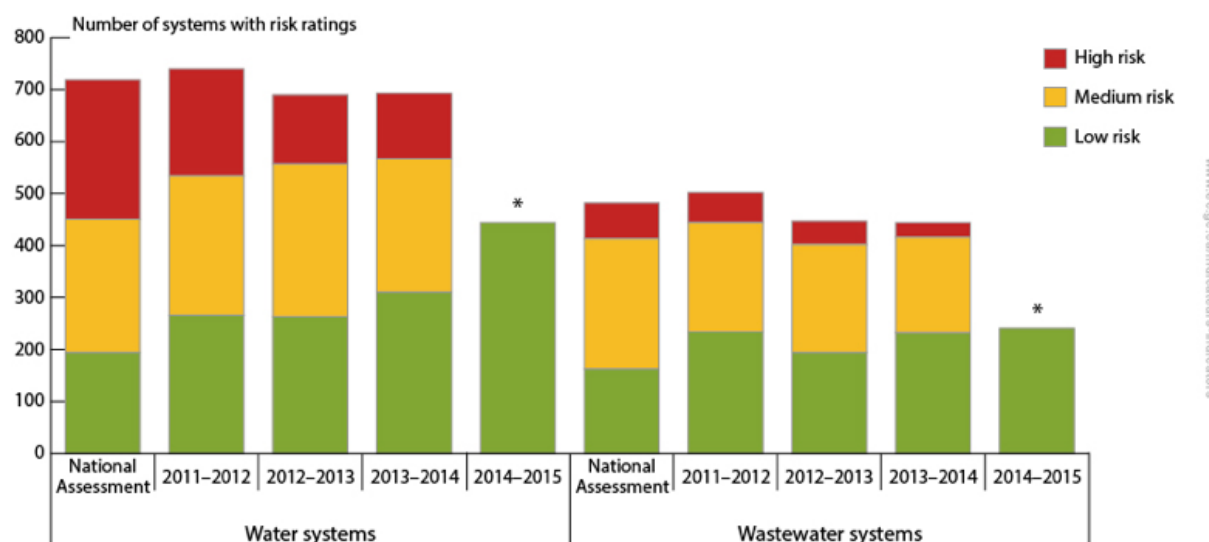
Forty-eight percent of on-reserve First Nations wastewater systems had low risk ratings in 2014–2015 compared with 38% in 2009–2011.

## **What we know**

Water and wastewater system risk ratings are based on overall risk associated with system management and operation and take into account an extensive set of factors that could lead to problems with drinking water and wastewater systems. A high-risk system might produce water or wastewater of equal quality to that of a low-risk system but might not be capable of responding adequately in the event of a problem. A risk rating is a measure of overall system risk, not of drinking water or wastewater safety or quality.

*Learn more: visit the [CESI](#) website.*

**Figure 9: Risk ratings for inspected INAC-funded First Nations water and wastewater systems, Canada, from the National Assessment to 2014–2015**



\*Data on the number of medium- and high-risk systems for 2014–2015 were not publicly available at the time of production of this report.

## Activity under the 2013–2016 FSDS

Building on approximately \$3 billion in investments between 2006 and 2014 to support First Nations communities in managing their drinking water and wastewater systems, the federal government continues to provide financial assistance to First Nations for the planning, procurement, design, construction, upgrade, renovation, decommissioning, operation and maintenance of water and wastewater systems on reserves, and the provision of drinking water monitoring.

The government is also delivering on its commitment to address drinking water and wastewater issues by extending the First Nations Water and Wastewater Action Plan (FNWWAP) with further investments. For example, water treatment plants were recently completed, upgraded or expanded in the Tallcree South Reserve, Black River First Nation, the Halalt and Penelakut First Nations and Buctouche First Nation communities.

In addition, annual performance inspections are carried out on federally funded systems using pre-defined criteria to assign an overall risk rating to each system. Inspection results form the basis of local action plans to address deficiencies and to help prioritize risk mitigation activities.

The federal government provides support to First Nations community members involved in water-related activities such as monitoring and reporting on drinking water quality. In 2013–2014, as in previous years, all First Nations communities had access to trained personnel to sample and test quality of their drinking water at the tap. These community members, known as the Community-Based Water Monitors, are trained by Environmental Health Officers.

As a result of enhanced First Nations capacity to monitor drinking water quality, the frequency of monitoring drinking water quality at the tap has increased. Since 2012–2013, approximately 53% of on-reserve public distribution systems met the weekly testing monitoring frequency recommended by the Guidelines for Canadian Drinking Water Quality (GCDWQ). These monitoring rates exclude communities in British Columbia as well as communities in Saskatchewan where environmental public health services have been transferred to a First Nations community.

Detailed information about the plans and performance of federal departments respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments: INAC (lead), HC.*

# DRINKING WATER QUALITY

Safe drinking water is essential to the life and health of all Canadians. Contamination of drinking water can result in illness. The federal government works collaboratively with the provinces and territories to develop the GCDWQ, which are used by all jurisdictions in Canada as the basis for their drinking water quality requirements. The development of new or updated guidelines allows jurisdictions to keep up with constantly evolving science.

## **Target 3.2: Drinking Water Quality**

Help protect the health of Canadians by developing up to 15 water quality guidelines/guidance documents by 2016.

### **Progress Statement**

Between 2013 and 2015, 10 new or updated drinking water quality guidelines/guidance documents were approved by provinces and territories, on track to achieve 15 by 2016.

## **What we know**

Health Canada developed 10 new or updated final drinking water quality guidelines/guidance documents that have been approved by provinces and territories—for ammonia, nitrate, nitrite, 1,2-dichloroethane, selenium, toluene, ethylbenzene, xylenes, tetrachloroethylene and boil water advisories—and is on track to meet the government's 2013–2016 target.

While an average of 5 guidelines/guidance documents are approved each year, at any given time Health Canada is working on 20 to 30 risk assessments, a process that involves multiple partners and stakeholders.

*Learn more: visit the [Health Canada](#) website.*

## **Activity under the 2013–2016 FSDS**

The federal government continues to provide expert advice to water programs nationally. Health Canada also continues to work with the provinces and territories to establish the GCDWQ and with national and international standard-setting organizations to develop health-based standards for materials that come into contact with drinking water. These activities are intended to help manage potential risks to the health of Canadians associated with water quality.

Detailed information about the plans and performance of the department respecting the FSDS commitment for this target may be found in its [Departmental Sustainable Development Strategy](#).  
*Responsible department: HC.*

# GREAT LAKES—CANADIAN AREAS OF CONCERN

The Great Lakes are a vast shared resource representing a significant portion of the world's freshwater. In addition to sustaining a rich variety of plants and animals, these lakes are fundamental to the well-being of Canadians and Americans, both as a direct source of drinking water and as a foundation for billions of dollars in economic activity.

The Great Lakes basin is Canada's most populated region, supporting 9 of Canada's 20 largest cities. This large population and associated industrial, agricultural and urban development place a strain on the lakes' capacity to support viable ecosystems.

The Canada–U.S. Great Lakes Water Quality Agreement (GLWQA) identifies 43 Areas of Concern (AOCs) across the Great Lakes. Of these, 26 are entirely in American waters, 12 are entirely in Canadian waters, and 5 are shared by both countries. All Canadian AOCs have a Remedial Action Plan to guide restoration and protection efforts targeting specific beneficial uses.

## **Target 3.3: Great Lakes—Canadian Areas of Concern**

Take federal actions to restore beneficial uses for delisting of five Canadian Areas of Concern (AOC) and to reduce the number of impaired beneficial uses in the remaining AOC by 25% by 2018.

### **Progress Statements**

Since 2010, no AOC have been delisted. However, a 2014 assessment revealed that ongoing action by the federal government and its partners has decreased the number of beneficial uses considered “impaired” by 33% (from 120 to 80) since each AOC was initially assessed.

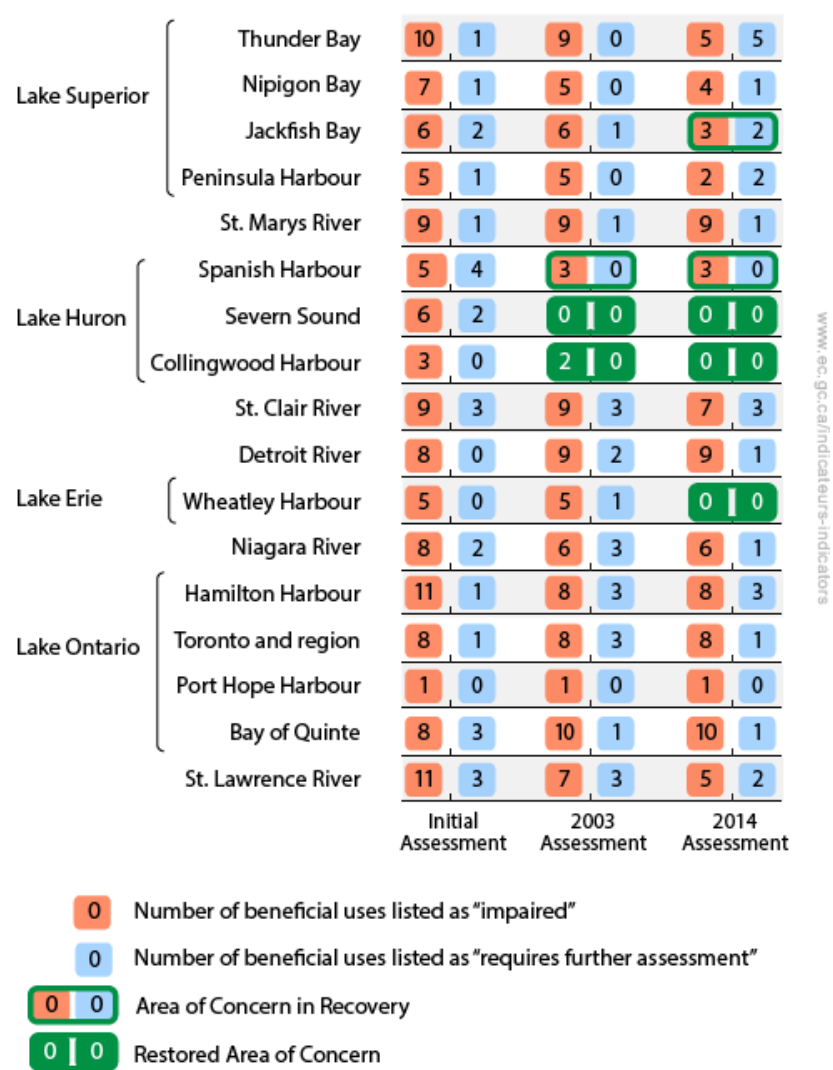
## **What we know**

Environmental quality in Canada's 17 Great Lakes AOCs has improved since the restoration program began in 1987. Three Canadian sites have been assessed as fully restored and have been removed from the list: Collingwood Harbour (delisted in 1994), Severn Sound (2003) and Wheatley Harbour (2010). The Spanish Harbour and Jackfish Bay AOCs were designated as “AOCs in Recovery” when all actions were deemed to have been completed (in 1999 and 2011, respectively). These areas require time for the environment to recover naturally (see Figure 10).

Considerable progress has been made toward restoring most of the remaining Great Lakes AOCs, as reflected in the decreased number of impaired beneficial uses (measures of the environmental, human health or economic impact of poor water quality) observed.

*Learn more: visit the [CESI](#) website.*

**Figure 10: Progress on Canadian Great Lakes Areas of Concern, 1987 to 2014**



## Activity under the 2013–2016 FSDS

Canada and the U.S. negotiated an amended GLWQA in 2012, which came into force on February 12, 2013. The 2012 GLWQA establishes a shared vision, common objectives and specific commitments to address shared environmental issues (AOCs, lake-wide management, chemicals of mutual concern, invasive species, discharges from vessels and climate change impacts).

To ensure the delivery of federal commitments expressed in the GLWQA, the federal government continues to implement the Great Lakes Ecosystem Initiative, which supports coordinating efforts to restore and maintain the chemical, physical and biological integrity of the Great Lakes basin ecosystem. Other federal government programs, such as the Chemicals Management Plan, also contribute to meeting the objectives of the GLWQA.

On December 18, 2014, the governments of Canada and Ontario renewed their commitment to restore, protect and conserve the Great Lakes by signing the Canada–Ontario Agreement on Great Lakes Water Quality and Ecosystem Health, 2014. This five-year agreement commits Canada and Ontario to take action to address algal blooms; complete actions to clean up historical AOCs; help prevent aquatic invasive species from entering the lakes; protect the lakes from harmful pollutants; conserve important fish and wildlife habitats; and strengthen collaboration within the Great Lakes community.

The Great Lakes Sustainability Fund also supports projects that improve water quality; rehabilitate and protect fish and wildlife habitat; and research and develop contaminated sediment management plans in AOCs. This fund received a \$1.5 million contribution in 2014 to support 27 projects in the Canadian Great Lakes AOCs.

A public-private partnership has been established to fund the clean-up of Randle Reef (Hamilton Harbour), the largest contaminated site in the Canadian Great Lakes waters. The site contains sediment contaminated with persistent toxic chemicals and heavy metals, which were deposited over a long period of time from industrial operations that are no longer active. This will improve water quality and reduce contaminant levels in aquatic organisms, making it safer to consume fish caught in the harbour. It will also remove current restrictions on navigation and generate economic returns through the creation of valuable port lands.

Detailed information about the plans and performance of federal departments respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (lead), DFO, NRCan.*

# GREAT LAKES

Phosphorus and nitrogen are essential plant nutrients; however, when levels in water are too high, aquatic plant growth can become excessive and harmful.

High nutrient levels can lead to toxic algal blooms that can affect the health of animals and humans. Recognizing this, the Canada–U.S. Great Lakes Water Quality Agreement supports objectives for offshore phosphorus levels to control algal growth and, as a result, the structure of the lakes' food webs.

## **Target 3.4: Great Lakes**

Contribute to the restoration and protection of the Great Lakes by developing and gaining binational acceptance of objectives for the management of nutrients in Lake Erie by 2016 and for the other Great Lakes as required.

### **Progress Statements**

In 2014, representatives of Canada, the U.S., Ontario, and the eight Great Lakes States agreed to develop phosphorus reduction targets for Lake Erie by spring 2016. Public consultations were held in summer 2015 on a 40% reduction target for Lake Erie.

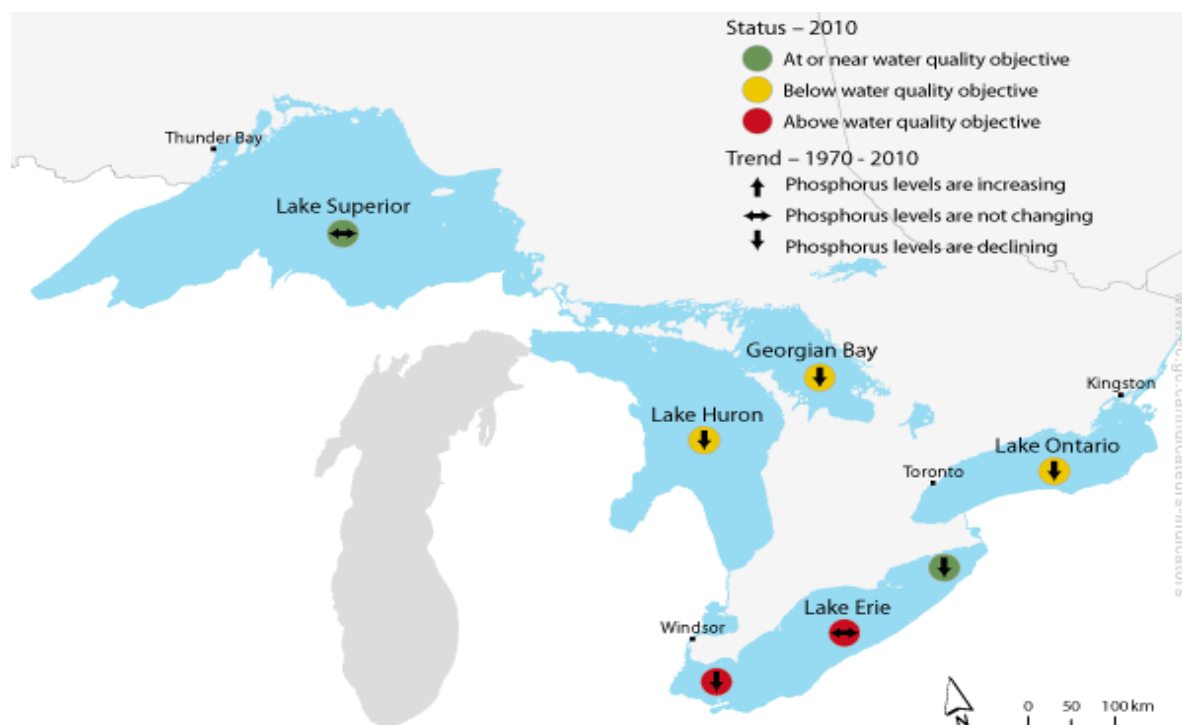
## **What we know**

Phosphorus levels remain an issue in the open waters of three of the four Canadian Great Lakes. Between 1970 and 2010, phosphorus levels declined in the central portions of lakes Huron and Ontario, in Georgian Bay, and in the eastern and western basins of Lake Erie. Levels have not changed in Lake Superior or in the central basin of Lake Erie (see Figure 11).

*Learn more: visit the [CESI](#) website.*



**Figure 11: Status and trends of phosphorus levels in the open waters of the Canadian Great Lakes, 1970–2010**



## Activity under the 2013–2016 FSDS

Canada is taking action in support of the GLWQA by implementing targeted activities, such as the Great Lakes Nutrient Initiative, that address the problem of harmful algal blooms. The federal government continues to track phosphorus levels and ensure that governments and citizens remain aware of this important aspect of the environmental condition of the Great Lakes.

In December 2014, the governments of Canada and Ontario signed the Canada–Ontario Agreement on Great Lakes Water Quality and Ecosystem Health. This agreement is an important mechanism for ensuring the coordinated and cooperative efforts of the provincial and federal governments in addressing conservation issues in the Great Lakes basin.

Further to this, in December 2014, representatives of Canada, U.S., Ontario, and the eight Great Lakes States agreed to develop phosphorus reduction targets for Lake Erie by spring 2016, in accordance with the commitment of the GLWQA. Throughout the summer of 2015, the Government of Canada held consultations and sought feedback from the public that will inform the final targets and the development of phosphorus reduction plans.

Through annual investments of \$8 million, the federal government continues to support scientific research and monitoring, lend expertise to partnered projects, consult stakeholders and engage communities, and participate in Great Lakes restoration and clean-up initiatives.

Investments were made over 2012–2016 (\$16 million) in the Great Lakes Nutrient Initiative to better understand and address issues related to nearshore water quality and aquatic ecosystem health, including toxic and nuisance algae. While currently focused on Lake Erie, this initiative will produce science and policy approaches that will be transferrable to other Great Lakes and elsewhere in Canada.

Detailed information about the plans and performance of federal departments respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments: ECCC (lead), DFO.*

# ST. LAWRENCE RIVER

The St. Lawrence River links the Great Lakes with the Atlantic Ocean and is one of the world's most important commercial waterways. It is a complex ecosystem of lakes and freshwater reaches, a long estuary and a gulf with marine features. It includes many different habitats and is home to a diverse collection of plants, fish and animals.

Phosphorus and nitrogen from human activity enter the St. Lawrence River through municipal and industrial wastewaters, agricultural runoff, and air pollution. Phosphorus continues to be a concern for water quality.

## **Target 3.5: St. Lawrence River**

Take federal actions to reduce pollutants to improve water quality, conservation biodiversity and ensure beneficial uses in the St. Lawrence River by 2016.

### **Progress Statements**

Phosphorus levels at the majority of water quality monitoring stations along the St. Lawrence River exceeded water quality guidelines more than 50% of the time during the period 2010–2012. Nitrogen levels exceeded water quality guidelines more than 50% of the time at only one site.

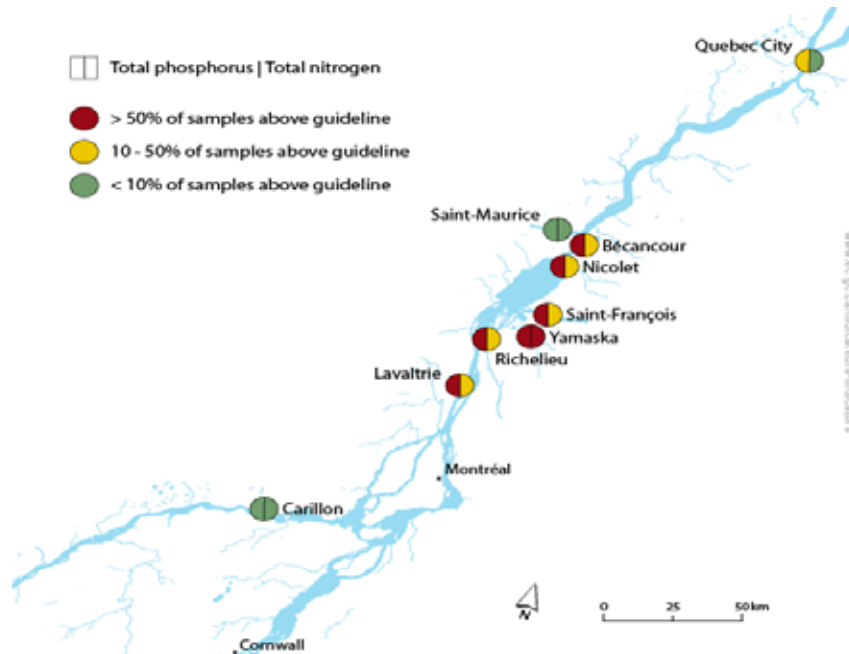
## **What we know**

Phosphorus levels at the majority of water quality monitoring stations along the St. Lawrence River exceeded water quality guidelines more than 50% of the time between 2010 and 2012. Nitrogen levels exceeded water quality guidelines more than 50% of the time only at the mouth of the Yamaska River for the same period (see Figure 12).

Higher phosphorus and nitrogen levels are found at stations next to agricultural areas along the south shore of the river between the estuary of the Richelieu River and Bécancour.

*Learn more: visit the [CESI](#) website.*

**Figure 12: Phosphorus and nitrogen levels in the St. Lawrence River for the 2010–2012 period**



## Activity under the 2013–2016 FSDS

Between 1988 and 2014, the Government of Canada invested \$383 million in projects and concrete actions to clean up the water, protect wildlife and flora, create and restore wetlands and habitats, develop new river access sites, reduce the impact of agricultural activities, and support sustainable management of navigation.

Building on past progress, the St. Lawrence Action Plan 2011–2026 aims to conserve and enhance the St. Lawrence through ongoing strong collaboration and pooling of resources and expertise of the governments of Canada and Quebec. Under this Action Plan, the two governments are working together to implement about 50 projects in three priority areas: the conservation of biodiversity; the sustainable use of the St. Lawrence (for example, for recreation); and the improvement of water quality.

A mapping of wetlands and other habitats has been carried out to slow the loss and alteration of habitats that threaten biodiversity. This mapping will promote better planning and better land use, as well as sustainable management of habitats in southern Quebec. In addition, given that the increasing presence of contaminants in discharged wastewater represents a source of concern, a project aimed at documenting the impacts of the discharge of pharmaceuticals sheds light on their impact on the environment and on human health. Also, the Priority Intervention Zone and Community Interaction initiatives funded under the Action Plan support collaborative efforts and projects aimed at conserving and improving the St. Lawrence ecosystem.

In 2015, the Navigation Coordination Committee, comprising representatives of the marine industry, environmental stakeholders, governments and the public, updated the Sustainable Navigation Strategy for the St. Lawrence. The strategy was first established in 2004 to help the maritime transportation sectors and pleasure boaters use the river in a responsible and sustainable manner.

