



Natural Resources
Canada

Ressources naturelles
Canada

Report on Plans and Priorities 2011-2012 Electronic Layer of Reporting

Elements of NRCan's Sustainable Development Strategy

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Section 1

Natural Resources Canada Sustainable Development Vision

Natural Resources Canada's Vision:

Improving the quality of life of Canadians by creating a sustainable resource advantage

NRCan and Sustainable Development

NRCan strives to enhance the economic competitiveness of Canada's resource sectors in ways that are commensurate with Canadians' expectations for quality of life, sustainable resource development and use, and a clean, healthy environment.

Underpinning NRCan's vision is the premise that environmental and social performance is increasingly driving the competitiveness of natural resource sectors. Sustainable development is an opportunity to harness our knowledge and innovation to achieve societal goals and economic success. The department has therefore based the outcomes of its vision on the pillars of sustainable development and works towards:

- Economic competitiveness - Natural resource sectors are internationally competitive, economically productive, and contribute to the social well-being of Canadians;
- Environmental responsibility - Canada is a world leader on environmental responsibility in the development and use of natural resources;
- Safety and security of Canadians and stewardship of natural resources - Natural resource knowledge, landmass and management systems strengthen the safety and security of Canadians and the stewardship of Canada's natural resources and lands.

Going forward, the department will focus on its strategic roles to:

- pioneer new frontiers in knowledge;
- drive the national S&T and innovation agenda on natural resources; and
- build results-based, priority-driven partnerships.

By using these roles to guide its activities, NRCan is leading the integration of sustainable development and competitiveness for the long-term benefit of Canadians.

Section 2

Departmental Decision-making and Sustainable Development

Departmental Decision-making and Sustainable Development

Managing Sustainable Development

Context of Sustainable Development at NRCan

NRCan's vision is to improve the quality of life of Canadians by creating a sustainable resource advantage. It seeks to achieve this vision by developing policies, programs, and regulations to strengthen the conditions for sustainable, resource-led growth in the energy, mining and forestry sectors.

NRCan recognizes that a sustainable development path must be embraced as an opportunity, not as a cost. In step with the changing global context, NRCan is reshaping how it fulfills its core federal roles to contribute more effectively to new competitiveness imperatives and position Canada as a new kind of global resource leader. NRCan is working to support the sustainable development of Canada's resources in a manner that advances the country's global standing as a leader on the environment. Going forward, NRCan will strive to lead the integration of sustainability and competitiveness for the long-term benefit of Canadians.

Natural Resources Canada's Strategic Framework

In 2006, NRCan embarked on a comprehensive renewal exercise that culminated in the publication of the NRCan's Strategic Framework. The objective of the Strategic Framework is to create an integrated, knowledge-based and results-oriented organization to be achieved through a "one department" approach to planning and reporting, collective leadership, and innovative collaboration and information sharing across the department and with stakeholders in pursuit of common goals.

The Strategic Framework situates sustainable development as a core value and a working principle. It is prominent in the vision statement – *improving the quality of life of Canadians by creating a sustainable resource advantage* - and is also reflected in the three strategic outcomes of economic development, environmental responsibility and safety, security and governance. Furthermore, sustainable development defines one of three NRCan mission statements – to become a Champion of Sustainable Development. NRCan is setting out to achieve this mission by applying sustainable development as a core value and major lens on everything we do as a department – always making sure that our actions recognize and reflect the interaction between our economic, environmental and social interests