Detailed information about the plans and performance of the federal department respecting its FSDS commitments for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: ECCC.*

# LAKE SIMCOE AND SOUTH-EASTERN GEORGIAN BAY

Lake Simcoe is the largest lake in southern Ontario outside of the Great Lakes system. Located north of Toronto, the lake is a major recreational and agricultural area and supplies drinking water to eight municipalities. Rapidly increasing population growth, urban development and more intensive agriculture have resulted in higher-than-normal phosphorus levels in Lake Simcoe. This is causing oxygen levels in the lake to drop, affecting fish and wildlife populations and overall water quality. Scientists estimate that the annual phosphorus load going into the lake has more than doubled since the major settlement and land clearing that took place in the 1800s.

South-eastern Georgian Bay is a major recreational area that supports a significant tourism industry and includes the United Nations Educational, Scientific and Cultural Organization–designated Georgian Bay Biosphere Reserve. Water quality and ecosystem health in parts of South-eastern Georgian Bay are under threat due to shoreline development, excessive inputs of phosphorus, and nuisance and toxic algae growth.

## ***Target 3.6: Lake Simcoe and South-eastern Georgian Bay***

Reduce an estimated 2000 kg of phosphorus loadings to Lake Simcoe by 2017, which will support the Province of Ontario's target to reduce phosphorus inputs into Lake Simcoe to 44 000 kg/year by 2045. Reduce an estimated 2000 kg of phosphorus loadings to South-eastern Georgian Bay watersheds by 2017.

### **Progress Statements**

Phosphorus reduction projects completed by March 2015 under the Lake Simcoe/South-eastern Georgian Bay Clean-up Fund are preventing approximately 4040 kg of phosphorus per year from entering the Lake Simcoe watershed.

Similarly, stewardship projects were preventing an estimated 124 kg of phosphorus per year from reaching South-eastern Georgian Bay and its tributary rivers.

## **What we know**

As of March 2015, stewardship projects supported by the Lake Simcoe and South-eastern Georgian Bay Clean-up Fund were preventing an estimated 4040 kilograms of phosphorus per year from reaching Lake Simcoe and its tributary rivers. Similarly, stewardship projects were preventing an estimated 124 kg of phosphorus per year from reaching South-eastern Georgian Bay and its tributary rivers.

*Learn more: visit the [CESI](#) website.*

## Activity under the 2013–2016 FSDS

In January 2013, the Government of Canada announced the \$29 million extension (2012–2017) to the Lake Simcoe and South-eastern Georgian Bay Clean-up Fund, building on the previous fund's success. The fund provides financial and technical support for priority projects aimed at reducing phosphorus inputs, conserving aquatic habitat and species, and enhancing research and monitoring capacity essential to the restoration of the Lake Simcoe and South-eastern Georgian Bay basin watersheds.

The geographic scope of the work has been expanded to include the adjacent drainage basins emptying into south-eastern Georgian Bay, including the watersheds and bays of Nottawasaga Valley, Severn Sound, and the targeted coastal regions west of Highway 400/69 north of Port Severn to the French River.

Detailed information about the plans and performance of the federal department respecting the FSDS commitment for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: ECCC.*

# LAKE WINNIPEG BASIN

Lake Winnipeg is Canada's sixth-largest freshwater lake and supports a large commercial fishery and a recreational tourism industry. The lake is composed of a large, deeper North Basin and a smaller, shallower South Basin. Its water naturally contains moderate nutrient concentrations and plant growth.

Phosphorus and nitrogen in Lake Winnipeg have been affected by a range of human activities, including agriculture, the draining of wetlands, and growing cities. A century of agricultural and urban development on the Prairies and two decades of high water flows in the Red River have increased the nitrogen and phosphorus concentrations in the lake to the point where algal growth is approximately 500% greater than it was prior to European settlement.

The federal and Manitoba governments and other partners are working closely to more fully understand the relationships between phosphorus and nitrogen levels and nuisance algal growth in Lake Winnipeg, as well as the impacts of the recent arrival of zebra mussels on the lake.

While this work continues, citizens, scientists, and domestic and international partners are being engaged to reduce phosphorus pollution by supporting stewardship projects such as erecting fencing to prevent livestock from entering lakes and rivers, stabilizing river banks and lake shorelines, restoring wetlands and planting native shrubs, plants and trees.

## **Target 3.7: Lake Winnipeg Basin**

By 2017, reduce phosphorus inputs to water bodies in the Lake Winnipeg basin, in support of the Province of Manitoba's overall plan to reduce phosphorus in Lake Winnipeg by 50% to pre-1990 levels.

### **Progress Statements**

As of March 2015, stewardship projects supported by the Lake Winnipeg Basin Stewardship Fund were preventing an estimated 14 800 kilograms of phosphorus per year from entering Lake Winnipeg and its tributary rivers.

Phosphorus levels in Lake Winnipeg were 100% higher in 2013 than pre-1990: 0.1 milligrams of phosphorus per litre compared with 0.05.

## **What we know**

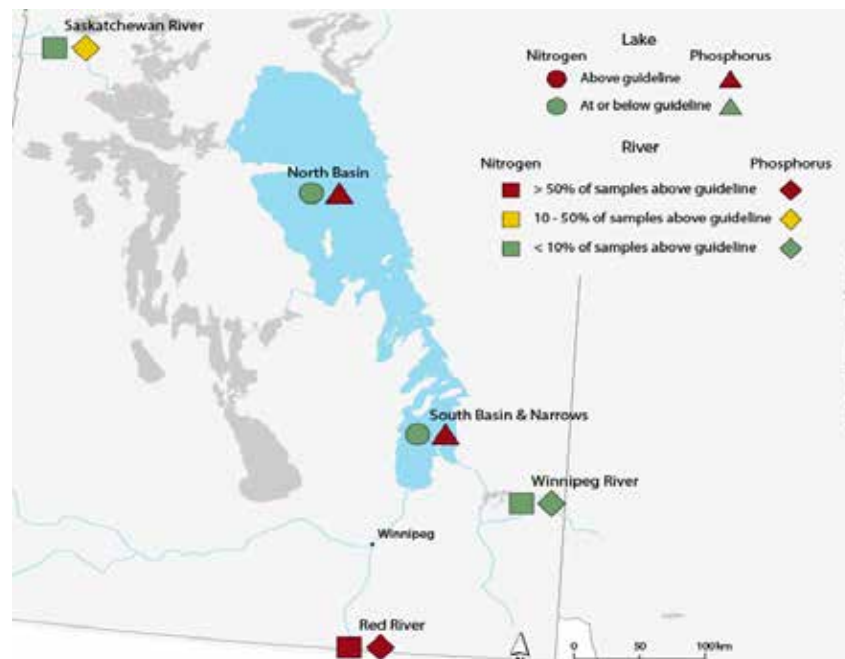
As of March 2015, stewardship projects supported by the Lake Winnipeg Basin Stewardship Fund were preventing an estimated 14 800 kilograms of phosphorus per year from entering Lake Winnipeg and its tributary rivers. Annual phosphorus reductions increased by more than 8300 kg between Phase I of the fund (April 2008–March 2012) and Phase II (April 2012–March 2015). In 2013, phosphorus levels in Lake Winnipeg's North and South Basins and Narrows were above water quality guidelines for the protection of freshwater plants and animals most of the time. Nitrogen levels in each basin were generally below water quality guidelines.



Phosphorus and nitrogen levels were consistently above water quality guidelines for the protection of freshwater plants and animals in the Red River, and always below the guidelines in the Winnipeg River. Just over 44% of phosphorus samples in the Saskatchewan River were above the guidelines for 2011 to 2013, while nitrogen samples were always below (see Figure 13).

Learn more: visit the [CESI](#) website.

**Figure 13: Status of phosphorus and nitrogen levels in Lake Winnipeg, Canada, 2013; and in three tributary rivers, Canada, 2011–2013**



## Activity under the 2013–2016 FSDS

The federal government works closely with the province of Manitoba and other partners to more fully understand the relationships between phosphorus and nitrogen levels and nuisance algal growth in Lake Winnipeg. At the same time, water managers work to reduce human sources of nitrogen and phosphorus in the drainage basin.

The Lake Winnipeg Basin Stewardship Fund supports on-the-ground projects in areas known to have the most influence on water quality in Lake Winnipeg, such as the Red and Assiniboine River basin and the Winnipeg River basin. \$5.4 million in grants and contributions have been allocated through the fund to promote stewardship, protect water resources and reduce nutrients. Funded projects include wetland restoration, agricultural water retention projects and pilot projects demonstrating innovative wastewater treatment technology. Since 2013, the fund has leveraged an additional \$11.5 million from other funders to support 47 stakeholder-driven projects to reduce nutrient loads in Lake Winnipeg and its basin. It has also provided \$1.1 million in targeted support to the Lake Winnipeg Research Consortium and the University of Manitoba.

Thirteen scientific research and monitoring projects have been conducted since 2012 in the Lake Winnipeg basin to bridge current knowledge gaps related to the lake's ecology and nutrient cycling, and to track the sources and transport of nutrients throughout the lake and its basin. These activities inform watershed and nutrient management decision-making and complement actions under way by the Province of Manitoba, other provincial and state jurisdictions, and the federal government.

The federal government continues to conduct research and monitor water quality in Lake Winnipeg and its basin. This information helps the Canadian public and stakeholders across the watershed make informed decisions about how to improve water quality in Lake Winnipeg. For example, the government monitors water quality in the Lake of the Woods, which contributes approximately 6% of the total phosphorus load through the Winnipeg River System.

Federal efforts also focus on domestic and international transboundary water quality issues through work with other governments (federal, provincial and state). For example, the Prairie Provinces Water Board, which represents Alberta, Saskatchewan and Manitoba, is developing water quality objectives for waterways that eventually drain into Lake Winnipeg.

Detailed information about the plans and performance of the federal department respecting the FSDS commitments for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: ECCC.*

# MARINE POLLUTION—RELEASES OF HARMFUL POLLUTANTS

Canada has the world's longest coastline, stretching 243 000 kilometres along the Pacific, Arctic and Atlantic oceans as well as the Great Lakes. It also has some of the most difficult waters to navigate due to extreme conditions, strong currents and very cold water. Marine activity is increasing in Canada: between 2002 and 2012, total cargo tonnage handled by Canada's port systems increased by 1.5% per year.

## **Target 3.8: Marine Pollution—Releases of Harmful Pollutants**

Protect the marine environment by an annual 5% reduction in the number of releases of harmful pollutants in the marine environment by vessels identified during pollution patrol from 2013–2016.

### **Progress Statement**

With a 70% increase in patrol hours from 2009–2010, 44 spills by identified vessels were detected in fiscal year 2013–2014 compared with 21 in 2009–2010, an average annual increase of 20%.

## **What we know**

More frequent patrols to monitor and detect pollution from ships resulted in over 97% more vessels being monitored in 2013–2014 than in the previous year. On the West Coast, 1000 surveillance hours per year has already been achieved, exceeding initial plans to increase surveillance hours from 500 to 700 hours in the first three years, then to 1200 hours in 2016–2017 and beyond.

In 2013–2014, the National Aerial Surveillance Program (NASP) detected 214 marine pollution incidents through 3877 pollution patrol hours. Of these, 44 were detected from identified vessels, an increase from the 21 spills detected from identified vessels in 2009–2010.

*Learn more: visit the [CESI](#) website.*

## **Activity under the 2013–2016 FSDS**

As part of the World-Class Tanker Safety System, additional funding was announced in 2014 for the NASP to increase the number of flights targeted at monitoring and detecting pollution from ships in Canada's waters. Evidence gathered by the NASP is used to enforce the provisions of Canadian legislation applicable to illegal discharges from ships.

In 2013 and 2014, other measures were taken to prevent spills, to clean them up quickly if they did occur, and to make sure polluters pay. These measures responded to the recommendations of the independent Tanker Safety Expert Panel and on other studies, as well as input from provincial governments, Indigenous groups and marine stakeholders from across Canada. Measures included:

- Enacting the *Safeguarding Canada's Seas and Skies Act* to strengthen the current requirements and increase oversight for pollution prevention and response at oil handling facilities.
- Increasing foreign tanker inspections; 100% of foreign tankers are inspected on their first visit to Canadian waters, and annually thereafter.
- Implementing an Incident Command System—an internationally accepted emergency management system—to more effectively respond to marine incidents.
- Modernizing Canada's Marine Navigation System to enable more accurate and real-time marine safety information to be shared with mariners to minimize the potential for accidents.
- Tailoring Area Response Planning to a region's particular conditions in four higher-traffic areas (the southern portion of British Columbia; Saint John and the Bay of Fundy, New Brunswick; Port Hawkesbury and the Strait of Canso, Nova Scotia; and St. Lawrence River [Montréal to Anticosti Island], Quebec). Best practices from these four areas will be used to refine Area Response Planning and allow the federal government to consider options for implementing this approach in other locations across Canada.
- Supporting scientific research on a range of petroleum products, such as diluted bitumen, and response measures. As well, the federal government is providing up to \$20 million to Ocean Networks Canada's Smart Oceans initiative to transform oceanographic data into navigational information that will help vessel operators and others avoid navigational hazards and prevent marine accidents.
- Supporting Indigenous communities so that they can participate in marine emergency preparedness and response planning around their communities.
- Allowing alternative response measures; the government will expand the toolkit for spill responses by removing the legislative prohibitions around the use of such measures when there would be a net environmental benefit.
- Strengthening the "polluter pay" principle by allowing Canada's domestic Ship-source Oil Pollution Fund (SOPF) to provide an unlimited amount of compensation for clean-up costs and damages from oil pollution. Should this compensation exceed the amount available in the SOPF, the Government of Canada will ensure that the SOPF is topped up through a levy paid by industry.

In addition, TC has strong and effective ballast water requirements and has ratified an international convention that will further reduce the risk of aquatic species invasions by ships. See Target 4.6 for more information.

Detailed information about the plans and performance of the federal department respecting the FSDS commitments for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: TC.*

# MARINE POLLUTION—DISPOSAL AT SEA

Canada regulates disposal at sea through a permit system under the *Canadian Environmental Protection Act, 1999*. “Disposal at sea” is defined as the discarding of approved material (via a permit) from a ship, aircraft, platform or other structure at sea. It is illegal without a permit and without managing the material discarded at these sites to prevent marine pollution.

## **Target 3.9: Marine Pollution—Disposal at Sea**

Ensure that permitted disposal at sea is sustainable, such that 85% of disposal site monitoring events do not identify the need for site management action (such as site closure) from 2013–2016.

### **Progress Statements**

Since 2004, the proportion of permitted disposal at sea sites requiring no management action has exceeded the 85% performance target, indicating that Canada’s ocean disposal sites are being used sustainably.

In 2013–2014, the government completed monitoring projects at 11 ocean disposal sites, or 12% of actively used sites.

## **What we know**

A management action is a change to how the waste is managed at a disposal site; it can include changes to timing of disposal, the mechanism by which the waste is deposited at the site, any changes to the site boundaries or even the closing of a site. Management actions have been required only five times since 2004: once in each of 2005, 2011 and 2012, and twice in 2013.

Learn more: visit the [CESI](#) website.

## **Activity under the 2013–2016 FSDS**

The federal government continues to monitor representative disposal at sea sites and to verify that permit conditions are being met so that disposal of waste at sea is sustainable. In 2012–2013, monitoring projects were completed at 11 ocean disposal sites nationally (12% of actively used sites).

The federal government also continues to participate in development of international guidance materials, such as guidance on dredged material assessment and best practices for disposal of offshore mining wastes. In 2012–2013, guidance was completed on the assessment of carbon dioxide (CO<sub>2</sub>) streams for sub-seabed geological storage, and on Action Levels (levels of concern) for fish waste.

Detailed information about the plans and performance of the federal department respecting its FSDS commitments for this target may be found in its [Departmental Sustainable Development Strategies](#). Responsible department: ECCC.

# AGRI-ENVIRONMENTAL PERFORMANCE METRICS

Farming in Canada has changed significantly in recent decades in response to market demand and new technologies. Agricultural producers and the public have also become more aware of the pressures that agriculture places on the environment.

## **Target 3.10: Agri-Environmental Performance Metrics**

Achieve a value between 81–100 on each of the Water Quality and Soil Quality Agri-Environmental Performance Metrics by March 31, 2030.

### **Progress Statement**

The Soil Quality Agri-Environmental Performance Metric rose from 66 in 1981 to 77 in 2006 as farm management improved. Meanwhile, the Water Quality Agri-Environmental Performance Metric declined from 94 in 1981 to 78 in 2006.

## **What we know**

The shift towards larger, more intensive operations has led to increased awareness of the fundamental links between agriculture and the environment. Recognition that protecting soil quality helps farms produce high-quality crops and the importance of sound farm management for reducing surface and groundwater contamination is growing.

The agri-environmental performance indices for soil and water quality focus on how farming affects the environment. A rating of 81 to 100 on the agri-environmental performance indices means that, overall, Canadian farming is working in a manner that protects the environment.

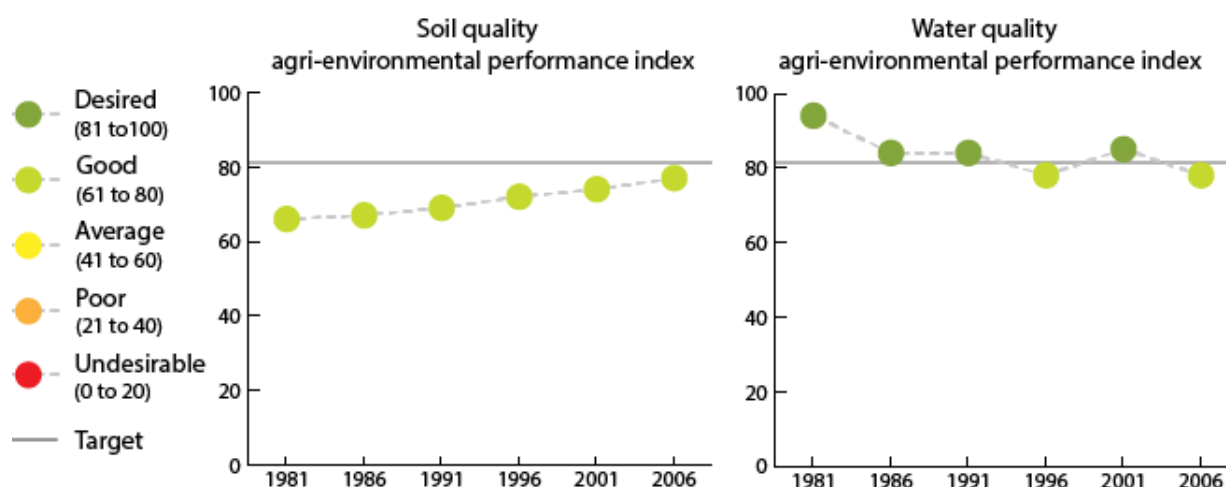
The soil quality agri-environmental performance index combines information about the risk of soil loss, soil contamination by trace elements, the buildup of salt and the reduction in organic matter in the soil.

The water quality agri-environmental performance index combines information about potential water contamination by nitrogen and phosphorus, bacteria and pesticides from farming operations.

Between 1981 and 2006, changes to how farms are managed have helped improve the soil quality agri-environmental performance index in Canada's farming regions. Index results are good, and increasing toward the desired level. While still rated as good, the water quality agri-environmental performance index has declined from the desired level (see Figure 14).

*Learn more: visit the [CESI](#) website.*

**Figure 14: Agri-environmental performance indices for soil and water quality in Canada, 1981 to 2006**



## Activity under the 2013–2016 FSDS

In collaboration with provincial and territorial governments, the federal government supports farmers through agri-environmental risk assessment and planning, and by providing expertise, information and incentives to increase the adoption of sustainable agriculture practices at the farm and landscape levels.

Up to \$204 million in cost-shared funding provided through the federal, provincial and territorial Growing Forward 2 agricultural policy framework is helping agricultural producers and processors become more innovative and competitive in world markets. This initiative will help farmers systematically assess priority environmental risks, plan effective mitigation activities and increase adoption of sustainable agricultural practices such as farmyard runoff controls and erosion control structures. For example:

- Manitoba's conservation districts will receive funding through Manitoba's Growing Assurance initiative to work with farmers on projects that will improve water quality, support climate change adaptation and preserve wildlife habitat.
- Through the Canada-Quebec Growing Forward 2 agreement, funding has been granted to carry out works on land to control water erosion, particularly during snowmelt, reduce agricultural non-point source pollution and conserve biodiversity.

Detailed information about the plans and performance of federal departments respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments: AAFC (lead), ECCC.*



# WASTEWATER AND INDUSTRIAL EFFLUENT

Each year, over 150 billion litres of untreated and undertreated wastewater (sewage) is dumped into Canadian waterways. The federal government, in collaboration with the provinces, territories and engaged municipalities, Indigenous communities and organizations, and other interested parties, established the country's first national standards for wastewater treatment—the *Wastewater Systems Effluent Regulations* (WSER). These regulations reduce threats to fish, fish habitat and human health from fish consumption posed by wastewater.

The federal government also manages risks to the environment and human health from the discharge of industrial effluents using *Fisheries Act* regulations such as the *Metal Mining Effluent Regulations* (MMER) and the *Pulp and Paper Effluent Regulations* (PPER). Environmental effects monitoring helps ensure that risks to fish, fish habitat and human health from fish consumption posed by these effluents are understood.

## **Target 3.11: Wastewater and Industrial Effluent**

Reduce risks associated with effluent from wastewater (sewage) and industrial sectors by 2020.

### **Progress Statements**

Regulatory compliance reduces the risks of effluent released to the environment in rivers. The indicators measuring the quality of metal mining and pulp and paper effluent show stable or improved regulatory compliance.

## **What we know**

Since 1985, effluent quality of industrial facilities regulated under the *Fisheries Act* has substantially improved (see figures 15 and 16).

In 2013, the metal mining sector reported over 99% compliance with authorized limits for metals, cyanide and pH and close to 98% compliance for total suspended solids (TSS). The percentage of self-reported test results that met authorized limits for acute lethality has remained above 95% since 2005.

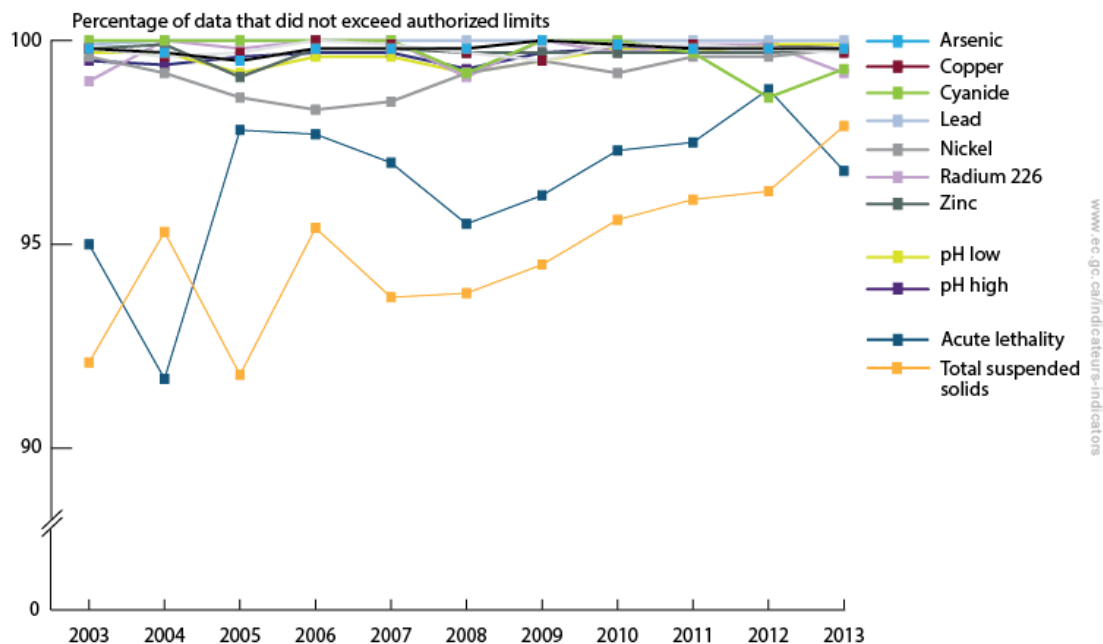
For the pulp and paper sector, 96.2%, 99.9% and 99.8% of effluent samples for toxicity tests on fish, biochemical oxygen demand (BOD) and TSS respectively met regulatory requirements.

In 2012–2013, enforcement officers issued 61 written warnings under MMER as well as 11 directions and 30 written warnings under PPER. There were 22 written warnings issued under MMER in 2013–2014. Environment Canada and Climate Change will continue to conduct inspections to verify compliance and take enforcement actions where necessary.

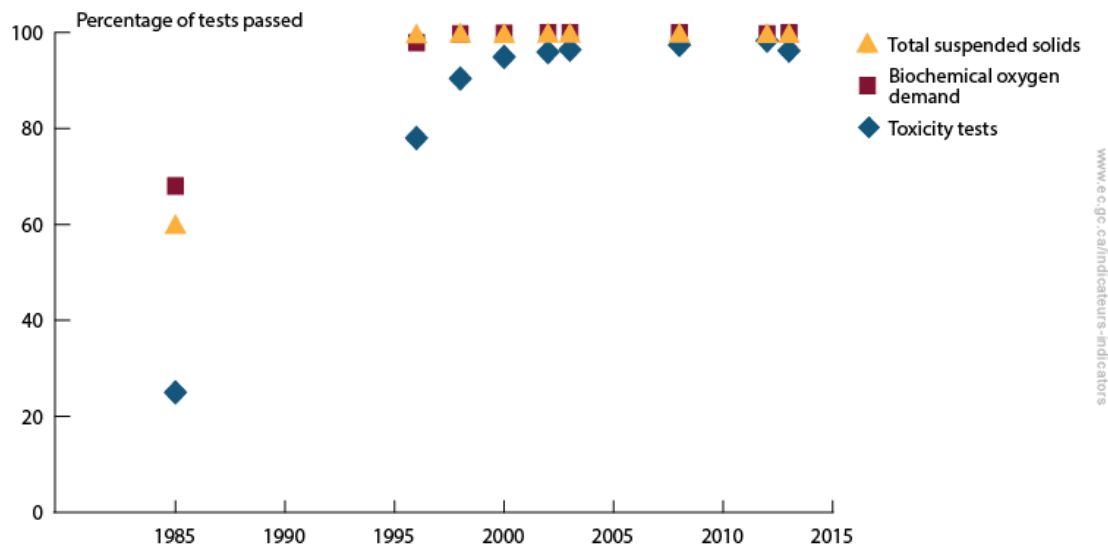
*Learn more: visit the [CESI](#) website.*



**Figure 15: Percentage of regulatory data submitted by metal mines that did not exceed authorized limits, Canada, 2003 to 2013**



**Figure 16: Percentage of regulatory tests passed by pulp and paper mills, Canada, 1985 to 2013 (selected years)**



## Activity under the 2013–2016 FSDS

The federal government has undertaken a number of regulatory and other initiatives to reduce the risks associated with effluent from sewage and industrial uses.

In 2013–2014, the government began to administer the WSER through activities and initiatives such as putting in place a Web-based reporting system to collect data and reports required under the regulations, and promoting compliance by developing and disseminating information about regulatory requirements. To reduce duplication and administrative burden, the government is also negotiating agreements with provinces and Yukon for the WSER. An equivalency agreement with Yukon and administrative agreements with New Brunswick and Saskatchewan are currently in place, and discussions with other interested provinces are ongoing.

The federal government supports implementation of the PPER and MMER through continued verification of compliance with regulatory limits and by communicating with regulatees concerning environmental-effects monitoring requirements.

The federal government consulted industry, environmental stakeholders and Indigenous organizations as part of the 10-year review of the MMER. Proposed changes to the regulations include revising existing limits as well as adding new substances, requirements or, potentially, other mining sectors.

Detailed information about the plans and performance of the federal department respecting the FSDS commitments for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: ECCC.*

# WATER RESOURCE MANAGEMENT

Water resource management is necessary in order to reconcile the competing needs of various users, satisfy basic needs, enable economic development, sustain the natural environment and support recreational activities. Decision-makers use water level, flow and sediment data to resolve issues related to sustainable use, infrastructure planning and water apportionment, and to keep Canadians safe.

## **Target 3.12: Water Resource Management**

Facilitate sustainable water resource management through the collection of data and the development and dissemination of knowledge from 2013–2016.

### **Progress Statement**

Provincial and territorial government clients rated the Government of Canada's hydrometric program 8 out of 10 on a performance satisfaction survey of their data dissemination.

## **What we know**

Provincial and territorial government partners rated the Government of Canada's hydrometric program highly. The National Hydrometric Program collects, interprets and disseminates national surface water quantity data that are vital for water management.

*Learn more: visit the [Water Survey of Canada](#) website.*

## **Activity under the 2013–2016 FSDS**

The federal government continues to work both domestically and internationally to support water resource management and to advance and communicate water management knowledge.

The government continues to support the International Joint Commission (IJC) as it implements an updated water regulation plan for Lake Superior. The government also provides expertise to support the IJC's Great Lakes–St. Lawrence River Adaptive Management Committee, which was established to coordinate and conduct needed monitoring, modelling and evaluation of the regulation plans for the outflows from Lake Superior and Lake Ontario.

On the East Coast, the Atlantic Ecosystems Initiative provides \$1.2 million in funding annually to ecosystem-based projects that address shared federal-provincial priorities, including water quality, throughout the four Atlantic provinces. The majority of projects help enhance water quality and watersheds through collaborative initiatives such as identifying and addressing threats to water resources, conducting water quality monitoring and research, and developing ecosystem management tools and management plans.

The federal government also launched an initiative under the National Conservation Plan to enhance collaboration, facilitate research and improve knowledge-sharing to support conservation and sustainable development in the transboundary Gulf of Maine. This initiative helps address common federal, provincial and stakeholder priorities, including water quality and sustainable water resource management.

Ongoing efforts to improve groundwater management have included holding a national workshop on emerging groundwater issues of national interest and providing stakeholders with access to tools and methods to assess groundwater resources through the Groundwater Information Network.

Regional initiatives have included collaborating with the Okanagan Basin Water Board and the Province of British Columbia to install four new monitoring wells, and with First Nations communities to characterize and disseminate information on the health of the Salish Sea ecosystem. The federal government also continues to work with the Province of Alberta and local stakeholders to implement the Joint Canada–Alberta Implementation Plan for Oil Sands Monitoring.

The National Hydrometric Program provides critical water level and flow information to Canadians through a federal, provincial and territorial cost-shared network that includes approximately 2750 hydrometric stations. Between May 2012 and October 2014, the number of stations transmitting data in near real time increased by approximately 70 per year. Information collected under the National Hydrometric Program helps provincial and territorial emergency management organizations keep Canadians safe when flooding is a risk.

In 2015, Statistics Canada released new biennial estimates on water use in [manufacturing](#), [thermal-electric power](#), [mining](#), [drinking water treatment plants](#) and [agricultural irrigation](#). Updated estimates on [household behaviour](#) with regard to water consumption and conservation were also released. These data are used to track water usage in multiple sectors and to provide an economy-wide perspective on water use.

The federal government passed the *Transboundary Waters Protection Act* in 2013 to protect Canadian waters within federal jurisdiction from bulk water removals. This act created new powers for inspection and enforcement, introduced new penalties for violations, and expanded protection to rivers and streams that cross borders.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (lead), NRCan, StatCan, WD.*



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## PROTECTING NATURE AND CANADIANS

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# Protecting Nature and Canadians

Conserving Canada's landscapes and seascapes and protecting its wild species are essential to environmental, social and economic well-being. Wild species face a range of threats, such as pollution, overexploitation, incidental loss due to resource harvesting, and most importantly, the loss, fragmentation and degradation of their habitat. They also face indirect impacts from human activities, such as stresses caused by invasive species, new diseases and climate change. Habitat loss caused by human activity is the leading cause of biodiversity loss in Canada and around the world.

## **GOAL 4: CONSERVING AND RESTORING ECOSYSTEMS, WILDLIFE AND HABITAT, AND PROTECTING CANADIANS**

Resilient ecosystems with healthy wildlife populations so Canadians can enjoy benefits from natural spaces, resources and ecological services for generations to come.

### **Progress Statements**

In 2010, 77% of Canadian wild species assessed in the General Status of Wildlife Species in Canada report were ranked "secure." The number of protected areas and the total area protected in Canada continued to grow.

### **Remaining Challenges**

Canada's wild species continue to face threats that include habitat loss and fragmentation, invasive species, and the effects of climate change. Of the over 8500 species considered in the 2010 General Status Report, 12% were considered "at risk" or "may be at risk."

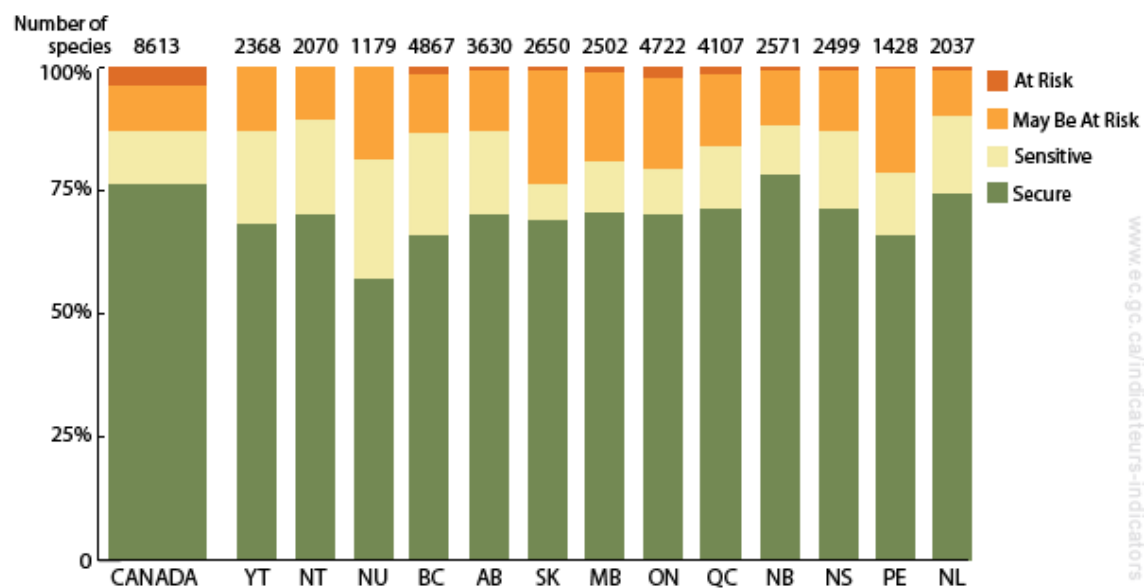
While 57% of managed migratory bird species have population sizes within an acceptable range, 43% do not. The proportion of species with acceptable population sizes varies between ecological groups—for example, only 18% of grassland bird species and 28% of aerial insectivores have acceptable population sizes.

## What we know

Of more than 8500 wild species assessed in 2010, 77% were ranked “secure,” 12% were ranked “at risk” or “may be at risk,” and the remaining 11% were considered “sensitive.” The proportion of species ranked “secure” ranged from 57% in Nunavut to 78% in New Brunswick (see Figure 17).

Learn more: visit the [CESI](http://CESI.gc.ca) website.

**Figure 17: General status ranks of wild species in Canada, 2010**



# SPECIES AT RISK

Some wildlife species in Canada have experienced serious population declines as a result of habitat reduction and other pressures. Species at risk or those that may become at risk can be protected under the *Species at Risk Act* (SARA).

## **Target 4.1: Species at risk**

By 2020, populations of species at risk listed under federal law exhibit trends that are consistent with recovery strategies and management plans.

### **Progress Statements**

Of the 307 species at risk that had final recovery strategies or management plans as of May 2015, 112 had population-oriented goals reassessed. Of these 112 species, 43 (38%) showed population trends consistent with the goals of the recovery strategies.

## **What we know**

While not all species at risk have been identified, as of February 2015, 521 animal and plant species in Canada were classified as “Endangered,” “Threatened,” or of “Special Concern” under Schedule 1 of SARA.

Of the 307 species at risk that had final recovery strategies or management plans as of May 2015, about one third (112 species) had population-oriented goals reassessed. Of these, 38% (43 species) had current population trends that are consistent with the goals laid out in the recovery strategies, and 40 (36%) showed trends that are inconsistent with goals. Another 9 (8%) had both some indication of improvement and some indication of decline. For the remaining 20 species (18%), there are insufficient data to determine trends.

Learn more: visit the [CESI](#) website.

## **Activity under the 2013–2016 FSDS**

A range of federal initiatives and funding continue to support this target. Funding announced in 2014 under the National Conservation Plan supports the Habitat Stewardship Program (HSP) and the Aboriginal Fund for Species at Risk while introducing, as a preventive measure, new funding for species that are not at risk.

The federal government continued to work with others to conserve species at risk and help them recover. For example:

- Recovery strategies have been developed for 266 species, including the Greater Sage-Grouse, Woodland Caribou (Boreal population, Atlantic-Gaspésie population and Southern Mountain population), rare plant species in the Garry Oak ecosystem, and aquatic species such as the North Atlantic Right Whale, Leatherback Sea Turtle (Atlantic Region), and a number of freshwater mussels occurring in southern Ontario watersheds.



- The government is implementing multi-species action plans in national parks and other protected heritage places that involve stakeholders, partners and visitors and foster support for the protection and recovery of species at risk.
- Investment in the Species at Risk Stream of the HSP (\$12.6 million in 2014–2015) funded 104 new projects and continued previous funding to 72 multi-year projects across Canada to help protect species at risk by fostering stewardship measures. In 2015, these projects will leverage an additional \$52.6 million from other partners, leading to a total investment of \$65.2 million. Meanwhile, investment in the HSP's Prevention Stream (\$2.6 million in 2014–2015) is funding 81 new projects to prevent other priority species beyond those listed under SARA from becoming a conservation concern. These projects will leverage an additional \$5.7 million from other partners, leading to a total investment of \$8.3 million.
- The first captive breeding and rearing program for the Greater Sage-Grouse involves a partnership of the federal government (\$2 million) with Alberta (\$2 million) and the Calgary Zoo (\$1.1 million). Launched in 2014, the program will run for 5 to 10 years.
- The federal government is collaborating with Saskatchewan to conserve species at risk by promoting cost-effective land stewardship practices to landowners. The South of the Divide (SoD) Stewardship in Action initiative and the SoD Action Plan complement other regional plans by outlining detailed approaches for implementing pre-existing SARA recovery strategies and management plans for species at risk in the SoD area.
- The federal government is collaborating with the Government of Ontario to support best management practices that promote the protection of species at risk and habitats on privately owned Ontario farms. The government is also collaborating with Ontario to provide science that supports harmonized management and recovery planning of freshwater aquatic species.
- The federal government worked with the Nelson River Sturgeon Board to develop a Lake Sturgeon conservation plan in Manitoba, set up public awareness tours of the Jenpeg Sturgeon Rearing Facility, and establish a Sturgeon Aquarium Program in multiple public schools.
- The federal government is collaborating with the Government of Alberta and stakeholders to conserve Westslope Cutthroat Trout in Alberta. For example, the government is working with the Alberta Riparian Habitat Management Society (also known as Cows and Fish) to raise awareness and implement conservation actions. Collaboration with the Government of Alberta has included developing and implementing a communication and education strategy to accompany provincial fishing regulation changes that came into force when Westslope Cutthroat Trout was listed under SARA in 2013.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (lead), DFO, National Defence (DND), PC.*

# MIGRATORY BIRDS

Sustainable and responsible waterfowl hunting contributes to tourism, provides food and maintains traditions. Bird watching is a popular activity for many in backyards, neighbourhoods and natural habitats. Birds also provide ecological benefits by controlling insect and rodent populations, dispersing seeds and pollinating plants. These “[ecosystem services](#)” contribute to our economy and our well-being.

Human activities have heavily influenced Canada’s bird populations, helping some species while hindering others. Because birds are sensitive to environmental changes, changes in their populations can reflect broader shifts in ecosystem health and the state of biodiversity.

## **Target 4.2: Migratory Birds**

Improve the proportion of migratory bird species that meet their population goals.

### **Progress Statement**

Baseline information indicates that more than half of managed migratory bird species regularly found in Canada have population sizes within an acceptable range.

## **What we know**

Fifty-seven percent (57%) of 368 managed migratory bird species regularly found in Canada had population sizes within an acceptable range in 2013. The proportion of species with acceptable population sizes varies between ecological groups. For example, while most waterfowl (67%) and forest bird species (63%) were within acceptable ranges, only 18% of grassland birds and 28% of aerial insectivores (birds that catch insects while in flight) had acceptable population levels.

*Learn more: visit the [CESI](#) website.*

## **Activity under the 2013–2016 FSDS**

Canada works with the U.S. and Mexico on the North American Bird Conservation Initiative. This agreement was established to conserve bird populations by restoring wetlands, associated uplands and other key habitats, and to engage other bird conservation groups. In Canada, the integration of conservation efforts currently under way for waterfowl, landbirds, shorebirds and waterbirds supports this objective. In 2013 and 2014, 25 Bird Conservation Region strategies were completed and published, with ongoing discussions to further implement conservation measures.

Detailed information about the plans and performance of the federal department respecting the FSDS commitments for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: ECCC.*

# TERRESTRIAL ECOSYSTEMS AND HABITAT CONSERVATION

Canada's natural spaces are a vital component of our culture, well-being, heritage, economy and future. They are also of global importance—approximately 30% of the world's boreal forest and 20% of freshwater resources are in Canada.

Natural areas provide a variety of ecosystem services. For example, lakes and rivers provide drinking water and energy, while forests and wetlands store GHGs, produce oxygen and regulate flooding. Protecting natural areas is crucial to maintaining these ecosystem services as well as conserving biodiversity.

## ***Target 4.3: Terrestrial Ecosystems and Habitat Stewardship***

Contribute to the proposed national target so that by 2020, at least 17% of terrestrial areas and inland water are conserved through networks of protected areas and other effective area-based conservation measures.

### **Progress Statement**

10.3% of Canada's terrestrial area (land and freshwater) is protected as of the end of 2014, and this percentage is expected to continue to increase.

As of 2015, 80 700 square kilometres (km<sup>2</sup>) of habitat for waterfowl had been secured since 1990 and as of 2014, 1836 km<sup>2</sup> habitat for species at risk had been secured since 2000.

## **What we know**

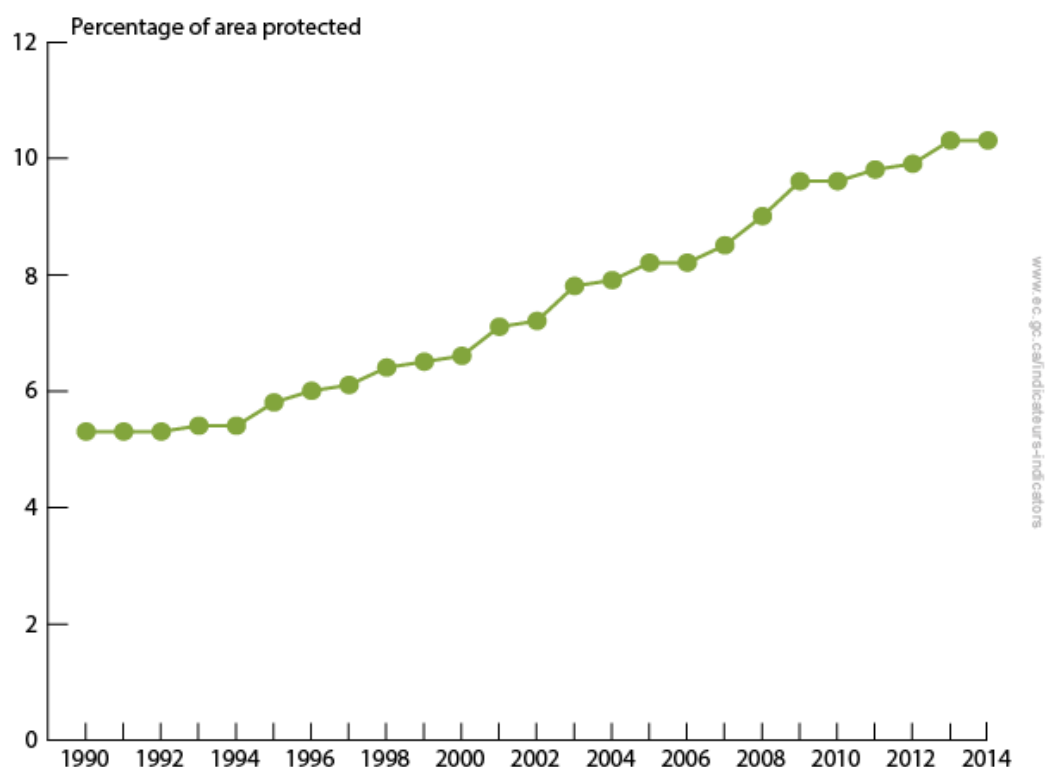
As of the end of 2014, 10.3% (1 026 682 km<sup>2</sup>) of Canada's terrestrial area (land and freshwater) has been recognized as protected. Terrestrial area protected has increased by almost 8% in the last 5 years, and close to 90% in the last 20 years. In 2014, federal jurisdictions protected a total terrestrial area of 468 322 km<sup>2</sup> (see Figure 18).

As of 2015, approximately 80 700 km<sup>2</sup> of habitat for waterfowl had been secured in Canada through the North American Waterfowl Management Plan, a more than four-fold increase over the last 10 years. The largest increase (from 34 000 to 70 400 km<sup>2</sup>) occurred in 2008, mainly as a result of habitat secured in the Western Boreal Forest region through Crown designation.

The area secured for species at risk has also increased steadily since inception of the HSP in 2000–2001. As of March 31, 2014, 1836 km<sup>2</sup> of Canadian habitat had been secured, benefiting up to 603 species assessed as Endangered, Threatened or of Special Concern by the [Committee on the Status of Endangered Wildlife in Canada](#).

Learn more: visit the [CESI](#) website.

**Figure 18: Trends in proportion of terrestrial area protected, Canada, 1990 to 2014**



## Activity under the 2013–2016 FSDS

Conserving biodiversity is critical to the long-term health, prosperity and security of Canadians. A number of initiatives by the federal government, including participation in international and domestic fora, advance the conservation of terrestrial ecosystems and habitat. For example:

- The federal government provided leadership in the United Nations Convention on Biological Diversity and the development of a new set of domestic biodiversity targets. The government also hosted meetings between August 2013 and February 2015 to advance implementation of the Conservation of Arctic Flora and Fauna work plan.
- In 2014–2015, as part of the National Conservation Plan, the federal government renewed the Natural Areas Conservation Program for another five years, investing an additional \$100 million. These investments help non-governmental organizations such as the Nature Conservancy of Canada and Ducks Unlimited Canada secure and protect ecologically significant land in southern Canada. As of the end of December 2014, over 3900 km<sup>2</sup> had been conserved, providing habitat for at least 173 species at risk and many other species.
- The federal government established the [Qausuittuq National Park](#), formally protecting under the *Canada National Parks Act* 11 008 km<sup>2</sup> of northern Bathurst Island, Nunavut, and ensuring that this magnificent part of Canada can continue to be enjoyed for generations. The park protects key wildlife habitat including travel routes, calving grounds and wintering grounds for Peary caribou; it is also a significant area for muskoxen. Archaeological studies have found evidence of human use on Bathurst Island dating back 4500 years.

- On July 31, 2015, the federal government signed separate agreements with the Province of Newfoundland and Labrador and the Innu Nation to create the Akami-uapishku-KakKasuak-Mealy Mountains National Park Reserve. The park, 10 700 km<sup>2</sup> in size, will protect a nationally significant example of the East Coast Boreal Natural Region, including important habitat for the threatened Mealy Mountains caribou herd, as well as for wolves, black bear, martens and other wildlife species. The landscape is also of great cultural significance to Indigenous peoples. The park will provide unique Indigenous cultural experiences as well as outdoor recreational activities such as canoeing, backcountry camping and hiking.
- A total of 79.1 km<sup>2</sup> of land has been committed to Rouge National Urban Park, making it one of the largest urban parks in the world. The park will protect the Rouge's natural ecosystems, cultural landscapes and native wildlife, including large tracts of Class 1 farmland, the rarest and most fertile in the country. It will also help connect Canadians with nature, culture and agriculture.
- The Ecological Gifts Program supports donations of ecologically sensitive land for conservation and provides tax benefits to landowners who donate land or a partial interest in land to a qualified recipient who, in turn, ensures that the land's biodiversity and environmental heritage are conserved in perpetuity. In 2014, the federal government increased the "carry-forward" for donations to allow donors to claim large gifts for up to 10 years. As of June 2015, over 1159 ecological gifts of land valued at over \$736 million have been donated through this program, protecting over 1700 km<sup>2</sup> of wildlife habitat across Canada.
- Using population goals set through the tri-national partnership (Canada, U.S. and Mexico) of the North American Waterfowl Management Plan (NAWMP) and the national suite of [Bird Conservation Region](#) plans for all species, the challenges for both declining and over-abundant species are being addressed. Federal investments in NAWMP include \$3.4 million in 2014 to support 16 new projects across Canada over the next 3 years. Undertaken in partnership with organizations such as the Nature Trust of B.C., Ducks Unlimited Canada and the Manitoba Habitat Heritage Corporation, these projects help to protect wetlands and restore wetland habitats.
- Statistics Canada, Environment Canada and Climate Change, and other departments continue to develop and apply models for social, cultural and economic valuation of ecosystem services to support decision-making. Among other impacts, new Statistics Canada investments of \$380 000 per year in the environmental statistics program will allow the annual release of estimates of changes in land cover and land use. Further investment will also allow for annual estimates of Canada's renewable freshwater resources. This information will provide insight about the changing potential of Canada's natural capital and on its capacity to generate ecosystem goods and services.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (lead), FIN, ISED, PC, StatCan.*

# HEALTH OF NATIONAL PARKS

The federal government works to restore Canada's ecosystems by addressing priority ecological integrity issues in national parks, while providing opportunities for Canadians to connect with nature, and for stakeholders and partners, including Indigenous partners, to work collaboratively.

## **Target 4.4: Improving the Health of National Parks**

Improve the condition of at least one Ecological Integrity Indicator in 20 national parks by 2015.

### **Progress Statement**

As of March 2015, management actions have resulted in improvements to at least one indicator of ecological integrity in 20 national parks.

## **What we know**

As of March 2015, management actions have resulted in improvements to at least 1 indicator of ecological integrity in 20 national parks. Parks Canada (PC) also continues to monitor the ecological integrity of national parks. As of 2013, the percentage of assessed ecosystems in good or fair condition remains high at 91%.

*Learn more: visit the [Parks Canada](#) website.*

## **Activity under the 2013–2016 FSDS**

The federal government continues to invest in and support the health of Canada's national parks. Through its Conservation and Restoration program, PC is undertaking priority ecosystem restoration projects to improve ecological integrity in key areas such as restoring the health and connectivity of aquatic ecosystems, restoring wildlife corridors, reintroducing species at risk, controlling and removing invasive species, and managing hyperabundant wildlife populations. Projects include:

- The construction of at least four wildlife crossings and approximately 6.5 km of fencing along Highway 93 South in Kootenay National Park to minimize human-wildlife collisions along the busy highway (an investment of \$9.6 million).
- An innovative and highly collaborative monitoring and restoration program for endangered inner Bay of Fundy Atlantic salmon to both restore a self-sustaining salmon population in Fundy National Park and provide opportunities for Canadians to connect to this iconic species (an investment of \$2.6 million).

PC also continues to reintroduce fire as a natural ecosystem process: in 2014–2015, there were 23 prescribed burns in 12 national parks, covering 5448 ha.

Detailed information about the plans and performance of the responsible federal agency respecting the FSDS commitment for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: PC.*

# MARINE ECOSYSTEMS

Canada's vast marine territory is important domestically and globally. Its varied ecosystems support an extensive diversity and abundance of marine life, contribute significantly to the Canadian economy, and offer enormous potential for future economic, social and cultural benefits.

Well-designed and well-managed marine protected areas (MPAs) and other effective area-based conservation measures form a key element of integrated ocean management that supports healthy, productive and resilient ecosystems.

## **Target 4.5: Marine Ecosystems**

By 2020, 10% of coastal and marine areas are conserved through networks of protected areas and other effective area-based conservation measures.

### **Progress Statement**

From 1990 to 2014, protected coastal and marine areas increased from 0.32% of Canada's marine territory to 0.9%.

## **What we know**

MPAs are key management tools that help improve the health, integrity and productivity of our marine ecosystems. Canada is establishing a national network of MPAs with the primary goal of protecting marine biodiversity, ecosystem function and special natural features. As of the end of 2014, 0.9% (51 572 km<sup>2</sup>) of Canada's marine territory has been recognized as protected. MPA networks will ultimately be developed for each of Canada's 13 marine bioregions.

*Learn more: visit the [CESI](#) website.*

## **Activity under the 2013–2016 FSDS**

The federal government supports marine ecosystems through research, knowledge-sharing and investments in conservation.

Fisheries and Oceans Canada (DFO) is leading the development of MPA networks in five priority bioregions: the Pacific Northern Shelf; Western Arctic; Newfoundland–Labrador Shelves; Scotian Shelf; and the Gulf of St. Lawrence. These MPA networks are being developed in collaboration with ECCC, PC, provincial and territorial governments, Indigenous groups, industry and non-governmental organizations, as well as other interested parties.

DFO has also made progress towards establishing new individual MPAs. Most notably, in June 2015 the Department released proposed regulations for public comment that would establish the proposed Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs MPA.



The federal government is also working to establish new national marine conservation areas. For example, the government focused its efforts on concluding three feasibility assessments in the unrepresented marine regions of Lancaster Sound in Nunavut, Strait of Georgia in British Columbia, and Magdalen Shallows in Quebec. In addition, the *Lake Superior National Marine Conservation Area Act* received royal assent in June 2015. Ultimately, the Act will lead to the formal protection under the *Canada National Marine Conservation Areas Act* of the Lake Superior Marine Conservation Area, the world's largest freshwater MPA.

Collaboration with provincial and territorial governments, Indigenous organizations, and coastal communities through the Integrated Oceans Management (IOM) process helps to integrate marine conservation measures and ensure the sustainable long-term human use of the ocean. As reported in *Canada's 5<sup>th</sup> National Report to the Convention on Biological Diversity*, published in March 2014, the federal government led the development of IOM plans in five Large Oceans Management Areas; four are currently being implemented.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: DFO (lead), ECCC, PC.*



# INVASIVE ALIEN SPECIES

Invasive alien species are a significant threat to biodiversity. In their new ecosystems, these species become predators, competitors, parasites, hybridizers, and diseases for native and domesticated plants and animals. Their impact on native ecosystems, habitats and species is severe and often irreversible. They can also have costly impacts on economic sectors such as forestry, fisheries, aquaculture and agriculture.

## **Target 4.6: Invasive Alien Species**

By 2020, pathways of invasive alien species introductions are identified, and risk-based intervention or management plans are in place for priority pathways and species.

### **Progress Statements**

No new invasive species were found to have become established in Canada in 2012 and 2013.

The federal government is conducting pathway and species risk assessments, including assessments of weeds for potential quarantine and assessments of aquatic species for potential regulations.

The government has developed risk-impact matrices for five groups of high-priority pathogens and completed an assessment of the risk posed by the invasive *Phytophthora ramorum* (commonly known as sudden oak death disease) to various Canadian tree species such as oak and larch.

## **What we know**

More alien species are being introduced into Canada with the increasing trade and travel that accompany globalization. Pathways of introduction include ships' ballast water, recreational boating, and the aquarium, pet and horticultural trades. Alien species can also enter Canada as "hitchhikers" on commodities such as wood products and ornamental plants, or as stowaways on various modes of transportation.

The federal government may regulate alien species if a risk analysis shows they are potentially invasive and that regulation is likely to be effective. As of the end of 2013, 248 species are federally regulated but not established in Canada, including 2 that were first regulated in 2012 and 15 first regulated in 2013. None of these species were found to have been established in Canada since January 2012.

Learn more: visit the [CESI](#) website.

## Activity under the 2013–2016 FSDS

With key responsibilities for international import and export and inter-provincial trade, the federal government has a primary role in creating the regulatory framework to ensure the prevention and detection of, and rapid response to, invasive alien species. This includes a wide range of measures, including:

- Researching early intervention in the event of a spruce budworm outbreak, as well as related reporting to clients and stakeholders.
- Providing expertise on the impacts of the spread of Emerald Ash Borer to Manitoba, Ontario and Quebec, as members of the Canadian Council of Forest Ministers.
- Developing risk-impact matrices for five groups of high-priority pathogens and completing a risk assessment of the invasive *Phytophthora ramorum* (commonly known as sudden oak death disease) to various Canadian tree species such as oak and larch.
- Enacting the *Aquatic Invasive Species Regulations* in May 2015. These new federal regulations provide tools that can be used by federal and provincial governments to respond to new invasions and control the spread of established aquatic invasive species. They include prohibitions on the import, possession, transport and/or release of listed species, such as Asian carps and zebra mussels.
- Continuing to implement the Invasive Plants Policy under the *Plant Protection Act*, which aims to control the importation and domestic movement of pest plants in Canada and provides a list of pest plants that are prohibited in Canada.
- Continuing to conduct pathway and species risk assessments, including assessments of weeds for potential quarantine as pest plants and assessments of aquatic species for potential regulation.
- Continuing to survey and conduct monitoring and inspection activities for regulated pests to support early detection, regulatory action and program verification.
- Continuing to increase public awareness, meet with stakeholders and provide access to information about invasive alien species and actions to prevent their introduction and spread.
- Collaborating with provincial and territorial ministers responsible for conservation, wildlife and biodiversity to fight invasive alien species in Canada.
- Continuing to collaborate and foster international cooperation—especially with key trading partners—to ensure that international standards and processes reflect Canadian interests.
- Ensuring that 100% of all overseas vessels are inspected and compliant with applicable ballast water regulations prior to entering the Seaways under a joint Canada–U.S. ballast water inspection program, as well as inspecting international ships arriving at coastal ports.
- Continuing to align TC’s ballast water policy and regulations with the International Convention for the Control and Management of Ships’ Ballast Water and Sediments, 2004.
- Working to ensure compatibility of its ballast water policy, regulations, research and enforcement actions with those of the U.S. through annual meetings of the authorities responsible for vessel discharges under the Great Lakes Water Quality Agreement.
- Continuing work through DFO and the Canadian Aquatic Invasive Species Network on science for monitoring aquatic invasive species and developing strategies to prevent and mitigate impacts.

Initiatives to protect the Great Lakes from the effects of invasive alien species include:

- Comprehensive programming to prevent establishment of Asian carps, in close cooperation with the Province of Ontario and U.S. federal and state agencies; and
- Ongoing work with the U.S. to deliver the world's largest aquatic invasive species control program, which is suppressing invasive sea lampreys and protecting fish and fisheries.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (lead), Canada Border Services Agency (CBSA), Canadian Food Inspection Agency (CFIA), DFO, NRCan, TC.*

# ENVIRONMENTAL DISASTERS, INCIDENTS AND EMERGENCIES

Environmental disasters, incidents and emergencies are events that threaten the environment as well as those that endanger human health. They include natural events such as forest fires, earthquakes, floods, hurricanes and ice storms. They also include accidents related to industrial operations: for example, transportation-related accidents that release hazardous substances.

## **Target 4.7: Environmental Disasters, Incidents and Emergencies**

Environmental disasters, incidents and emergencies are prevented or their impacts mitigated.

### **Progress Statements**

As of March 2015, 86% of federal institutions have assessed their strategic emergency plan and taken actions to address risks related to their area of responsibility.

Of the 2449 facilities that implemented environmental emergency (E2) plans in 2014–2015, 21 had environmental emergencies (0.9%).

## **What we know**

Between April 2012 and March 2015, fewer than 1% of facilities with E2 plans (as required by the federal *Environmental Emergency Regulations*) reported environmental emergencies.

Learn more: visit the [CESI](#) website.

## **Activity under the 2013–2016 FSDS**

The federal government undertakes a range of activities and makes investments to prevent and reduce the impacts of environmental emergencies within Canada. For example, the government established the National Disaster Mitigation Program in April 2015. The Program addresses rising flood risks and costs, and will build the foundation for future investments that could reduce or negate the effects of flood events. The federal government also invested in 20 new science and technology projects in 2014 as part of an approximately \$14.5 million allocation under the Canadian Safety and Security Program. This initiative will support investments in science and technology projects that will strengthen Canada's ability to anticipate, prevent, mitigate, prepare for, respond to and recover from natural disasters, serious accidents, crime and terrorism.

The government also continued to establish and implement regulations and conduct oversight to prevent and respond to incidents, ensure preparedness and determine liabilities arising from incidents.

- When certain criteria and thresholds are met under the *Environmental Emergency Regulations*, companies are required to prepare E2 plans for the possibility of controlled, planned, or accidental releases of hazardous substances listed in the regulations and report emergency releases that occur. As of March 2015, approximately 2852 individuals and organizations were required to prepare E2 plans. The majority had E2 plans in place.

- Amendments made in June 2014 to the *Transportation of Dangerous Goods Act*, the *Railway Safety Management System Regulations* and the *Transportation Information Regulations* will help build a stronger safety culture among railway companies, strengthen requirements for rail tank cars and other means of containment, and help reduce the risk of accidents.

Amendments to the *Radio Regulations, 1986*, the *Television Broadcasting Regulations, 1987*, and the *Broadcasting Distribution Regulations* were announced in August 2014 in support of alerting Canadians to imminent threats to life. The amendments make participation in the National Public Alerting System mandatory for radio and television broadcasters, cable and satellite companies, and video-on-demand services by March 31, 2015, and for campus, community and Native broadcasters by March 31, 2016.

Indigenous and Northern Affairs Canada (INAC) is the primary federal government department responsible for emergency management in First Nations communities. Its Emergency Management Assistance Program enables funding and coordination assistance to First Nations on reserve lands in the event of emergencies like fires and floods, often through arrangements with provincial and territorial governments for the delivery of emergency management services to First Nations. From 2013 to 2015, INAC allocated close to \$239 million for emergency management, of which 70% was for response and recovery activities. The federal government has since created a new single window for First Nations to secure funding for emergency costs, provided \$19.1 million to facilitate negotiation of agreements with provinces and territories and support emergency preparedness activities, and obtained an additional \$29.33 million of sustainable funding to cover annual response and recovery costs. These concrete actions improve emergency management on reserve lands and support stronger and more resilient First Nation communities while contributing to reducing the risks of environmental disasters, incidents and emergencies, and safeguarding residents.

Federal government planning that supports resource development includes initiatives such as the following.

- Strengthening pipeline safety through the *Pipeline Safety Act*, which received royal assent on June 18, 2015. The Act builds on the principles of incident prevention, preparedness and response, and liability and compensation. The Act introduces absolute liability for all National Energy Board (NEB) regulated companies operating pipelines, including \$1 billion for companies operating major oil pipelines; authorizing the NEB to order reimbursement of any reasonable cleanup costs incurred by governments or individuals; and authorizes the NEB to take control of incident response and cleanup in exceptional circumstances if a company is unable or unwilling to do so.
- Building on preliminary research led by NRCan under the World Class Tanker Safety System initiative, TC and ECCC are undertaking additional research on new petroleum products in a number of marine environments and identifying a range of response measures.
- Participating regularly in the development and revision of federal government Emergency Management Plans such as the Interagency Volcanic Event Notification Protocol, Atlantic Canada Tsunami Protocol, Earthquake Contingency Plan, Earthquake Response Protocol, Flood Plan, and Satellite Imagery Acquisition Plan.
- Communicating earthquake and space weather information on websites, Twitter and the Multi-Agency Situational Awareness System, and delivering information to the Public Safety Government Operations Centre, critical infrastructure operators and media outlets.

- Partnering with the Government of New Brunswick and others to implement the SmartATLANTIC buoy project in Saint John, New Brunswick, which will improve the efficiency, safety and environmental stewardship of marine transportation in the Bay of Fundy. In line with measures already taken to strengthen Canada's existing robust marine safety system, this project will help to further modernize Canada's marine navigation system by providing accurate and real-time meteorological/hydrological data for use in producing high-resolution forecasts of weather and sea conditions and for scientific research.
- Collaborating with provincial and industry partners in May 2014 to validate the renewed Federal Nuclear Emergency Plan in the largest-ever national-level full-scale nuclear emergency response exercise in Canada.
- Continuing to monitor environmental radiation across Canada and in the world in support of Canada's nuclear emergency response capabilities and Comprehensive Nuclear Test Ban Treaty obligations.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (co-lead), Public Safety Canada (PS) (co-lead), AAFC, DFO, HC, INAC, ISED, National Energy Board (NEB), NRCan, PC, Public Services and Procurement Canada (PSPC), TC.*

# CHEMICALS MANAGEMENT

Toxic substances released into the environment are known to have harmful effects on human health, wildlife and biological diversity. Toxic metals and organic pollutants can be inhaled or deposited onto soil and into water, where they can enter the food chain and accumulate in the body tissues of living organisms. Some of these substances can also be transported over great distances by air.

## ***Target 4.8: Chemicals Management***

Reduce risks to Canadians and impacts on the environment and human health posed by releases of harmful substances.

### **Progress Statements**

The government is making progress in reducing environmental and health risks posed by releases of harmful substances:

As of 2013, mercury, lead and cadmium emissions to air have been reduced to about 10% of 1990 levels (emission reductions of 88%, 90% and 90% respectively).

Monitoring and surveillance of harmful substances in the environment shows that concentrations of polybrominated diphenyl ethers (PBDEs) in fish and sediment are decreasing, and that perfluorooctane Sulfonate (PFOS) levels in water and in fish tissue are within guidelines for water quality and fish health, though in some areas they exceed safe levels for wildlife eating those fish.

As of March 31, 2014, 100% of new substances notifications received have been assessed under the Chemicals Management Plan (CMP).

## **What we know**

Reductions in mercury (Hg), lead (Pb) and cadmium (Cd) emissions to air are mainly due to reduced emissions from industrial sources (see Figure 19).

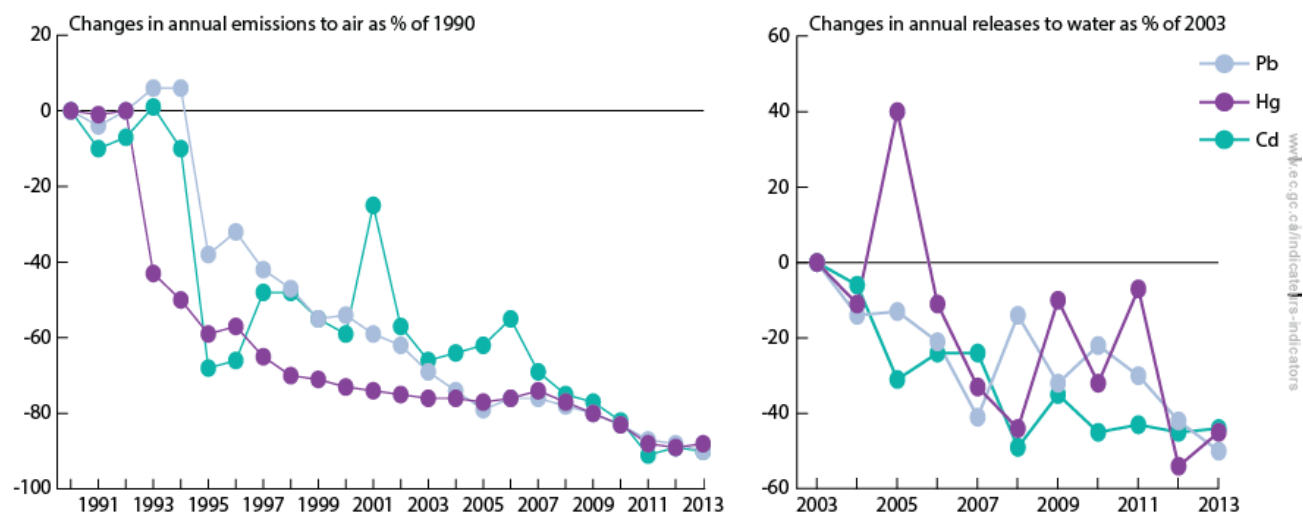
Releases of Hg, Pb and Cd to water decreased by 45%, 50% and 44% respectively between 2003 and 2013. These reductions are mainly due to reduced releases from wastewater treatment plants and from some industrial sources.

ECCC conducted sediment sampling in nine drainage regions between 2009 and 2014. Of the nine, six were found to have levels of pentaBDE that exceeded the Federal Environmental Quality Guidelines (numerical limits established under the CMP to protect aquatic ecosystems), and two had levels of decaBDE that exceeded the guidelines. Concentrations above the guidelines indicate that further evaluation may be required.

Information included in three Reports on Human Biomonitoring of Environmental Chemicals in Canada (2007–2009, 2009–2011, 2012–2013) is helping to establish an understanding of health risk factors, detect emerging trends in risk factors and exposures, advance health surveillance and research, and assess the effectiveness of actions by government and others in Canada.

Learn more: visit the [CESI](#) website.

**Figure 19: Releases of heavy metal to air and water, Canada, 1990 to 2013 (air) and 2003 to 2013 (water)**



## Activity under the 2013–2016 FSDS

Since the launch of the CMP in 2006, the federal government has conducted risk assessments for approximately 2700 existing substances and 3000 new substances. Of the 97 substances (or groups of substances) found to be harmful to the environment and/or human health since 2006, 80% are of health concern, 16% are of ecological concern and 4% are both. The government has developed, or is in the process of developing, risk management actions for approximately 360 of the 2700 individual existing substances noted above.

The government is making progress toward the objectives of the second phase of the CMP. Key deliverables include updating the second phase of the Domestic Substances List Inventory, continuing to conduct approximately 500 pre-market evaluations on new substances per year and manage risk when required, prioritizing the Revised In-Commerce List, and continuing environmental and health monitoring, surveillance and research programs.

The federal government continues to initiate the re-evaluation of every registered pesticide on a 15-year cycle as per the requirement of the *Pest Control Products Act*. Pesticides are re-evaluated to ensure that their uses continue to be acceptable under today's modern standards of health and environmental protection.



In January 2013, the federal government published the final *Prohibition of Certain Toxic Substances Regulations, 2012*. These regulations prohibit the manufacture, use, sale, offer for sale or import of certain toxic substances, such as benzenamine, N-phenylreaction products with styrene and 2,4,4-trimethylpentene, and short-chain chlorinated alkanes.

To reduce the amount of mercury entering the environment, the federal government published the *Products Containing Mercury Regulations* on November 19, 2014. These regulations are the first of their kind in Canada and prohibit the manufacture and importation of most mercury-containing products.

Other federal activities and investments to manage chemicals include the following:

- Health Canada worked with the Assembly of First Nations to implement the First Nations Biomonitoring Initiative survey. The survey was a national survey (conducted in 2011 and released in June 2013), which indicated that exposure levels for approximately 15% of the chemicals studied were higher for the First Nations population than for the general Canadian adult population.
- Promoting compliance to 9325 facilities by increasing regulatees' awareness and understanding of requirements related to key risk management instruments. These mainly include regulations, codes of practice, pollution prevention plans, and guidelines under the *Canadian Environmental Protection Act, 1999*, and the *Fisheries Act*. A pilot compliance-rate campaign that included the identified regulated community across Canada using tetrachloroethylene (PERC) resulted in 100% of PERC dry cleaners in Canada being aware of the *Dry Cleaning Regulations*.
- Continuing the work of the 15-year Federal Contaminated Sites Action Plan (FCSAP) to reduce environmental and human health risks from known federal contaminated sites. Under FCSAP in 2014–2015, 368 remediation projects and 322 assessment projects were undertaken. This included initiating cleanup work for 21 sites of the Distant Early Warning Line (announced in 2014). The associated \$575 million investment is the largest to date made for an environmental remediation project by the federal government. A 25-year monitoring program of the sites is also under way.
- Engaging northerners and scientists in research and monitoring of long-range contaminants persisting in the Canadian Arctic environment and building up in the food chain. The data generated by the Northern Contaminants Program is used to assess ecosystem and human health. The assessments are used to address the issues of safety and security of traditional/ country foods that are central to the health and traditional lifestyles of northerners and northern communities.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: ECCC (co-lead), HC (co-lead), AAFC, Correctional Service Canada (CSC), DFO, DND, INAC, ISED, NRC, PC, PSPC, Royal Canadian Mounted Police (RCMP), TC.*

# BIOLOGICAL RESOURCES

While forests, fish and agricultural products are renewable resources, inadequate ecosystem management can contribute to their depletion and threaten the viability of the sectors that depend on them. Lack of attention to the sustainable management of these resources can also threaten the biodiversity and environmental well-being of Canada's oceans, lakes, wetlands, rivers, grasslands and forests.

## GOAL 5: BIOLOGICAL RESOURCES

Efficient economic and ecological use of resources—Production and consumption of biological resources are sustainable.

### Progress Statements

From 1990 to 2013, annual timber harvest has been in the range of 47% to 85% of Canada's wood supply, and 48% of major fish stocks were considered healthy in 2014, an increase from 46% in 2011.

### Remaining Challenges

More intensive agriculture and aquaculture, in response to growing demand, continues to put pressure on the environment.

Although 74 major fish stocks (48% of the total) were considered healthy in 2014, 16 (10%) were in the "critical" category. Stocks in the critical zone have a level of productivity that may result in serious harm to the resource.

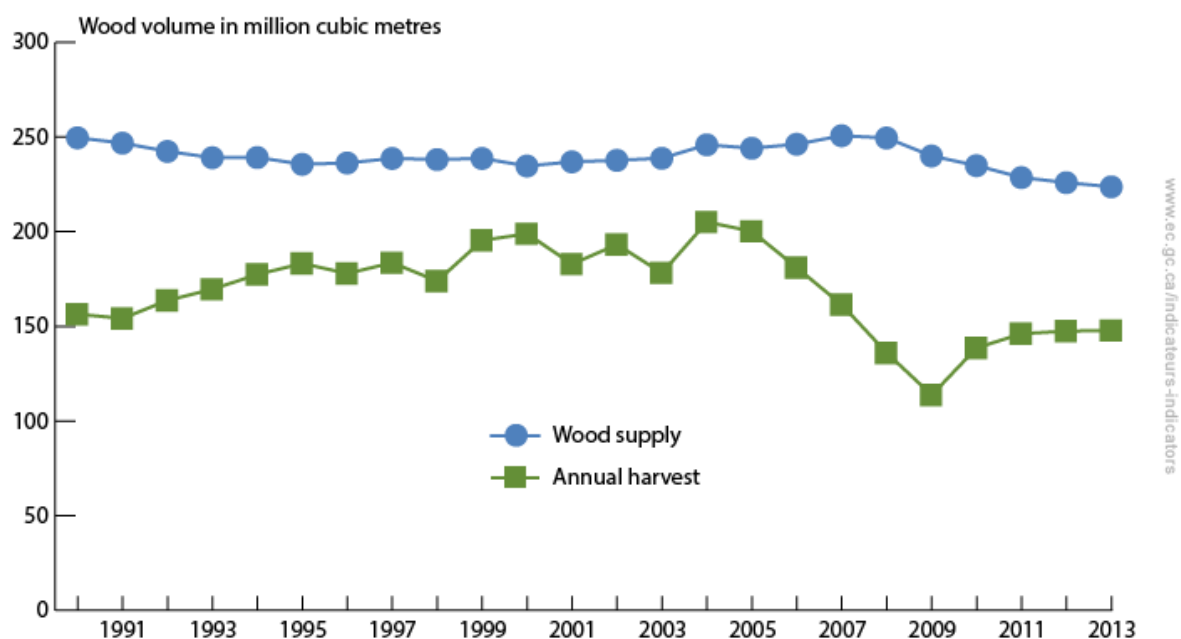
## What we know

Between 1990 and 2013, timber harvests in Canada ranged from 47% to 85% of the estimated Canadian supply of industrial roundwood (wood supply). Canada's wood supply has remained relatively stable since 1990 at an average of 239 million cubic metres (see Figure 20).

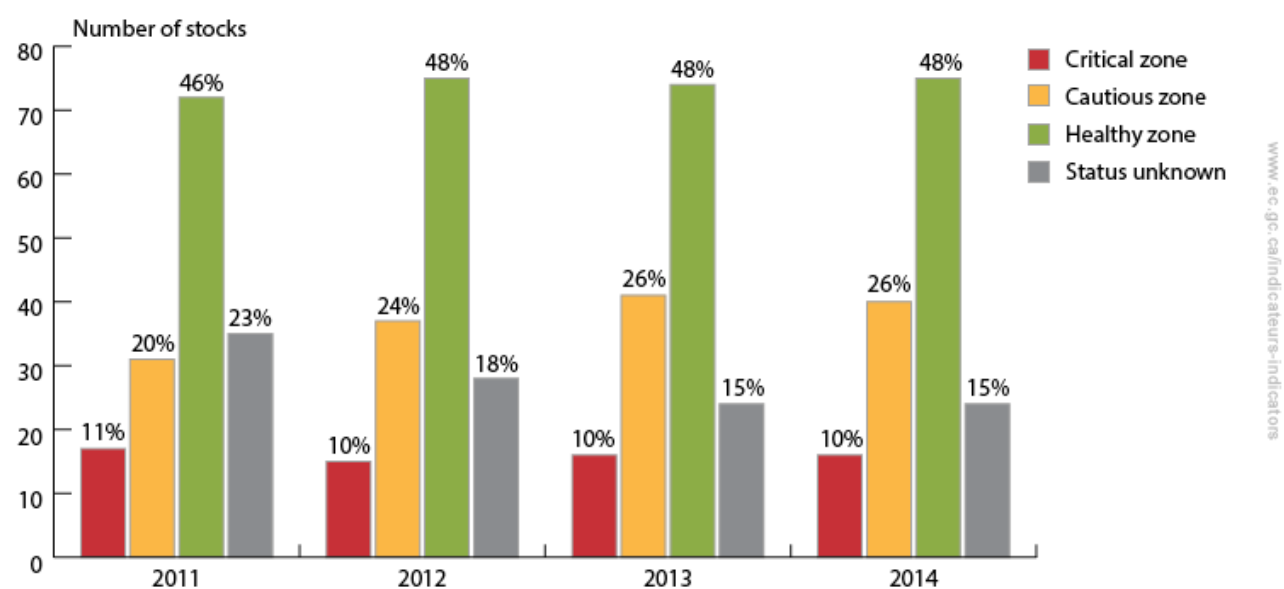
Of the 131 fish stocks with a known status in 2014, 75 stocks were in the healthy category, and 16 stocks were in the critical zone. Knowledge about the state of the stocks has improved; with 11 fewer stocks in the unknown category since 2011 (see Figure 21). It can take many years for biological systems to respond to changes in management.

*Learn more: visit the [CESI](#) website.*

**Figure 20: Wood supply and annual harvest of industrial roundwood, Canada, 1990 to 2013**



**Figure 21: Status of major fish stocks, Canada, 2011 to 2014**



# SUSTAINABLE FISHERIES

The federal government works to secure the future of our wild capture fisheries through sustainable and responsible fisheries management that is science-based, applies the precautionary approach, and addresses ecosystem considerations using risk analysis and assessment.

While conservation remains the top priority, the federal government also supports an economically prosperous fishery, working to improve its competitiveness by investing in conservation measures and activities, and by adjusting the balance of harvesting with that of resource capacity in order to provide more stable employment, particularly in coastal communities.

## **Target 5.1: Sustainable Fisheries**

Improve the management and conservation of major stocks.

### **Progress Statement**

In 2014, 99% of 155 major fish stocks were harvested at sustainable levels, an increase from 90% in 2011.

## **What we know**

In 2014, for 67 major fish stocks (43% of 155 stocks assessed), there was sufficient historical information to set the harvest level using the mathematically based removal reference, while the harvest levels for an additional 86 stocks (55%) were set using other scientific approaches. Two stocks (1%) were harvested above approved levels.

*Learn more: visit the [CESI](#) website.*

## **Activity under the 2013–2016 FSDS**

The federal government delivers an integrated fisheries program that contributes to sustainable wealth for Canadians through the development and implementation of Integrated Fisheries Management Plans (IFMP). These plans provide science-based information on the stock status, current management issues and objectives, enforcement and compliance measures, and strategies for a particular species in a given region. In 2013, IFMPs were developed for the Canadian Atlantic Herring, the Canadian Atlantic Swordfish and Other Tunas, and for Shrimp-Scotian Shelf. These are in addition to the growing list of evergreen or multi-year IFMPs that currently exist for other stocks.

In addition, the federal government supports a range of complementary initiatives. At the national level, DFO continues to elaborate and implement the suite of policies under the Sustainable Fisheries Framework, such as the multi-year initiative to develop a risk-based national catch monitoring policy.

On a regional basis, targeted initiatives are under way. For example, under the second round of the Recreational Fisheries Conservation Partnerships Program, the Fraser Valley Watersheds Coalition will receive up to \$124 000 to restore salmon habitat in channels of the natural floodplain of the Vedder River. The project will benefit Coho, Chum and Pink salmon, as well as Steelhead and Cut-throat trout.

On the East Coast, incomes were increased through the lobster sustainability program in Newfoundland (specifically in Fortune Bay, the southwest coast and the west coast), which promoted voluntary reductions of lobster traps and retirement of lobster licences. The program, which concluded in 2014, permanently removed 105 000 lobster traps from the fishery (a 36% reduction) and 266 lobster licenses (a 24% reduction).

Detailed information about the plans and performance of the responsible federal department respecting its FSDS commitments may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: DFO.*

# SUSTAINABLE AQUACULTURE

Aquaculture is a rapidly growing industry with roots that go back to 1865 when oyster production began in Prince Edward Island. The environmental impact of the industry has grown as well, and efforts are being made to address issues such as the use of wild fish as feed, the escape of cultured fish and their pathogens, the use of pharmaceuticals, and the release of untreated waste.

## **Target 5.2: Sustainable Aquaculture**

By 2020, all aquaculture in Canada is managed under a science-based regime that promotes the sustainable use of aquatic resources (including marine, freshwater and land-based) in ways that conserve biodiversity.

### **Progress Statements**

Integrated Management of Aquaculture Plans have been completed for British Columbia finfish and shellfish. The Plan for freshwater species is currently in development. National aquaculture science programs are in place to inform other regulatory processes under the *Fisheries Act* (for example, the *Aquaculture Activities Regulations*).

## **What we know**

The entire Canadian aquaculture sector (100%) is managed under the science-based environmental framework of the *Fisheries Act* and its associated regulations.

From 2011 to 2013, the compliance rate of aquaculture operations with *Fisheries Act* regulations was over 99% each year. This percentage is based on the total number of charges issued divided by the total number of aquaculture sites checked. Ensuring aquaculture operators meet environmental protection standards helps protect our aquatic environment and conserve marine resources for future generations.

## **Activity under the 2013–2016 FSDS**

In renewing the Sustainable Aquaculture Program (SAP) with \$54 million over five years (2013–2018), the federal government is further improving the regulatory system for the aquaculture sector in Canada under the *Fisheries Act*. This investment is targeted for three key initiatives:

- Continuing support for [regulatory aquaculture science](#) (\$6.5 million a year, of which \$5.4 million will directly support science and research activities);
- Building on existing work on [aquaculture regulatory reform and governance](#) (\$2.9 million a year);
- Improving public reporting on the environmental and economic performance of Canada's aquaculture sector (\$1.4 million a year).

Improvements to the regulatory system include:

- The new *Aquaculture Activities Regulations*, which came into force in July 2015. These regulations clarify conditions under which aquaculture operators may treat their fish for disease and parasites as well as deposit organic matter under sections 35 and 36 of the *Fisheries Act*.
- Amendment of *Fisheries Act* regulations to address barriers to industry growth while safeguarding the environment. Currently, the aquaculture industry is subject to the following wild capture fisheries regulations: *Atlantic Fishery Regulations, 1985*; *Maritime Provinces Fishery Regulations*; and *Pacific Fishery Regulations, 1993*. Amendments to each of these regulations will be brought forward to address aquaculture's unique regulatory requirements. Aspects of the *Fishery (General) Regulations*, *Management of Contaminated Fisheries Regulations* and *Pacific Aquaculture Regulations* will also be amended to address specific operational issues and streamline authorities.
- Ongoing bilateral cooperation with the U.S. under the Regulatory Cooperation Council's Joint Forward Plan to improve cooperation in environmental management of the aquaculture sector and identify potential areas for regulatory alignment.

The federal government also continues to deliver three key national programs that support aquaculture:

- The National Aquatic Animal Health Program, which aims to protect Canadian aquaculture and wild fisheries from diseases in order to maintain competitive access to seafood trade markets;
- The Canadian Shellfish Sanitation Program, a federal food-safety program that protects Canadians from the health risks associated with the consumption of contaminated bivalve molluscan shellfish (for example, mussels, oysters, clams); and
- The Introductions and Transfers program, which evaluates the risk of introducing or transferring live fish and shellfish within a particular province, between provinces, or into Canada from other countries, and issues approval and licenses.

Detailed information about the plans and performance of the responsible federal department respecting its FSDS commitments for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: DFO.*

# SUSTAINABLE FOREST MANAGEMENT

Canada's forest sector, which includes forestry and logging, pulp and paper, and wood product manufacturing, accounted for about 1% of Canada's total gross domestic product in 2013.

The federal government is working to maintain a vibrant forest economy while protecting the health of forested lands and maximizing their many environmental and social benefits.

## ***Target 5.3: Sustainable Forest Management***

Contribute to the proposed national target so that by 2020, continued progress is made on the sustainable management of Canada's forests.

### **Progress Statements**

Through its participation on advisory boards and committees, NRCan provides scientific expertise to stakeholders on how to address challenges related to maintaining the sustainability of forest ecosystems. In 2013–2014, 77 NRCan representatives sat on disturbances advisory boards and committees, up from 73 in the previous reporting period.

## **What we know**

The Canadian Forest Service participates on advisory boards and committees involving governments, industry and non-governmental organizations, providing scientific knowledge on forest ecosystems. In 2013–2014, 77 NRCan representatives sat on disturbances advisory boards and committees, compared with 73 in the previous reporting period. As this indicator fluctuates annually, through its representation on 123 forest ecosystem advisory boards and committees, NRCan was within 5% of its target of participating in 128 such organizations in 2013–2014.

## **Activity under the 2013–2016 FSDS**

Through participation in over 120 forest-ecosystem advisory boards and committees, the federal government provides scientific expertise to stakeholders on how to address challenges related to maintaining the sustainability of forest ecosystems.

The government also helps address national forest sector issues: for example, through the development of a tracking system to enable reporting on the effects of climate change on Canada's forests, an adaptation toolkit and resources (including maps, databases, web applications and synthesis reports) and an integrated assessment of the impacts of climate change on Canada's forests and forest sector are also under way.

In 2013, the federal government produced a series of 11 papers synthesizing the available scientific research on the impacts of human development, resource use and climate change on Canada's boreal zone. The papers will be publicly available by the end of 2015 on the NRCan website.



The federal government also invested in two key initiatives to support sustainable forest management:

- \$24 million in FPInnovations, Canada's national industry-led forest research organization. As a result of this 2014–2015 investment, FPInnovations will undertake research to develop new products and increase the value of products created from Canadian wood fibre, supporting jobs and economic prosperity.
- The first-ever Technical Guide for the Design and Construction of Tall Wood Buildings in Canada by FPInnovations was launched in 2014. Increasing the number of tall wood buildings is a priority for the economic growth opportunity identified by Canada's forest industry and expands the range of choice in high-rise construction materials.

Detailed information about the plans and performance of the responsible federal department respecting the FSDS commitment for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: NRCan.*

# SUSTAINABLE AGRICULTURE

In recent decades, agriculture has undergone significant changes in response to evolving market demands and new production technologies.

## **Target 5.4: Sustainable Agriculture**

By 2020, agricultural working landscapes provide a stable or improved level of biodiversity and habitat capacity.

### **Progress Statements**

As of 2013–2014, more than 85% of ranges in the Community Pastures Program were rated good or excellent in terms of their capacity to support biodiversity and provide habitat for wildlife.

Ninety-five percent of farms have taken action on their Environmental Farm Plan to improve agri-environmental risk assessment and risk mitigation.

## **What we know**

The number of farms in Canada has decreased, while the average farm size has increased. More specifically, both crop area as a proportion of farmland and the number of head of livestock have increased over this time. Coupled with these changes is an increased awareness among producers and the public of the pressures that agricultural production places on the environment. The federal government continues to work toward indicators of wildlife habitat capacity on farmland and environmental farm planning on agricultural land.

*Learn more: visit the [CESI](#) website.*

## **Activity under the 2013–2016 FSDS**

The federal government continues to play a key role in agricultural science and research. For example, it maintains key critical sources of information and knowledge within the National Biological Collections. These collections include the Canadian National Collection of Insects—Arachnids and Nematodes; National Mycological Herbarium; Canadian Collection of Fungal Cultures; AAFC National Collection of Vascular Plants; Plant Gene Resources of Canada; Canadian Animal Genetic Resources; and Canadian Plant Virus Collection. The material and information contained in these collections enable public and private research that benefits the economy and trade, food and agriculture, public health and safety, monitoring of invasive alien species, and national security. These collections are also the foundation for essential research and development activities that help the agricultural sector adapt to changes resulting from natural challenges, such as changes in climate, pests and diseases.

Through cost-shared programs under the federal-provincial-territorial Growing Forward 2 agricultural policy framework, provinces and territories have the flexibility to design programs that address their environmental priorities. Programming under this five-year framework helps farmers assess environmental risks, plan mitigation activities and increase adoption of sustainable practices at farm and landscape levels.

Extension practices and incentive programs can encourage the voluntary participation of landowners in implementing land management practices that favour wildlife, such as conserving riparian areas, adopting conservation tillage, managing woodlands, implementing rotation grazing, converting marginal cropland to permanent cover, and conserving natural remaining habitats. For example, Saskatchewan's Farm Stewardship Program, with an annual budget of \$4.6 million (2013–2018), provides assistance to eligible producers to help implement sustainable farming practices.

Detailed information about the plans and performance of the responsible federal department respecting the FSDS commitments for this target may be found in its [Departmental Sustainable Development Strategy](#). *Responsible department: AAFC.*



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## SHRINKING THE ENVIRONMENTAL FOOTPRINT— BEGINNING WITH GOVERNMENT

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# Shrinking the Environmental Footprint—Beginning with Government

The Government of Canada has a broad mandate to provide services to Canadians at home and abroad. Its extensive operational presence consists of more than 30 000 buildings owned or leased, in excess of 16 000 on-road vehicles, and over 250 000 employees.

## **GOAL 6: GREENHOUSE GAS EMISSIONS AND ENERGY**

Reduce the carbon footprint and energy consumption of federal operations.

### **Progress Statements**

Overall GHG emissions from federal operations have been reduced since 2005.

Responsible departments and agencies continue to work toward achieving their own GHG emissions reduction targets in support of the overall federal target of 17% by 2020–2021.

### **Remaining Challenges**

There are various opportunities for reducing energy use in existing buildings. However, unlike vehicles and other equipment where newer technology and frequent turnover can have a significant contribution in reducing energy consumption, projects to reduce energy consumption in federal real property typically have longer time frames, involve more stakeholders and require greater resources.

## **What we know**

Federal operations consume a considerable amount of energy—to heat and cool facilities, to fuel vehicles and equipment, and to power the daily activities of the federal workforce. This energy consumption is tied to the release of direct and indirect GHG emissions and to overall GHG emissions from sources not under direct control by the government such as leased facilities, business travel and employee commuting.

Reducing GHG emissions generated by federal facilities and fleets remains the core focus of this goal. Responsible departments and agencies are working to reduce emissions associated with the energy used in federal buildings and fleets as well as to support activities that reduce indirect emissions. A target has been established to address significant sources of emissions where the government has the capacity and operational control to effect change.

# GREENHOUSE GAS EMISSIONS REDUCTION

Departments and agencies subject to the GHG emissions reduction target have quantified their base-year emissions levels for 2005–2006 using the Federal Greenhouse Gas Tracking Protocol, a common standard for federal organizations based on internationally accepted principles. The aggregate of these emissions for the base year is 1391 kilotonnes (kt) in units CO<sub>2</sub> eq. Energy-related emissions represent approximately 97% of the GHG emissions produced by Crown-owned buildings and fleets of 15 federal departments and agencies.

The accounting method for emissions associated with electricity use excludes ongoing improvements to the emissions intensity of electricity from provincial power grids (“greening of the grid”). This approach differentiates emission reductions resulting from departmental efforts to reduce energy consumption from those accruing from the “greening of the grid.”

## ***Target 6.1: Greenhouse Gas Emissions Reduction***

The Government of Canada will reduce GHG emissions from its buildings and fleet by 17% below 2005 levels by 2020.

### **Progress Statement**

In fiscal year 2013–2014, responsible departments and agencies have reduced GHG emissions from their buildings and fleets by 2.5%, relative to fiscal year 2005–2006.

## **What we know**

As of March 2014, the 15 responsible departments and agencies reduced annual GHG emissions from their buildings and fleet by 2.5%, relative to fiscal year 2005–2006. This represents a 34 kt CO<sub>2</sub> eq decrease from base-year emission levels and is comparatively smaller than the 6% and 5% reductions observed in the previous two years.

Custodian departments responsible for managing the energy use of their buildings indicated that weather variations from year to year had a considerable impact on the heating and cooling demands of their buildings. Across Canada, the winter of 2013–2014 was longer and colder than previous years (especially 2005–2006, against which the target has been set), which largely explains the higher-than-anticipated emissions reported by many departments.

## **Activity under the 2013–2016 FSDS**

Beginning in fiscal year 2011–2012, all 15 departments established separate targets and plans to reduce GHG emissions below base-year levels to support achievement of the government-wide target in 2020–2021. These targets and plans are tailored to departmental circumstances and identify emissions reduction activities within the operational control and ability of departments.

## Federal facilities

Emissions from facilities account for 91% of emissions covered by the federal GHG target. Departments responsible for reducing GHG emissions from their Crown-owned facilities have identified a wide range of measures to reduce energy consumption and improve energy efficiency, such as energy audits, energy efficiency upgrades and facility retrofits. Actions such as upgrading lighting systems with efficient light sources, fixtures and controls have provided additional benefits beyond reducing energy use, such as improvements to the visual environment of the workspace.

Several departments have included recommissioning and continuous building optimizations in their plans to help building control systems meet both operational and efficiency needs. Many departments have incorporated energy efficiency into their governance practices, established energy management capacity, and incorporated employee engagement strategies and energy awareness training.

Others generate renewable power on-site, or have purchased renewable power generated from low-impact wind, solar or biomass. These initiatives help to reduce the amount of traditional electricity consumed, further reducing emissions from purchased electricity.

## Federal fleet

The federal fleet represents roughly one tenth of targeted emissions. Over half are associated with on-road vehicles, while the balance is associated with marine vessels, aircraft and other mobile equipment owned by federal departments.

Departments have reviewed their vehicle purchases, composition and deployment (fleet rationalization) to contribute to a more efficient government fleet. Since 2005–2006, departments and agencies subject to this target have reduced the number of on-road vehicles by about 1200. Other measures include implementing regular maintenance schedules, anti-idling campaigns and eco-driver training.

For instance, the Canada Revenue Agency (CRA) reduced GHG emissions by 26% from fiscal year 2005–2006, clearly exceeding its 17% GHG target. CRA reduced the size of its fleet, from 90 to 67 vehicles over the same period, using a centralized fleet management model and focusing on the “greening” and right-sizing of its fleet with the continued use of hybrid vehicle technologies, as well as the reduction in engine size and number of cylinders where operationally feasible. CRA also implemented initiatives such as reallocating under-utilized vehicles across the agency, stringent tracking of vehicle kilometres driven to ensure optimal usage, and training and communicating best practices to fleet managers and drivers.

Technological advancements in the automotive industry are also helping the government to green its fleet, as older vehicles are replaced by more fuel-efficient models.

Detailed information about departmental plans and performance on this target may be found in the [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: AAFC, CBSA, Canada Revenue Agency (CRA),<sup>†</sup> DFO, DND, ECCC, Employment and Social Development Canada (ESDC),<sup>†</sup> HC,<sup>†</sup> INAC,<sup>†</sup> Immigration, Refugees and Citizenship Canada (IRCC),<sup>†</sup> ISED,<sup>†</sup> NRCan, PC, PSPC, TC (<sup>†</sup> denotes departments and agencies reporting GHG emissions from fleet only).*

# WASTE AND ASSET MANAGEMENT

A broad range of government operations are covered by this goal, including the management of buildings and the federal fleet, as well as an array of federally procured goods and services.

The goal includes the following Targets:

- 7.1: Improving the environmental performance of federal real property;
- 7.2: Incorporating environmental considerations in procurement and implementing the federal Policy on Green Procurement; and
- 7.3: Improving the sustainability of federal workplace operations.

A fourth operational target, Target 7.4: Greening Services to Clients, was introduced in 2013–2016, which focuses on measures by departments to reduce the environmental impact of the services to their clients.

## GOAL 7: WASTE AND ASSET MANAGEMENT

Reduce waste generated and minimize the environmental impacts of assets throughout their life cycle.

### Progress Statement

The government has made progress on waste and asset management: 37 of 54 real property projects and existing Crown-owned buildings have achieved a high level of environmental performance, 85% of SMART green procurement targets have been achieved (or are on track to be achieved), and 100% of FSDS departments have developed an approach to maintain and improve the sustainability of workplace policies and practices.

### Remaining Challenge

While most departments and agencies have made considerable progress under this goal, there remain some target areas in which improvement is still expected from a few departments. This is especially true in the area of printer rationalization and green procurement.

## What we know

All 26 FSDS departments have established three Specific, Measurable, Achievable, Relevant and Time-bound (SMART) green procurement targets; 85% of these targets have been achieved or are on track to be achieved. One hundred percent (100%) of FSDS departments have developed an approach to maintain and improve the sustainability of workplace policies and practices.

Since 2012–2013, 37 out of 54 real property projects and existing Crown-owned buildings have achieved a high level of environmental performance.



# REAL PROPERTY ENVIRONMENTAL PERFORMANCE

This target focuses on approaches to integrating environmental decision-making in the management of real-property energy, material, waste and water. Federal real property includes office buildings, labs, research facilities, combined spaces, storage buildings, warehouses, coast guard and military bases, recreational and heritage buildings, as well as many other types of buildings owned or leased by the federal government. Improving the sustainability of real property represents a large and promising opportunity to reduce emissions, improve energy and resource efficiency, and save on operational and maintenance costs.

Recognizing that departments have different operational mandates and resource requirements, the FSDS requires departments to develop a Real Property Sustainability Framework (RPSF) that outlines their approach to implementing the Real Property (7.1) and Water Management (8.1) targets. The RPSF is a continuation of the green building strategic frameworks that departments got under way in FSDS 2010–2013 to manage the environmental performance of real property projects and existing buildings.

## ***Target 7.1: Real Property Environmental Performance***

As of April 1, 2014, and pursuant to departmental Real Property Sustainability Frameworks, an industry-recognized level of high environmental performance will be achieved in Government of Canada real property projects and operations.

### **Progress Statements**

Federal real property custodians continue to integrate environmental performance considerations into real property decision-making, supporting the government's pursuit of its GHG emissions reduction, waste and asset management, and water management targets, as well as utility cost savings.

To date, 37 of 54 real property projects and existing Crown-owned buildings and 26 of 36 new construction and major renovation projects have achieved an industry-recognized level of high environmental performance since 2012–2013.

## **What we know**

Of the existing Crown-owned buildings (over 1000 m<sup>2</sup>) and new lease or lease renewal projects (over 1000 m<sup>2</sup>) where the Crown is the major lessee, 707 out of 2560 have been assessed since 2011–2012 for their environmental performance using an industry-recognized assessment tool.

Of the new construction, build-to-lease projects and major renovations projects, 26 out of 36 have achieved an industry-recognized level of high environmental performance since 2012–2013. Eleven out of 18 fit-up and refit projects have achieved an industry-recognized level of high environmental performance since 2012–2013.

## Activity under the 2013–2016 FSDS

Custodial departments strive to achieve a high level of environmental performance for their real property projects and existing buildings. To rate a building's performance, federal departments use industry-recognized assessment and validation tools, such as the Canada Green Building Council Leadership in Energy and Environmental Design, Building Owners and Managers Association Building Environmental Standards and Green Globes.

Fourteen FSDS departments and agencies for which this target applies have updated their RPSF, which defines their organization's approach to managing the environmental performance of new construction, build-to-lease projects, major renovations, operations and maintenance of existing Crown-owned buildings, and new lease or lease renewal projects. Additionally, six departments have incorporated environmental consideration clauses into the performance evaluations of real-property managers and functional heads responsible for new construction, leases or existing building operations.

An example of departmental efforts to improve real-property performance is NRCan's Canmet MATERIALS Laboratory, located in Hamilton, Ontario. The lab, a Private Public Partnership between NRCan, McMaster Innovation Park and McMaster University, was certified LEED Platinum in October 2013. This building uses both passive and active sustainable technologies such as geothermal heating and cooling, radiating in-floor heating, photovoltaic cells, solar walls, solar shades, and light-reflecting materials. With all of its energy saving and sustainable design features, the lab is designed to reduce energy consumption by up to 70%.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: AAFC, CBSA, DFO, DND, ECCC, HC, INAC, ISED, NRCan, PC, Canadian Heritage (PCH), PHAC, PSPC, TC, Veterans Affairs Canada (VAC).*

# GREEN PROCUREMENT

The federal government is a significant purchaser of goods and services, spending billions of dollars annually to provide services to Canadians. To protect the environment and support sustainable development, the federal government established the Policy on Green Procurement in 2006 and has since required that all departments identified in Section 2 of the *Financial Administration Act* (including all 26 departments bound by the *Federal Sustainable Development Act*) integrate environmental performance considerations into their procurement decision-making processes.

Departments and agencies have identified specific targets to reduce the environmental impacts of goods and services that they use or procure, such as information technology and audio-visual equipment, vehicles, office furniture, printers and paper, and business travel.

## **Target 7.2: Green procurement**

As of April 1, 2014, the Government of Canada will continue to take action to embed environmental considerations into public procurement, in accordance with the federal Policy on Green Procurement.

### **Progress Statements**

The federal government continues to make progress on implementing the Policy on Green Procurement; for example, more than 14 600 specialists in procurement and/or materiel management have completed training over the last 3 years.

In addition, in 2013–2014, 96% of the 26 FSDS departments included support or contribution towards green procurement as an element in the performance evaluations of those managing procurement and materiel management.

## **What we know**

Over 14 600 specialists in procurement and/or materiel management across government have completed the Canada School of Public Service Green Procurement course in the last 3 years. And as of 2013–2014, 26 FSDS departments (96%) have included support or contribution towards green procurement in the performance evaluations of managers and functional heads of procurement and materiel management.

## **Activity under the 2013–2016 FSDS**

The government continues to incorporate environmental considerations into its procurement instruments for use by all government departments and agencies. Over 30 goods and services categories have green procurement plans in place. Green procurement plans outline the key environmental impacts for a given good or service and the procurement actions that can be taken to mitigate these impacts. The environmental categories assessed include GHGs and air contaminants, energy and water efficiency, ozone-depleting substances, waste, reuse and recycling, hazardous waste, and toxic and hazardous chemicals and substances. The resulting green scorecards identify environmental considerations taken into account in the procurement decision-making process for each good or service, as well as future plans for incorporating environmental criteria in federal government purchases.

Under Target 7.2, departments and agencies have identified specific targets to reduce the environmental impacts of goods and services that they use or procure, such as information technology and audio-visual equipment, vehicles, office furniture, printers and paper, and business travel. Six departments have introduced a business travel target to reduce emissions from business-related air travel by a minimum of 25% by 2020–2021. The baseline fiscal year for these departmental targets varies from 2005–2006 to 2008–2009. These six departments have reduced their emissions from business travel by an average of 52.5% (29 459 t CO<sub>2</sub> eq) since 2008–2009.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: AAFC, ACOA, CBSA, CED, CRA, GAC, DFO, Department of Justice Canada (JUS), DND, ECCC, ESDC, FIN, HC, INAC, ISED, IRCC, NRCan, PC, PCH, PHAC, PS, PSPC, Treasury Board of Canada Secretariat (TBS), TC, VAC, WD.*

# SUSTAINABLE WORKPLACE OPERATIONS

The sustainable workplace operations target in the 2013–2016 FSDS consolidates several similar targets from the 2010–2013 FSDS: printer rationalization, paper consumption reduction, greening meetings, and e-waste. It also includes new implementation strategies associated with information technology, fleet management, office waste, employee engagement and other corporate policies and practices, which represent activities already under way in departments. The target requires departments to develop an approach on implementing this target in line with their operational environment and available resources.

## ***Target 7.3: Sustainable Workplace Operations***

As of April 1, 2015, the Government of Canada will update and adopt policies and practices to improve the sustainability of its workplace operations.

### **Progress Statements**

The government has reduced the environmental impact of the federal workplace in a number of key areas. From 2011 to 2014, the federal government donated over 369 000 computers, laptops, monitors and printers to Computers for Schools (CFS), and increased the average ratio of employees to printing units from 4:1 to 8.5:1 (shedding an estimated 27 500 units).

In addition, over 2 years, annual paper consumption dropped by about 540 million sheets, and the use of 20 000 toner cartridges was eliminated, saving the government approximately \$4.5 million.

## **What we know**

All 26 FSDS departments and agencies have an approach in place to maintain or improve the sustainability of workplace policies and practices. Many departments have implemented their own sustainability strategy, in addition to the FSDS.

## **Activity under the 2013–2016 FSDS**

Departments and agencies have undertaken actions to continuously improve workplace operations, such as engaging employees in reducing energy and material consumption, reducing waste, and reusing and recycling material and assets to divert waste from landfills.

For instance, the Defence Environmental Strategy (DES), along with the FSDS, provides National Defence with the direction it needs to continue to evolve as an environmentally responsible and sustainable organization. The DES effectively integrates and employs best practices through life-cycle management into workplace activities and operations at an organizational level in support of a sustainable modern military. The intent is to inform its personnel on the environmental program and its relevance to Defence activities; to motivate personnel to integrate environmental considerations into their activities by highlighting what others are doing; and to show results.

All FSDS departments and agencies follow the Government of Canada's E-Waste Strategy, which was launched in February 2010. It aims to prevent improper e-waste disposal and its associated negative impacts on human health, the environment and information security by emphasizing reuse and, where reuse is not possible, environmentally sound recycling. All 26 FSDS departments and agencies reuse or recycle their surplus electronic and electrical equipment in an environmentally sound and secure manner where feasible.

From 2011–2014, the federal government donated over 369 000 computers, laptops, monitors and printers to CFS, a computer reuse program led by Innovation, Science and Economic Development Canada. The majority of the equipment was refurbished and reused in Canadian schools, Indigenous communities and not-for-profit learning organizations. Equipment that could not be reused or refurbished was sent for environmentally sound recycling using provincial electronic waste recycling programs.

Internal paper consumption per employee also showed a positive trend. As of the end of fiscal year 2013–2014, 22 of the 26 FSDS departments (85%) had reduced paper consumption per office employee by at least 20% compared with their departmental baseline years. By the numbers, this means that over 2 fiscal years, annual paper consumption by all FSDS departments dropped by an estimated 540 million sheets (2700 tonnes).

In response to the green meetings target established under the 2010–2013 FSDS, 25 of the 26 FSDS departments and agencies have adopted a green meetings guide to reduce the environmental impacts associated with organizational meetings or events. Leading departments have taken steps to embed the culture of green meetings within their organizations by disseminating the guide via targeted Web communications activities, such as national sustainable development events.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: AAFC, INAC, ACOA, CBSA, CED, IRCC, CRA, GAC, DFO, DND, ECCC, ESDC, FIN, HC, ISED, JUS, NRCan, PC, PCH, PHAC, PS, PSPC, TC, TBS, VAC, WD.*

# GREENING SERVICES TO CLIENTS

The objective of this target is to allow departments with a significant role in delivering services to internal and external clients to demonstrate their actions to minimize the environmental impact of these services.

## ***Target 7.4: Greening Services to Clients***

By March 31, 2015, departments will establish SMART targets to reduce the environmental impact of their services to clients.

### **Progress Statement**

As this is a new and optional target, data is not yet available to provide a measure of progress.

## **What we know**

Three FSDS departments have established targets to reduce the environmental impact of their services to clients.

## **Activity under the 2013–2016 FSDS**

Several departments have examined how they serve their clients and implemented strategies to reduce the environmental impact of their services.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitment for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: Optional for all departments and agencies subject to the FSDS.*

# WATER MANAGEMENT

The 2013–2016 FSDS was the first to include a goal and target on water management in federal government operations. This new goal and target was established to demonstrate how the government's own operations are contributing to the wider water goal outlined under Theme II (Maintaining Water Quality and Availability).

## **GOAL 8: WATER MANAGEMENT**

Improve water management in federal operations.

### **Progress Statement**

The government has added a new commitment to improve the management of water in its real property operations.

### **Remaining Challenges**

It is expected that federal efforts to improve management of water across the federal real property portfolio will proceed in small, manageable steps through further integration of environmental considerations in decision-making and greater understanding and measurement of water consumption.

## **What we know**

This new goal is intended to increase the awareness of water usage across departments and to raise the capacity of custodial departments to monitor and manage their water resources more effectively in the future to realize water and cost savings. Custodial departments are required to outline their approaches to implement water conservation and management measures and are encouraged to take steps to improve the availability of data on the consumption of potable water.



# WATER MANAGEMENT

The target for water management emphasizes the importance of implementing actions to improve a department's ability to measure water use. This information assists departmental decision-making and future government-wide actions related to water management in federal real-property operations.

## **Target 8.1: Water Management**

As of April 1, 2014, the Government of Canada will take further action to improve water management within its real property portfolio.

### **Progress Statement**

All 15 custodial FSDS departments and agencies are making strides to improve water management in their real property operations and identify priority areas for action.

## **What we know**

Of applicable FSDS departments and agencies, 13 (87%) have established an approach to improving water management in their real property operations. For 2015–2016, 7 departments have indicated that 11 196 893 m<sup>2</sup> (16%) of floor space of planned new Crown-owned construction and major renovation projects will include water metering.

## **Activity under the 2013–2016 FSDS**

Government-wide water consumption measurement and tracking mechanisms and water conservation targets continue to be medium- and longer-term objectives. However, the range in the scope of objectives may vary due to the diverse nature of federal-real property facilities and operations, shared responsibilities for real property management across government, and variability of information management systems.

Increasing the metering of water usage for both existing and new facilities is critical for better water management within government operations. Increased metering and monitoring through potable water audits allow organizations to identify leaks, anticipate repairs and assess water efficiency measures in order to inform operational improvements and targeted investments.

The conservation of potable water can be improved by using lower-quality water to flush toilets, for washing, and for uses in building operations (such as heating, ventilation and air conditioning) and landscape irrigation. Several custodial departments have implemented water conservation through the introduction of technology, or new processes or designs, and by encouraging building occupants to be water conscious.

Management of stormwater run-off is another important element to improve the overall management of water. Managing stormwater run-off can minimize impacts to the natural hydrology from facilities and associated grounds.

Detailed information about the plans and performance of federal departments and agencies respecting their FSDS commitments for this target may be found in their [Departmental Sustainable Development Strategies](#). *Responsible departments and agencies: AAFC, CBSA, DFO, DND, ECCC, HC, INAC, ISED, NRCan, PC, PCH, PHAC, PSPC, TC, VAC.*



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## BEHIND THE SCENES

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# ABOUT THE CONTENTS

The Executive Summary provides high-level snapshots as of 2015 of the progress of the implementation of the 2013–2016 Strategy. The goals and targets presented in the report were included in the 2013–2016 Federal Sustainable Development Strategy that was tabled in Parliament in November 2013; they will remain in effect until the next FSDS is tabled in Parliament.

Subsequent sections provide contextual information about the challenges being addressed—as well as those remaining—to support a fair and balanced presentation of the extent and nature of progress made. Links throughout the report ensure that readers can access further detail and updates as these become available. Annex D of this report also sets out notes and data considerations that supplement the information provided by the indicators.

For specific information about the programming contributions and financial commitments made by the 33 participating federal departments and agencies toward their commitments in the 2013–2016 FSDS, readers are also encouraged to explore the departmental websites of FSDS departments and agencies. Departments report annually on their progress under the FSDS through Departmental Sustainable Development Strategies. These reports provide the most detailed and current information on what departments have taken on and what they have done to support the implementation of the 2013–2016 FSDS.

## What We Know: Indicator Updates

This progress report presents the federal government's progress in implementing the FSDS as shown by the indicators of the 2013–2016 FSDS. To put the indicator results into context, it should be noted that while federal actions contribute to the achieving environmental outcomes, many other factors also play a role, including time. In some cases, results of initiatives may quickly become evident, while in other cases considerable time may be required for the environment to recover from a particular state or respond to specific efforts.

The indicators used to track progress were identified over the course of the development of the 2013–2016 FSDS. Many are part of the suite of indicators provided by the [Canadian Environmental Sustainability Indicators](#) (CESI) program; others are drawn from departmental performance reporting. In a few cases, interim indicators are presented to provide some meaningful information about targets while the development of more comprehensive indicators is still under way (for example, the indicators concerning climate change adaptation).

While specific notes on data considerations are provided in Annex D, some broad principles and issues about the data sources and methods used by CESI are provided below for additional context about the results reported.

CESI indicators are developed using scientifically recognized and valid methodology. The data used to calculate indicators are credible, robust and of high quality; they originate from a variety of sources.

In most cases, the data collected are subject to rigorous data quality assurance and quality control processes and are also reviewed and validated by experts. Nevertheless, detailed and robust data are not always readily available to develop “state-of-the-art” indicators—sometimes proxy or representative data sources must be used even though they do not permit an assessment of the full area under examination.

There is often a time lag between the last year of data available and the year of publication of the indicators. The time lag is due to several important but time-consuming operations such as verification of data, databases compilation, data analysis and reporting. The indicators are then developed, validated, and material is drafted. The indicators then undergo a thorough technical review before final approval and publication. Indicator values may also be influenced over time by one or more factors, including economic conditions, natural variation, weather and global developments.

Each CESI indicator is accompanied by a data sources and methods (DSM) document that includes the rationale for the indicator, a description of methods used to develop it, the spatial and temporal coverage of the data, and caveats and limitations. The DSM provides users of the data and indicators with an understanding of the strengths and weaknesses of the information presented.

The performance measures related to the greening of government operations, established over the course of the development of the 2010–2013 FSDS and the 2013–2016 FSDS, are drawn from the information contained in the Theme IV section of the Departmental Sustainable Development Strategy (DSDS) Supplementary Information Table in annual departmental reports. Where there are common indicators specified, the data are aggregated to indicate government-wide progress. In other cases, such as for green procurement, unique departmental mandates and activities lead to varying departmental performance measures, which do not allow for compilation of government-wide results.

Assessing progress on greening government operations relies on either measuring the outcome or a proxy for an outcome. For example, the federal government measures the overall federal achievement in reducing GHG emissions from data supplied by departments using a standardized methodology, while other indicators require departments to demonstrate the implementation or completion of specific activities that will contribute to reducing the government’s environmental footprint (for example, that departments have a plan in place to deal with electronic and electrical surplus equipment).

For greening government operations, 26 departments and agencies are responsible for gathering the data and performance information and reporting on the applicable performance measures outlined in the DSDS Supplementary Information Table. These data allow the government to aggregate the information and prepare a complete, accurate and balanced account of overall progress by the government in reducing its environmental footprint.

## Who Was Involved

Under the *Federal Sustainable Development Act*, the Sustainable Development Office (SDO) is responsible for providing the Minister of Environment and Climate Change with a Progress Report every three years for tabling in both Chambers of Parliament. The SDO led the development of this report, working with the information provided by the 33 FSDS departments and agencies; however, specific departmental contributions to progress under the 2013–2016 FSDS are fully presented on the websites of departments listed in Annex B.

For more information about how the FSDS departments and agencies support FSDS implementation and monitoring, please see the [FSDS Management Framework](#).

## A Word about Timing

While much of the report was completed over the summer of 2015, more recent data has been included where possible. Readers are encouraged to consult the [CESI](#) website for the most up-to-date information on environmental sustainability indicators included in the CESI suite as it becomes available.

# Annex A Clean Air Agenda

As a legislated and permanent framework for reporting on federal initiatives supporting sustainable development, the FSDS provides the vehicle for public reporting on the overall progress of the Clean Air Agenda (CAA) at a government-wide level. Individual CAA departments also report annually through their DSDS on the specific CAA activities for which they are responsible. The CAA programming is integrated into the implementation strategies of the 2013–2016 FSDS.

The CAA (which expires on March 31, 2016) represents collaborative efforts within the federal government and with other jurisdictions to realize health, economic and environmental benefits for Canadians. These initiatives were organized as follows:

- **Theme: Clean Air Regulatory Agenda (CARA)** seeks to reduce GHG and air pollutant emissions by supporting regulatory actions in the industrial, transport, and consumer and commercial products sectors. CARA also supports other important air quality efforts, including the development of codes and standards for indoor and outdoor air quality.
- **Theme: Clean Energy** seeks to improve environmental performance by advancing clean electricity and cleaner energy production, increasing the use of alternative fuels, and improving end-use energy efficiencies.
- **Theme: Clean Transportation** aims to reduce GHG and air pollutant emissions from the transportation sector through the development of transportation sector regulations and next-generation clean transportation initiatives.
- **Theme: Adaptation** helps Canadians adapt to the challenges of climate change. These initiatives seek to reduce risk to communities, industry, infrastructure, and the health and safety of Canadians while realizing economic benefits and maintaining competitiveness from innovations responding to climate change.
- **Theme: International Actions** support the Government of Canada's broad efforts to reduce GHG and air pollutant emissions and address climate change by participating in international partnerships and negotiations, and by helping to ensure that international obligations are met.

The federal partners are: Environment and Climate Change Canada, Fisheries and Oceans Canada, Global Affairs Canada, Health Canada, Indigenous and Northern Affairs Canada, National Research Council Canada, Natural Resources Canada, Parks Canada, Public Health Agency of Canada, Standards Council of Canada, and Transport Canada. For more information regarding the CAA, see the [Departmental Sustainable Developments Strategies](#) for these federal partners.

## CLEAN AIR AGENDA 2012–2014—Spending by Department and Theme

	2012–2013		2013–2014	
<b>CLEAN AIR AGENDA PROGRAMMING by Department and Theme</b>	<b>Planned Spending (\$ million)</b>	<b>Actual Spending (\$ million)</b>	<b>Planned Spending (\$ million)</b>	<b>Actual Spending (\$ million)</b>
<b>Summary by CAA Theme</b>				
<i>ADAPTATION</i>	29.82	27.35	35.04	32.31
<i>CLEAN AIR REGULATORY AGENDA</i>	122.86	99.13	114.54	96.06
<i>CLEAN ENERGY</i>	109.51	85.75	105.99	101.42
<i>CLEAN TRANSPORTATION</i>	27.32	20.43	37.44	25.78
<i>INTERNATIONAL ACTIONS</i>	11.84	9.62	10.66	9.66
<i>Theme Total</i>	301.35	242.28	303.67	265.23
<b>Summary by CAA Department</b>				
<i>Indigenous and Northern Affairs Canada</i>	8.48	8.24	8.72	8.57
<i>Environment and Climate Change Canada</i>	107.32	84.11	98.86	83.76
<i>Fisheries and Oceans Canada</i>	3.57	3.40	5.18	4.91
<i>Global Affairs Canada</i>	2.03	0.96	0.70	0.70
<i>Health Canada</i>	31.46	28.03	31.25	25.83
<i>National Research Council Canada</i>	1.80	1.80	1.80	1.80
<i>Natural Resources Canada</i>	114.55	91.07	115.44	109.92
<i>Parks Canada Agency</i>	0.51	0.47	0.52	0.51
<i>Public Health Agency of Canada</i>	3.10	2.60	2.20	1.80
<i>Standards Council of Canada</i>	0.50	0.50	0.50	0.50
<i>Transport Canada</i>	28.03	21.10	38.50	26.93
<i>Department Total</i>	301.35	242.28	303.67	265.23
<b>By Individual Department</b>				
<b>Indigenous and Northern Affairs Canada</b>				
<b>ADAPTATION</b>				
Climate Adaptation and Resilience Program for Aboriginals and Northerners	4.36	4.30	4.60	4.65
Integrating Adaptation into Codes and Standards for Northern Infrastructure	0.19	0.17	0.19	0.17
<b>CLEAN ENERGY</b>				
ecoENERGY for Aboriginal and Northern Communities	3.93	3.77	3.93	3.75
<b>Environment and Climate Change Canada</b>				
<b>ADAPTATION</b>				
Climate Change Prediction and Scenarios Program	5.76	4.87	5.78	4.94
<b>CLEAN AIR REGULATORY AGENDA</b>				
Analysis in Support of Regulations	5.47	3.65	5.82	4.20
Atmospheric Pollutants Policy	3.04	1.87	2.95	2.01
Atmospheric Research, Monitoring and Modelling	18.21	13.27	18.41	13.29
Compliance Promotion and Enforcement	6.72	4.87	6.68	5.32



	2012–2013		2013–2014	
<b>CLEAN AIR AGENDA PROGRAMMING by Department and Theme</b>	<b>Planned Spending (\$ million)</b>	<b>Actual Spending (\$ million)</b>	<b>Planned Spending (\$ million)</b>	<b>Actual Spending (\$ million)</b>
Consumer and Commercial Products Regulations	2.06	1.45	1.20	1.02
Cross–Cutting Analysis	3.13	2.68	3.13	2.19
Cross–Cutting Data Collection and Reporting	3.02	1.55	3.05	2.19
Data Collection and Reporting for Atmospheric Pollutants	8.48	7.54	8.46	7.97
Data Collection and Reporting for Greenhouse Gases	7.63	5.73	7.71	5.37
Electricity Regulations	2.69	1.92	1.38	1.67
Emissions–Intensive Trade–Exposed Regulations	7.13	4.44	3.51	4.51
Greenhouse Gas Policy	4.60	3.91	4.60	4.25
Health and Environmental Impacts of Air Pollutants	2.91	3.19	3.14	2.88
Oil and Gas Regulations	6.24	5.34	3.13	4.69
Oil Sands Science	2.84	2.80	2.84	2.88
Science Integration, Accountability and Benefits of Action	0.87	0.38	0.78	0.36
Transportation Regulations	8.56	8.74	8.49	7.74
<b>CLEAN TRANSPORTATION</b>				
Marine Sector Regulatory Initiative	2.39	1.30	2.08	1.13
<b>INTERNATIONAL ACTIONS</b>				
Engagement and Alignment with U.S. (U.S.-Canada Clean Energy Dialogue)	0.70	0.47	0.85	0.67
International Climate Change Obligations	0.34	0.31	0.34	0.33
International Climate Change Participation/Negotiations	4.53	3.83	4.53	4.15
<b>Fisheries and Oceans Canada</b>				
<b>ADAPTATION</b>				
Aquatic Climate Change Adaptation Services Program	3.57	3.40	5.18	4.91
<b>Global Affairs Canada</b>				
<b>INTERNATIONAL ACTIONS</b>				
International Climate Change Obligations	0.61	0.61	0.69	0.69
International Climate Change Participation/Negotiations	1.42	0.35	0.01	0.01
<b>Health Canada</b>				
<b>ADAPTATION</b>				
Climate Change and Health Adaptation for Northern First Nations and Inuit Communities	2.32	2.06	2.11	2.13
Heat Alert and Response Systems (Heat Resiliency Program)	1.68	1.97	1.68	1.98
<b>CLEAN AIR REGULATORY AGENDA</b>				
Atmospheric Pollutants Policy	5.18	4.31	5.18	4.31
Atmospheric Research, Monitoring and Modelling	5.92	4.61	5.92	3.75
Data Collection and Reporting for Atmospheric Pollutants	2.68	2.45	2.68	2.97
Health and Environmental Impacts of Air Pollutants	2.62	2.05	2.62	2.19
Indoor Air Quality Management—Biological and Chemical Contaminants	1.86	2.09	1.86	2.01



	2012–2013		2013–2014	
<b>CLEAN AIR AGENDA PROGRAMMING by Department and Theme</b>	<b>Planned Spending (\$ million)</b>	<b>Actual Spending (\$ million)</b>	<b>Planned Spending (\$ million)</b>	<b>Actual Spending (\$ million)</b>
Indoor Air Quality Management—Radioactive Contaminants	6.10	6.69	6.10	5.01
Science Integration, Accountability and Benefits of Action	3.10	1.80	3.10	1.48
<b>National Research Council Canada</b>				
<b>CLEAN AIR REGULATORY AGENDA</b>				
Indoor Air Quality Strategies and Solutions	1.80	1.80	1.80	1.80
<b>Natural Resources Canada</b>				
<b>ADAPTATION</b>				
Enhancing Competitiveness in a Changing Climate				
Forest Disturbances Science and Application (Canadian Forest Service)	0.99	0.92	0.99	0.93
Climate Change Geoscience and Adaptation (Minerals and Metals Sector)	0.25	0.25	0.25	0.25
Enhancing Competitiveness in a Changing Climate (Earth Sciences Sector)	3.49	3.87	7.90	7.26
<b>CLEAN ENERGY</b>				
Clean Energy Policy	2.33	1.86	2.33	1.94
ecoENERGY for Alternative Fuels	0.57	0.39	0.57	0.64
ecoENERGY Efficiency	38.00	37.83	37.59	34.83
ecoENERGY Innovation Initiative	63.87	41.60	60.76	59.81
Marine Renewable Energy Enabling Measures	0.81	0.30	0.81	0.45
<b>INTERNATIONAL ACTIONS</b>				
Engagement and Alignment with U.S. (U.S.-Canada Clean Energy Dialogue)	1.15	1.07	1.15	0.95
International Climate Change Participation/Negotiations				
International Participation/Negotiations in Climate Change	1.11	1.08	1.11	0.98
Forestry Carbon Policy and Monitoring	1.98	1.90	1.98	1.88
<b>Parks Canada Agency</b>				
<b>ADAPTATION</b>				
Understanding Climate-Driven Ecological Changes in Canada's North	0.51	0.47	0.52	0.51
<b>Public Health Agency of Canada</b>				
<b>ADAPTATION</b>				
Preventative Public Health Systems and Adaptation to a Changing Climate	3.10	2.60	2.20	1.80
<b>Standards Council of Canada</b>				
<b>ADAPTATION</b>				
Integrating Adaptation into Codes and Standards for Northern Infrastructure	0.50	0.50	0.50	0.50

	2012–2013		2013–2014	
<b>CLEAN AIR AGENDA PROGRAMMING by Department and Theme</b>	<b>Planned Spending (\$ million)</b>	<b>Actual Spending (\$ million)</b>	<b>Planned Spending (\$ million)</b>	<b>Actual Spending (\$ million)</b>
<b>Transport Canada</b>				
<b>ADAPTATION</b>				
Northern Transportation Adaptation Initiative*	3.10*	1.97	3.14	2.28
<b>CLEAN TRANSPORTATION</b>				
Aviation Sector Regulatory Initiative	2.97	2.54	2.77	2.51
Marine Sector Regulatory Initiative	4.81	4.48	4.32	4.16
Rail Sector Regulatory Initiative	4.03	2.34	3.55	3.00
Support for Vehicle GHG Emissions Regulations	2.26	2.15	2.06	1.90
ecoTECHNOLOGY for Vehicles II Initiative	8.25	6.49	8.56	7.61
Gateway Carbon Footprint Initiative	0.41	0.19	0.39	0.14
Shore Power Technology for Ports Program	0.49	0.43	10.98	4.96
Truck Reservation System Program**	1.71**	0.51	2.73	0.37

(Figures are rounded.)

**Notes:**

Figures exclude those accommodation costs that are supported by Public Services and Procurement Canada.

\* The planned spending was adjusted to \$2.56 million to account for the 2012–2013 approved re-profile of \$0.54 million to future fiscal years.

\*\* The planned spending was adjusted to \$0.92 million to account for the 2012–2013 approved re-profile of \$0.73 million to future fiscal years.

# Annex B List of Departments and Agencies

The *Federal Sustainable Development Act* requires the following departments and agencies to table sustainable development strategies.

1. Agriculture and Agri-Food Canada
2. Atlantic Canada Opportunities Agency
3. Canada Border Services Agency
4. Canada Economic Development for Quebec Regions
5. Canada Revenue Agency
6. Canadian Heritage
7. Department of Finance Canada
8. Department of Justice Canada
9. Employment and Social Development Canada
10. Environment and Climate Change Canada
11. Fisheries and Oceans Canada
12. Global Affairs Canada
13. Health Canada
14. Immigration, Refugees and Citizenship Canada
15. Indigenous and Northern Affairs Canada
16. Innovation, Science and Economic Development Canada
17. National Defence
18. Natural Resources Canada
19. Parks Canada
20. Public Health Agency of Canada
21. Public Safety Canada
22. Public Services and Procurement Canada
23. Transport Canada
24. Treasury Board of Canada Secretariat
25. Veterans Affairs Canada
26. Western Economic Diversification Canada

While not bound by the *Federal Sustainable Development Act*, the following organizations have contributed implementation strategies to the *2013–2016 Federal Sustainable Development Strategy*.

1. Canadian Food Inspection Agency
2. Correctional Service Canada
3. National Energy Board
4. National Research Council Canada
5. Royal Canadian Mounted Police
6. Standards Council of Canada
7. Statistics Canada

# Annex C List of Abbreviations

**AHI:** Air Health Indicator  
**AOC:** Areas of Concern  
**AQHI:** Air Quality Health Index  
**AQMS:** Air Quality Management System  
**BOD:** Biochemical oxygen demand  
**CAA:** Clean Air Agenda [Annex A]  
**CARA:** Clean Air Regulatory Agenda [Annex A]  
**CBD:** Convention on Biological Diversity [Annex D]  
**CCAC:** Climate and Clean Air Coalition  
**Cd:** Cadmium  
**CESI:** Canadian Environmental Sustainability Indicators  
**CFS:** Computers for Schools  
**CHMS:** Canadian Health Measures Survey  
**CMP:** Chemicals Management Plan  
**CO:** Carbon monoxide  
**CO<sub>2</sub>:** Carbon dioxide  
**CO<sub>2</sub> eq:** Carbon dioxide equivalent  
**DPR:** Departmental Performance Report  
**DSM:** Data sources and methods  
**DSDS:** Departmental Sustainable Development Strategy  
**E2 Plan:** Environmental Emergency Plan  
**ECA:** Emission Control Area  
**eTV:** ecoTECHNOLOGY for Vehicles Program  
**FCSAP:** Federal Contaminated Sites Action Plan  
**FEQG:** Federal Environmental Quality Guidelines  
**FSDS:** Federal Sustainable Development Strategy  
**GHG:** Greenhouse gas  
**GLWQA:** Canada–U.S. Great Lakes Water Quality Agreement  
**GWP:** Global Warming Potential [Annex D]  
**HARS:** Heat Alert and Response System  
**HFC:** Hydrofluorocarbon  
**HSP:** Habitat Stewardship Program  
**ICAO:** International Civil Aviation Organization  
**IFMP:** Integrated Fisheries Management Plans

**IJC:** International Joint Commission

**IOM:** Integrated Oceans Management

**kg:** Kilogram(s)

**km<sup>2</sup>:** Square kilometres

**kt:** Kilotonne

**LEED:** Leadership in Energy and Environmental Design

**MPA:** Marine Protected Area

**m<sup>2</sup>:** Square metres

**Mt:** Megatonne

**MSWG:** Mobile Sources Working Group

**NASP:** National Aerial Surveillance Program

**NAWMP:** North American Waterfowl Management Plan

**NH<sub>3</sub>:** Ammonia

**NIR:** National Inventory Report

**NO<sub>2</sub>:** Nitrogen dioxide

**NO<sub>x</sub>:** Nitrogen oxide

**O<sub>3</sub>:** Ozone

**Pb:** Lead

**PBDE:** Polybrominated diphenyl ethers

**PERC:** Tetrachloroethylene

**PFOS:** Perfluorooctane sulfonate

**PM<sub>2.5</sub>:** Fine particulate matter

**PPER:** *Pulp and Paper Effluent Regulations*

**RCC:** Canada-U.S. Regulatory Cooperation Council

**RPSF:** Real Property Sustainability Framework

**SARA:** *Species at Risk Act*

**SDO:** Sustainable Development Office

**SMART:** Specific, Measurable, Achievable, Relevant, Time-bound

**SO<sub>2</sub>:** Sulphur dioxide

**SoD:** South of the Divide

**SOPF :** Ship-source Oil Pollution Fund

**SO<sub>x</sub>:** Sulfur oxide

**STDC:** Sustainable Development Technology Canada

**TSS:** Total suspended solids

**U.S.:** United States

**VOCs:** Volatile Organic Compounds

The following abbreviations are used to indicate federal organizations that lead, or share the accountability for, specific implementation strategies.

**AAFC:** Agriculture and Agri-Food Canada  
**ACOA:** Atlantic Canada Opportunities Agency  
**CBSA:** Canada Border Services Agency  
**CED:** Canada Economic Development for Quebec Regions  
**CFIA:** Canadian Food Inspection Agency  
**CRA:** Canada Revenue Agency  
**CSC:** Correctional Service Canada  
**DFO:** Fisheries and Oceans Canada  
**DND:** National Defence  
**ECCC:** Environment and Climate Change Canada  
**ESDC:** Employment and Social Development Canada  
**FIN:** Department of Finance Canada  
**GAC:** Global Affairs Canada  
**HC:** Health Canada  
**INAC:** Indigenous and Northern Affairs Canada  
**IRCC:** Immigration, Refugees and Citizenship Canada  
**ISED:** Innovation, Science and Economic Development Canada  
**JUS:** Department of Justice Canada  
**NEB:** National Energy Board  
**NRC:** National Research Council Canada  
**NRCan:** Natural Resources Canada  
**PC:** Parks Canada  
**PCH:** Canadian Heritage  
**PHAC:** Public Health Agency of Canada  
**PS:** Public Safety Canada  
**PSPC:** Public Services and Procurement Canada  
**RCMP:** Royal Canadian Mounted Police  
**SCC–CCN:** Standards Council of Canada  
**StatCan:** Statistics Canada  
**TBS:** Treasury Board of Canada Secretariat  
**TC:** Transport Canada  
**VAC:** Veterans Affairs Canada  
**WD:** Western Economic Diversification Canada

# Annex D Data Considerations and Notes

**GOAL 1: CLIMATE CHANGE**—In order to mitigate the effects of climate change, reduce greenhouse gas (GHG) emission levels and adapt to unavoidable impacts.

**Indicator:** National greenhouse gas emissions

## Data Considerations and Notes

- The GHGs included in estimates are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulphur hexafluoride (SF<sub>6</sub>), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and nitrogen trifluoride (NF<sub>3</sub>).
- Carbon dioxide equivalent is a measure used to compare the emissions from various GHGs based upon their global warming potential.
- The data used for this indicator are from Canada's National Inventory Report. The inventory uses internationally agreed methodologies and reporting format.

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**TARGET 1.1: CLIMATE CHANGE MITIGATION**—Relative to 2005 emission levels, reduce Canada's total GHG emissions 17% by 2020

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**Indicator:** Progress toward Canada's GHG emissions reduction target

## Data Considerations and Notes

- The indicator is based on the 2015 National Inventory Report on Greenhouse Gas Sources and Sinks in Canada (NIR), 1990–2013. The 2015 NIR includes revisions to historical emissions based on Intergovernmental Panel on Climate Change Guidelines, which incorporate updated global warming potentials (GWP). For example, the 100-year GWP for methane is now 25, compared with 21 in previous years. This results in an increase in historic emissions compared with last year's NIR.
- The future level of GHG emissions in Canada depends on a number of factors. Changes in the current or future context for any of these parameters would change the currently projected GHG levels.

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**TARGET 1.2: CLIMATE CHANGE ADAPTATION**—Facilitate reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change through the development and provision of information and tools.

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**Indicator:** Number of Canadian communities with Heat Alert and Response Systems

**Indicator:** Number of community-based research projects funded to address climate change and health adaptation in First Nations and Inuit communities in northern Canada

**Indicator:** Number of new knowledge products indicator

**Indicator:** Number of communities implementing adaptation plans and measures

**Indicator:** Number of new and revised codes and standards and guidelines for infrastructure in the North being adopted

## Data Considerations and Notes

- This target is new to the 2013–2016 FSDS.



**GOAL 2: AIR POLLUTION**—Minimize the threats to air quality so that the air Canadians breathe is clean and supports healthy ecosystems.

**Indicator:** Air quality indicators

**Data Considerations and Notes**

- The methodologies, limitations and assumptions associated with these indicators can be found in the CESI Data Sources and Methods for the Air Quality Indicators.
- Monitoring stations are selected with the help of time-series criteria for the calculation of the air quality indicators. As a result, the number of stations selected may vary from one release date to another.

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**TARGET 2.1: OUTDOOR AIR POLLUTANTS**—Improve outdoor air quality by ensuring compliance with new or amended regulated emission limits by 2020 and thus reducing emissions of air pollutants in support of Air Quality Management System (AQMS) objectives.

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**Indicator:** National air pollutant emissions

**Indicator:** Air health indicator—Ozone and fine particulate matter

**Data Considerations and Notes**

- The methodologies, limitations and assumptions associated with these indicators can be found in the CESI Data Sources and Methods for the Air Pollutant Emissions Indicators.
- The methodologies for estimating and compiling air pollutant emissions summaries and analyzing trends are improved yearly. Improvements to data completeness are also made periodically as new emission estimation methodologies are adopted and additional information is made available. Nevertheless, it was not possible to update some area sources emissions for 2013 due to activity level statistics not being available at the time of the compilation.
- The Air Health Indicator (AHI) is an indicator in development. It focuses on the mortality risk from cardiopulmonary diseases as a whole for ozone (O<sub>3</sub>) and fine particulate matter (PM<sub>2.5</sub>) in communities with the best available data. The AHI work does not include assessments of the potential reasons behind changes in mortality attributable to air pollutant exposure.
- Due to the complexity of mortality data collection, the AHI data lags other data sets. Currently AHI modeling is completed for 1990 to 2007. Indicators values reported for 2008 to 2010 are approximated using the averages of annual national risk estimates from the previous periods (1990 to 2007 for O<sub>3</sub> and 2001 to 2007 for PM<sub>2.5</sub>) and should be considered as preliminary.
- This target was reported as Target 6.2 in the 2010–2013 FSDS.

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**TARGET 2.2: INDOOR AIR QUALITY**—Help protect the health of Canadians by providing health-based guidance and tools to support actions to better manage indoor air quality.

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**Indicator:** Actions to manage indoor air quality that incorporate health-based guidance

**Data Considerations and Notes**

- Health Canada has also conducted field research to investigate sources of residential indoor air quality and impacts of intervention studies.

**GOAL 3: WATER QUALITY AND WATER QUANTITY**—Protect and enhance water so that it is clean, safe and secure for all Canadians and supports healthy ecosystems.

**Indicator:** Drinking water advisories in Canada

**Indicator:** Freshwater quality in Canadian rivers

**Indicator:** Water quantity in Canadian rivers

**Data Considerations and Notes**

- The water quantity and quality indicators only assess surface waters. Groundwater is not considered in the indicators.
- Most water quantity and quality monitoring stations in Canada are located in populated areas and do not represent the country's entire geographic extent or all its watersheds.
- To dampen temporal variability in the water quality results caused by annual fluctuations in weather and hydrology, three years of data are combined to produce the results.
- The freshwater quality indicator does not directly measure biological integrity; it measures whether physical and chemical characteristics of freshwaters are acceptable for aquatic life.
- Normal water quantity does not mean there are not areas within the drainage region with too much or not enough water for some period of the year.
- The Drinking Water Advisories in Canada indicator presents an overall view of the trends emerging in the system and does not focus on the specific data for any particular province, territory or agency. It is important to note that percentages reported in this report may differ from previous and future reports as historic data are added to the system and as adoption of the Drinking Water Advisories application expands to new agencies.

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**TARGET 3.1: ON-RESERVE FIRST NATIONS WATER AND WASTEWATER SYSTEMS—**

Increase the percentage of on-reserve First Nations water systems with low risk ratings from 27% to 50% by 2015. Increase the percentage of on-reserve First Nations wastewater systems with low risk ratings from 35% to 70% by 2015.

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**Indicator:** First Nations water and wastewater system risk

**Data Considerations and Notes**

- Only INAC-funded First Nations water and wastewater systems on reserves across Canada are included.
- The overall number of systems actually inspected varies slightly from year to year due to eligibility criteria or conditions that determine if, or to what extent, a system is subject to an inspection. For example, brand-new systems or freshly renovated systems may not be subject to an inspection.
- This target was reported as Target 3.10 in the 2010–2013 FSDS.

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**TARGET 3.2: DRINKING WATER QUALITY**—Help protect the health of Canadians by developing up to 15 water quality guidelines/guidance documents by 2016.

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**Indicator:** Water quality guidelines/guidance documents

**Data Considerations and Notes**

- This target was reported as Target 3.11 in the 2010–2013 FSDS.

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**TARGET 3.3: GREAT LAKES–CANADIAN AREAS OF CONCERN**—Take federal actions to restore beneficial uses for delisting of five Canadian Areas of Concern and to reduce the number of impaired beneficial uses in the remaining Areas of Concern by 25% by 2018.

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**Indicator:** Restoring the Great Lakes Areas of Concern (AOC)

**Data Considerations and Notes**

- Each AOC is assessed separately. Most initial assessments were published between 1989 and 1993.
- The reporting process is unique for each AOC and reflects the specific needs and activities in each area. As a result, data availability varies across AOCs.
- The beneficial use status findings are gathered from the Remedial Action Plans and update reports published by the groups working to delist the AOCs. For this reason, a status can only change when new reports are published. While useful in many respects, this reporting process does not reflect the continuous nature of the rehabilitation process and results in staggered status changes.
- This target was reported as Target 3.1 in the 2010–2013 FSDS.

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**TARGET 3.4: GREAT LAKES**—Contribute to the restoration and protection of the Great Lakes by developing and gaining binational acceptance of objectives for the management of nutrients in Lake Erie by 2016 and for the other Great Lakes as required.

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**Indicator:** Phosphorus levels in the Great Lakes

**Data Considerations and Notes**

- This indicator reflects the overall state of phosphorus levels in the offshore of the Great Lakes and does not indicate near-shore phosphorus levels. Offshore data from the U.S. is not included in this indicator.
- Water quality for each Great Lake is determined by comparing average spring offshore total phosphorus concentrations with the lake's water quality objective.
- Interim objectives for phosphorus concentration in the Great Lakes have been set in the amended 2012 Great Lakes Water Quality Agreement (GLWQA).
- The 2012 Canada–U.S. GLWQA stipulates that the State of the Lakes reports is to be published every three years. The last report published in 2014 presented data up to 2011; the next report will be published in 2017.
- This target was reported as Target 3.2 in the 2010–2013 FSDS.

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**TARGET 3.5: ST. LAWRENCE RIVER**—Take federal actions to reduce pollutants to improve water quality, conserve biodiversity and ensure beneficial uses in the St. Lawrence River by 2016.

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**Indicator:** Phosphorus and nitrogen levels in the St. Lawrence River

**Data Considerations and Notes**

- The nitrogen and phosphorus concentrations do not capture the effect of spills or other transient events, unless these are frequent or long-lasting.
- Comparing this indicator with similar indicators for lakes requires a degree of caution. In rivers, total phosphorus concentrations are influenced by suspended particles in the water that increase during high-flow events.
- This target was reported as Target 3.3 in the 2010–2013 FSDS.

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**TARGET 3.6: LAKE SIMCOE AND SOUTH-EASTERN GEORGIAN BAY**—Reduce an estimated 2000 kg of phosphorus loadings to Lake Simcoe by 2017, which will support the Province of Ontario's target to reduce phosphorus inputs into Lake Simcoe to 44 000 kg per year by 2045. Reduce an estimated 2000 kg of phosphorus loadings to South-eastern Georgian Bay watersheds by 2017.

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**Indicator:** Reducing phosphorus loads to Lake Simcoe and South-eastern Georgian Bay

**Data Considerations and Notes**

- Estimates/predictions assume that each management project is 100% effective and that reductions in phosphorus flows to surface waters achieved are permanent. The indicator does not directly measure the amount of phosphorus actually diverted from the lake.
- The Lake Simcoe and South-eastern Georgian Bay Clean-up Fund program relies on the most appropriate, current and accepted equations to predict phosphorus loading reductions resulting from the implementation of beneficial management practices.
- This target was reported as Target 3.4 in the 2010–2013 FSDS.

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**TARGET 3.7: LAKE WINNIPEG BASIN**—By 2017, reduce phosphorus inputs to water bodies in the Lake Winnipeg basin, in support of the Province of Manitoba's overall plan to reduce phosphorus in Lake Winnipeg by 50% to pre-1990 levels.

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**Indicator:** Phosphorus and nitrogen levels in Lake Winnipeg

**Indicator:** Reducing phosphorus loads to Lake Winnipeg

**Data Considerations and Notes**

- The Phosphorus and Nitrogen Levels in Lake Winnipeg indicator does not show the effect of spills or other transient events unless these are frequent or long-lasting.
- The calculation of the indicators for the major tributaries and the lake are slightly different. This difference exists because total phosphorus concentrations in rivers are influenced by suspended particles in the water, which may increase during high-flow events.
- Estimates/predictions assume that each management project is 100% effective and that reductions in phosphorus flows to surface waters achieved are permanent. The indicator does not directly measure the amount of phosphorus actually diverted from the lake.

- The program relies on the most appropriate, current and accepted equations to predict phosphorus loading reductions resulting from the implementation of beneficial management practices.
- This target was reported in the 2010–2013 FSDS as Target 3.5. This target was achieved, and subsequently the current (new) target was developed.

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**TARGET 3.8: MARINE POLLUTION—RELEASES OF HARMFUL POLLUTANTS**—Protect the marine environment by an annual 5% reduction in the number of releases of harmful pollutants in the marine environment by vessels identified during pollution patrol from 2013–2016.

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**Indicator:** Number of marine pollution spills from identified vessels

**Data Considerations and Notes**

- The difference between total spills and spills by identified vessels represents spills that were detected but for which the source is unknown.
- Between 2009–2010 and 2013–2014, the National Aerial Surveillance Program increased the number of patrol hours from 2274 to 3877 hours, contributing to the increase in the number of vessels over-flown and the spills detected from identified vessels.
- This target was introduced for the first time in the 2013–2016 FSDS.

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**TARGET 3.9: MARINE POLLUTION—DISPOSAL AT SEA**—Ensure that permitted disposal at sea is sustainable, such that 85% of disposal site monitoring events do not identify the need for site management action (such as site closure) from 2013–2016.

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**Indicator:** Managing disposal at sea

**Data Considerations and Notes**

- Disposal sites are monitored on a representative basis. Not all disposal sites used each year are monitored. Between 2005 and 2014, the number of monitored sites per year fluctuated between 6 and 20 sites.
- This target was reported in combination with Target 3.8 (the combined target was Target 3.9 Marine Water Quality) in the 2010–2013 FSDS.

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**TARGET 3.10: AGRI-ENVIRONMENTAL PERFORMANCE METRICS**—Achieve a value between 81–100 on each of the Water Quality and Soil Quality Agri-Environmental Performance Metrics by March 31, 2030.

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**Indicator:** Soil and water quality indicators for agriculture

**Data Considerations and Notes**

- The two national indices for this target are calculated using indicator models developed at a local level. The local results are scaled to the national scale, which can mean that information to help determine actual physical causes of problems in specific locations is lost or inaccurate.
- The indicator for soil contamination by trace elements was only calculated for the years 1981 and 2006. For years in between, an interpolated value was included in the index calculation.
- This target was introduced for the first time in the 2013–2016 FSDS.

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**TARGET 3.11: WASTEWATER AND INDUSTRIAL EFFLUENT**—Reduce risks associated with effluent from wastewater (sewage) and industrial sectors by 2020.

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**Indicator:** Managing metal mining effluent quality in Canada

**Indicator:** Managing pulp and paper effluent quality in Canada

**Data Considerations and Notes**

- The indicators consider whether self-reported effluent samples are meeting regulations. They do not measure impact of the effluent on the environment.
- Groundwater is not considered in these indicators.
- Data collection for the wastewater indicator will begin in February 2016, and for this reason, progress on wastewater treatment cannot yet be reported.
- This target was reported as Target 3.7 in the 2010–2013 FSDS.

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**TARGET 3.12: WATER RESOURCE MANAGEMENT**—Facilitate sustainable water resource management through the collection of data and the development and dissemination of knowledge from 2013–2016.

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**Data Considerations and Notes**

- This target was reported as Target 4.1 in the 2010–2013 FSDS.

**GOAL 4: CONSERVING AND RESTORING ECOSYSTEMS, WILDLIFE AND HABITAT, AND PROTECTING CANADIANS**—Resilient ecosystems with healthy wildlife populations so Canadians can enjoy benefits from natural spaces, resources and ecological services for generations to come.

**Indicator:** General Status of Species in Canada

**Indicator:** Level of exposure to substances of concern

**Data Considerations and Notes**

- Species are often present in multiple provinces or territories, and there are separate rankings by region for the same species.
- The ranking for a given species is first done at the regional level. The ranks can be quite different depending on the range and condition of the population across regions. The process of establishing the rank for Canada usually involves selecting the highest regional rank with exceptions related to breeding areas and the proportion of a species' range within a region. The average of the ranks by region is not an appropriate measure of the overall status of a species in the context of the whole country.
- The indicator for general status of species only represents biodiversity at the species level and does not report on genetic and ecosystem diversity.
- The General Status of Species in Canada indicator is generated and released every five years; the next update is anticipated for fall 2016.
- The indicator for level of exposure to substances of concern is currently under development.

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**TARGET 4.1: SPECIES AT RISK**—By 2020, populations of species at risk listed under federal law exhibit trends that are consistent with recovery strategies and management plans.

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**Indicator:** Species at risk population trends

**Data Considerations and Notes**

- While the indicator coverage is national, significant variations in information availability exist. Species knowledge is greatest in southern Canada, in part because the area is more accessible, and in part because more species at risk inhabit southern Canada.
- Species require time to recover, and long-lived species may require many decades. As such, the results should not be interpreted as a measure of recovery success until sufficient time has passed to allow species to recover and to collect sufficient information to assess that recovery.
- Determining population trends in rare species can present some challenges. For many of these species, individuals are difficult to find and identify.
- A pilot version of this indicator was reported as Target 5.1 in the 2012 FSDS Progress Report.

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**TARGET 4.2: MIGRATORY BIRDS**—Improve the proportion of migratory bird species that meet their population goals.

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**Indicator:** Population status of Canada's migratory birds

**Data Considerations and Notes**

- Population goals take into account human uses of birds, such as hunting or bird watching, as well as the role of birds in our ecosystems. As societal needs change and science progresses, it is to be expected that these goals will be refined over time.
- The indicator is restricted to species considered under the *Migratory Birds Convention Act, 1994* and those that regularly reside in Canada. Groups of species such as raptors and corvids are not included.
- Species that are within the acceptable range may still be of conservation concern. Examples might include cases where trends are negative or where a species remains at the lower end of the range for a number of years. Similarly, if a group of related species are near the boundaries of the acceptable range, it may signal the need for management intervention.



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**TARGET 4.3: TERRESTRIAL ECOSYSTEMS AND HABITAT STEWARDSHIP**—Contribute to the proposed national target so that by 2020 at least 17% of terrestrial areas and inland water are conserved through networks of protected areas and other effective area-based conservation measures.

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**Indicator:** Canada's protected areas—terrestrial area

**Indicator:** Habitat secured for waterfowl

**Indicator:** Habitat secured for species at risk

**Indicator:** Total land area identified that is key to migratory birds and species at risk

**Data Considerations and Notes**

- The indicator for the Habitat Stewardship Program for Species at Risk presents a measure of the quantity of habitat secured, not a measure of the success of species conservation or recovery, or of the quality of habitat secured.
- Areas addressed by the three conservation indicators may overlap.
- Information is not available on the total land identified that is key to migratory birds and species at risk.
- This target was reported as Target 6.1 in the 2010–2013 FSDS.

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**TARGET 4.4: IMPROVING THE HEALTH OF NATIONAL PARKS**—Improve the condition of at least one Ecological Integrity Indicator in 20 national parks by 2015.

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**Indicator:** Ecological integrity of national parks

**Data Considerations and Notes**

- Parks Canada regularly publishes reports on the state of national parks. The next State of Canada's Natural and Historic Places report is expected in 2016, and will be published every 5 years after that.
- Parks are not isolated from the surrounding environment. Local context, such as the land use surrounding the park, and global-level changes like climate change, also affect the state of park ecosystems.
- This target was reported as Target 6.2 in the 2010–2013 FSDS.



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**TARGET 4.5: MARINE ECOSYSTEMS**—By 2020, 10% of coastal and marine areas are conserved through networks of protected areas and other effective area-based conservation measures.

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**Indicator:** Canada's protected areas—marine area

**Data Considerations and Notes**

- Coastlines are mapped differently at the national scale than at the scale of individual protected areas. Due to the uncertainty of boundaries, results should be seen as general estimates rather than precise measurements.
- Reporting towards Target 6.3 under the 2010–2013 FSDS included “contributory sites” as elements of Canada's Marine Protected Areas network. This approach is in the process of being revised, in keeping with wording of the Convention on Biological Diversity CBD target, which calls for the conservation of 10% of marine and coastal areas by 2020. The CBD target includes protected areas and other effective area-based conservation measures.

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**TARGET 4.6: INVASIVE ALIEN SPECIES**—By 2020, pathways of invasive alien species introductions are identified, and risk-based intervention or management plans are in place for priority pathways and species.

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**Indicator:** Newly established invasive alien species in Canada, 2012–2013

**Data Considerations and Notes**

- Alien species may be present without becoming invasive, and it may take some time to recognize whether a species is invasive.
- Species native to a region in Canada that are invading elsewhere in Canada are not included.
- New invasive alien species subject to eradication efforts are not reported under this indicator.
- This target was reported as Target 6.4 in the 2010–2013 FSDS.

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**TARGET 4.7: ENVIRONMENTAL DISASTERS, INCIDENTS AND EMERGENCIES**—Environmental disasters, incidents and emergencies are prevented or their impacts mitigated.

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**Indicator:** Environmental emergencies—regulated facilities

**Data Considerations and Notes**

- A related target was reported as Target 6.2 in the 2010–2013 FSDS.

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**TARGET 4.8: CHEMICALS MANAGEMENT**—Reduce risks to Canadians and impacts on the environment and human health posed by releases of harmful substances.

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**Indicator:** Releases of harmful substances to the environment

**Indicator:** Perfluorooctane sulfonate (PFOS) in fish and water

**Indicator:** Polybrominated diphenyl ethers (PBDE) in fish and sediment

**Indicator:** Levels of human exposure to harmful substances

**Data Considerations and Notes**

- The Levels of Human Exposure to Harmful Substances indicator is based on the Canadian Health Measures Survey (CHMS) which did not target specific exposure scenarios, and consequently did not select or exclude participants on the basis of their potential for low or high exposures to environmental chemicals. The following groups were not included in the CHMS: people living on reserves or in other Indigenous settlements in the provinces; residents of institutions; full-time members of the Canadian Armed Forces; people living in certain remote areas; and people living in areas with a low population density.
- Monitoring and surveillance of harmful substances in the environment under the Chemical Management Plan began in 2007. As monitoring is not necessarily performed at the same location each year, year-to-year comparisons at the national level are not yet possible. To address this limitation, the PBDEs in Fish and Sediment indicators, and the PFOS in fish and water indicators are estimated by grouping the samples for all recent available years by drainage area.
- The releases to water indicators only reflect the releases reported by facilities to the National Pollutant Release Inventory. They do not estimate or include potential releases from other sources in Canada, or releases noted during enforcement activities.
- This target was reported as Target 2.3 and Target 3.12 in the 2010–2013 FSDS.

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**GOAL 5: BIOLOGICAL RESOURCES**—Efficient economic and ecological use of resources—Production and consumption of biological resources are sustainable.

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**Indicator:** Sustainability of timber harvest

**Indicator:** Status of major fish stocks

**Data Considerations and Notes**

- Forest data are collected from many jurisdictions and rolled-up to national level. Methods for estimating wood supply and harvest vary among jurisdictions.
- The term “timber” refers to the supply of industrial roundwood. Supply and harvest of other products (e.g., fuelwood) are not included.
- The sharp decline in the total annual harvest since 2006 is mostly due to the global economic downturn and the decline in use of newspaper due to the increase in the use of electronic media.
- Recovery of fish stocks requires time and good environmental conditions. Information is difficult to collect in the large volume of ocean waters.
- This goal was reported as Goal 7 in the 2010–2013 FSDS.

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**TARGET 5.1: SUSTAINABLE FISHERIES**—Improve the management and conservation of major stocks.

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**Indicator:** Sustainable fish harvest

**Data Considerations and Notes**

- The Fishery Checklist is completed with the best available information. Given the challenges and expense of monitoring mobile fish in a large volume, comprehensive information is not always readily available.
- The Fishery Checklist summarizes information across a wide variety of species, management regimes, and types of fisheries, geographic regions and socio-economic contexts. Results should be interpreted with this in mind.
- Harvest rates are only one element of sustainable fish management.
- This target was reported as Target 7.1 in the 2010–2013 FSDS.

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**TARGET 5.2: SUSTAINABLE AQUACULTURE**—By 2020, all aquaculture in Canada is managed under a science-based regime that promotes the sustainable use of aquatic resources (including marine, freshwater and land-based) in ways that conserve biodiversity.

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**Indicator:** Management of Canadian aquaculture

**Data Considerations and Notes**

- Shared jurisdiction with provinces and territories, as well as the large number of stakeholders and wide variety of aquaculture species and infrastructure, make industry-wide measures difficult to design and assess.

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**TARGET 5.3: SUSTAINABLE FOREST MANAGEMENT**—Contribute to the proposed national target so that by 2020 continued progress is made on the sustainable management of Canada's forests.

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**Indicator:** Representation of the Canadian Forest Service on advisory boards or committees involving governments, industry and non-governmental organizations in order to provide scientific knowledge on forest ecosystems

**Data Considerations and Notes**

- This target was reported as Target 7.3 in the 2010–2013 FSDS.
- The indicator for this target has been revised.

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**TARGET 5.4: SUSTAINABLE AGRICULTURE**—By 2020, agricultural working landscapes provide a stable or improved level of biodiversity and habitat capacity.

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**Indicator:** Wildlife habitat capacity on farmland

**Indicator:** Environmental farm planning on agricultural land

**Data Considerations and Notes**

- The wildlife habitat capacity on farmland indicator depends on modelling how wildlife species use farmland. This involves a simplification of species' behaviour and an integration of results over a wide range of species. General observations that wildlife capacity has increased or decreased should not be applied to individual species.
- The improved methodology uses a land-cover map at 30 metres resolution. Many important landscape features, such as hedgerows, wind breaks and small watercourses, are not captured at this resolution.
- This target was introduced for the first time in the 2013–2016 FSDS.

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**GOAL 6: GREENHOUSE GAS EMISSIONS AND ENERGY**—Reduce the carbon footprint and energy consumption of federal operations.

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**TARGET 6.1: GHG EMISSIONS REDUCTION**—The Government of Canada will reduce GHG emissions from its buildings and fleet by 17% below 2005 levels by 2020.

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**Indicator:** Departmental GHG emissions reductions from buildings and fleets relative to fiscal year 2005–2006, expressed as a percentage

**Data Considerations and Notes**

- Consistent with the Theme IV target, reported emissions are from energy consumption of federally operated buildings and fleet located in Canada, and consist of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) only.
- Departments are excluded from reporting against operations where national safety and security is overwhelmingly the primary function, or where efforts required to obtain complete and accurate energy data are prohibitively onerous.
- Improvements to the GHG emission intensity of electricity generation in Canada (greening of the grid) are not included in the federal GHG target calculations, though these improvements have significant implications for organizations (including the federal government) that purchase this electricity. The aggregate emissions reduction from responsible departments and agencies for 2013–2014 increases to 14% below 2005–2006 levels when “greening of the grid” is taken into account. Without the inclusion of the “greening of the grid”, the emissions reduction is 2.5%. Departmental emissions reported for measuring progress

against the federal GHG target exclude the “greening of the grid” to demonstrate and maintain visibility of internal efforts.

- This target is a continuation of the 2010–2013 FSDS Target 8.5.

**GOAL 7: WASTE AND ASSET MANAGEMENT**—Reduce waste generated and minimize the environmental impacts of assets throughout their life cycle.

**Indicator:** Number of real property projects and existing buildings achieving a high level of environmental performance

**Indicator:** Number and percentage of FSDS departments that have established three SMART green procurement targets from the identified commodity categories

**Indicator:** Number and percentage of FSDS departments that have developed an approach to maintain and improve the sustainability of workplace policies and practices

**Data Considerations and Notes**

- SMART is defined as Specific, Measurable, Achievable, Relevant and Time-bound. These targets focus on goods and services that are common to government purchasers (e.g., high spend and/or high volume), that have important environmental impacts, and for which tools and resources are available to facilitate the integration of environmental considerations in departmental procurement.
- Progress summarized in the following section is largely based on the achievements of departments and agencies meeting the previously established targets under FSDS 2010–2013 (Target 8.1–8.4: Improving the environmental performance of buildings, 8.6: Managing electronic waste, 8.7: Reducing printing units, 8.8: Reducing paper consumptions, 8.9: Green meetings, and 8.10–11: Green Procurement), which have been incorporated into the FSDS 2013–2016 targets, identified above.

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**TARGET 7.1: REAL PROPERTY ENVIRONMENTAL PERFORMANCE**—As of April 1, 2014, and pursuant to departmental Real Property Sustainability Frameworks, an industry-recognized level of high environmental performance will be achieved in Government of Canada real property projects and operations.

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**Indicator:** Total number of existing Crown-owned buildings (over 1000 m<sup>2</sup>) and new lease or lease renewal projects (over 1000 m<sup>2</sup>), where the Crown is the major lessee, assessed for environmental performance using an industry-recognized assessment tool, and associated floor space (m<sup>2</sup>)

**Indicator:** Total number of existing Crown-owned buildings, new construction, build-to-lease projects, major renovation projects, achieving an industry-recognized level of high environmental performance, and associated floor space (m<sup>2</sup>)

**Indicator:** Number of fit-up and refit projects achieving an industry-recognized level of high environmental performance

**Data Considerations and Notes**

- Specific scoping considerations and approaches to environmental performance are established by individual departments and are identified in their departmental Real Property Sustainability Frameworks. Information on applicable buildings, the assessment tools used,

and performance level sought or achieved are noted in each department's Departmental Sustainable Development Strategy supplementary tables.

- Six additional buildings reported in 2012–13 Departmental Performance Reports (four Canada Green Building Council Leadership in Energy and Environmental Design [LEED] Gold and two LEED Silver) are not included in the “new construction, build-to-lease projects, and major renovations projects” indicator because they achieved certification prior to the implementation of the 2010–2013 FSDS.
- Floor space (m<sup>2</sup>) was not a required reporting element under the 2010–2013 FSDS, and therefore is not currently available for the performance indicators under this target.
- To consolidate government-wide greening actions related to real property, four 2010–2013 FSDS targets (8.1–8.4) were combined to form Target 7.1 in the 2013–2016 FSDS.

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**TARGET 7.2: GREEN PROCUREMENT**—As of April 1, 2014, the Government of Canada will continue to take action to embed environmental considerations into public procurement, in accordance with the federal Policy on Green Procurement.

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**Indicator:** Number and percentage of specialists in procurement and/or material management who have completed the Canada School of Public Service Green Procurement course or equivalent, in the given fiscal year

**Indicator:** Number and percentage of managers and functional heads of procurement and material management whose performance evaluation includes support and contribution towards green procurement, in the given fiscal year

**Data Considerations and Notes**

- Departmental reporting on the number of relevant employees that have included support and contribution towards green procurement in their performance evaluations was not required under the 2010–2013 FSDS.
- Additional detailed progress can be found in the departmental performance reports of departments and agencies bound by the Policy on Green Procurement.
- To consolidate government-wide actions related to green procurement, 2010–2013 FSDS Targets 8.10 and 8.11 were combined to form Target 7.2 in the 2013–2016 FSDS.

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**TARGET 7.3: SUSTAINABLE WORKPLACE OPERATIONS**—As of April 1, 2015, the Government of Canada will update and adopt policies and practices to improve the sustainability of its workplace operations.

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**Indicator:** The existence of a departmental approach to maintain or improve the sustainability of workplace policies and practices

**Data Considerations and Notes**

- Reports on types and quantities of surplus electronic equipment are available for some disposal options only. In addition to equipment donated to Computers for Schools, departments divert surplus federal electronic and electrical equipment for resale through GCSurplus, or send unusable equipment to provincial recycling programs recognized by organizations such as the Electronics Products Recycling Association. Where provincial recycling programs are not available, or for equipment that is not accepted in any of the available streams, the federal government set up a national master standing offer with a

qualified Canadian e-waste recycling organization to ensure that departments and agencies have access to secure, reliable and environmentally sound disposal.

- To consolidate government-wide actions related to sustainable workplace operations, four FSDS 2010–2013 targets (8.6–8.9) were combined to form Target 7.3 in the 2013–2016 FSDS.
- A fourth optional target, Target 7.4 (Greening Services to Clients), was introduced in 2013–2016, which focuses on measures by departments to reduce the environmental impact of the services provided to their clients.

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**TARGET 7.4: GREENING SERVICES TO CLIENTS**—By March 31, 2015, departments will establish SMART targets to reduce the environmental impact of their services to clients.

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**Indicator:** Three FSDS departments have established targets to reduce the environmental impact of their services to clients

**Data Considerations and Notes**

- Reporting on progress toward departmental greening services targets will be available in Departmental Performance Reports and summarized as appropriate in subsequent FSDS Progress Reports.
- This Greening Services target is a new, optional target meant to recognize and showcase departmental greening initiatives that are not covered by other FSDS targets. It was developed on the basis of feedback from departments during consultations on the development of the 2013–2016 FSDS.

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**GOAL 8: WATER MANAGEMENT** —Improve water management in federal operations.

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**TARGET 8.1: WATER MANAGEMENT**—As of April 1, 2014, the Government of Canada will take further action to improve water management within its real property portfolio.

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**Indicator:** Number of applicable FSDS departments and agencies that have established an approach to improving water management in their real property operations

**Indicator:** Amount and percentage of floor space of new Crown-owned construction and major renovation projects that includes water metering, in the given fiscal year

**Data Considerations and Notes**

- While some specific federal buildings or facilities have established procedures in place to track and manage water consumption, additional time and effort will lead to more widespread water tracking and management across federal departments.
- As departments and agencies continue to improve the water metering of their buildings and the monitoring of potable water consumption, it is expected that over time, the government will be able to benchmark its water performance and report on improvements.
- Reporting on progress toward departmental water management targets will be available in future Departmental Performance Reports. This information will be summarized as appropriate in subsequent FSDS Progress Reports.



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Government of Canada (2015) [Pipeline Safety Act](#).

Indigenous and Northern Affairs Canada (2014) [Climate Change](#).

Statistics Canada (2014) [Canadian Health Measures Survey](#).



Additional information can be obtained at:

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