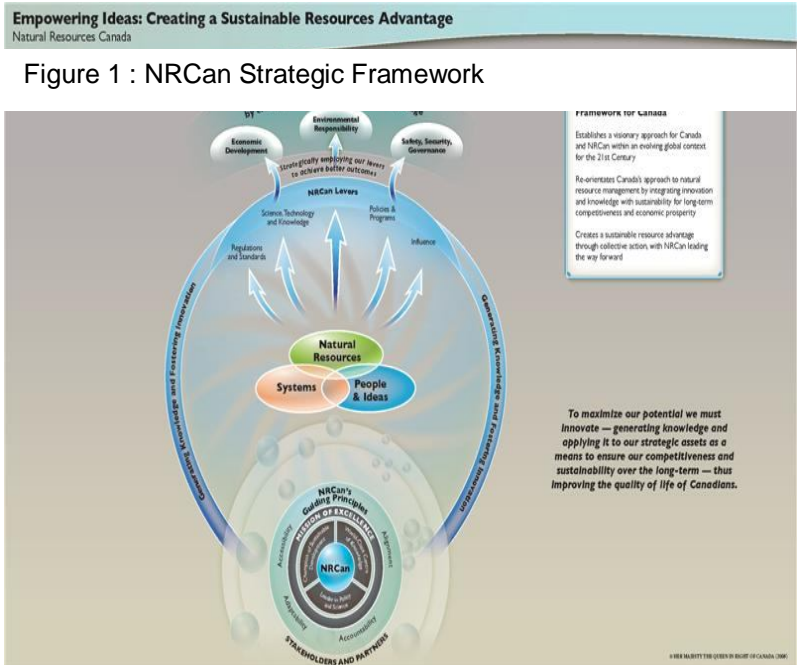


Figure 1 : NRCan Strategic Framework

NRCan's Strategic Framework establishes a visionary approach for Canada and NRCan within an evolving global context for the 21st century. It re-orientates Canada's approach to natural resources management by integrating innovation and knowledge with sustainability for long-term competitiveness and economic prosperity. Finally, it seeks to create a sustainable resource advantage through collective action, with NRCan leading the way.

Integrating SD into Decision-Making at NRCan

Governance Mechanisms

NRCan's corporate governance structure is core to delivering on its strategic outcomes and succeeding in its business strategy. The governance structure comprises executive and advisory committees that enable and support collective leadership and integrated management of policy, programs and finances. Together these committees aim to fulfill NRCan's Strategic Framework and emphasize the importance of sustainable development.

NRCan's senior management policy committees are an example of how the department integrates sustainable development principles into internal policy and operational mechanisms. They ensure that departmental policy decisions are grounded by science and sustainable development, and that science performed is responsive to policy priorities and also supports sustainable development.

The **Executive Committee** is the senior-most deliberative and decision-making committee of the Department, ensuring policy, science, program and corporate integration. The Committee establishes the Department's directions, priorities, and policy approach.

The following committees, structured around specific functions, provide direct support to the Executive Committee in operationalizing the collective leadership and sustainable development principles outlined in the Strategic Framework:

- **Business Transformation Committee:** Chaired by the Associate Deputy Minister, leads and manages the Department's programs and business processes with a view to enhance the utilization of human, financial, IM/IT and real property resources and to improve the capacity and responsiveness of NRCan to meet its strategic outcomes.
- **Policy and Science Integration Committee:** Chaired by the ADM, Science and Policy Integration, reviews policy and science proposals to ensure policy and science integration and consistency with the Department's longer-term policy agenda.
- **Science and Technology Board:** Chaired by the Deputy Minister, will be launched in the Spring of 2011, with internal and external members to provide senior leadership for an integrated approach to the ongoing management of NRCan's S&T capacity and ensure alignment with NRCan's strategic outcomes and policy agenda.

Furthermore, management teams in each of NRCan's sectors (e.g. forestry, energy, mineral and metals, etc.) also view the Strategic Framework as an important tool in developing their strategic plans and orient their day-to day activities. By applying the Strategic Framework, sectors ensure that sustainable development forms the basis for strategic discussions, informs program direction and is one of the criteria used in the evaluations of many programs.

Interdepartmental Fora Related to the Federal Sustainable Development Strategy

- The **Interdepartmental Assistant Deputy Minister Federal Sustainable Development Strategy (ADM FSDS) Committee** is chaired by Environment Canada's (EC) ADM of Strategic Policy. The mandate of the ADM FSDS Committee is to provide strategic direction, and make decisions on key issues associated with the implementation of the *Federal Sustainable Development Act*.
- The **Interdepartmental Director General FSDS Committee** is, chaired by EC's Director General of the Sustainability Directorate. This Committee provides operational direction and guidance and discusses key issues concerning the implementation of the FSDA and the development of goals, targets and implementation strategies for future FSDSs.

- The **Director-level Working Group on the Assessment of the FSDS** is chaired by the director of the Sustainability Directorate. The purpose of the Working Group is to identify gaps and vulnerabilities in the FSDS, identify best practices and lessons learned, provide and refine guidance to departments, and refine approaches used to develop, implement and evaluate the FSDS. The Working Group is also responsible for the development of the FSDS Management Framework and the FSDS Progress Reports.

Application of specific tools

NRCan employs a number of tools to integrate SD considerations in policy development:

Business Planning

In 2010, NRCan published its first Integrated Business Plan (IBP). The IBP is based on NRCan's Program Activity Architecture which is structured around three sustainable development-related outcomes: Economic Competitiveness, Environmental Responsibility, and Safety, Security and Stewardship. The IBP shows how the department integrates its programs, activities, and resources to deliver on its vision *to create a sustainable resource advantage to Canadians*.

Along with implicitly integrating sustainable development into the planning process, NRCan, consistent with its Strategic Review, is focusing on the "new competitiveness model", which is premised on the fact that economic competitiveness can only be achieved through environmental and social responsibility. As a result, senior managers are challenged to reflect on and showcase linkages to the new competitiveness model as part of the integrated planning process.

Environmental Scan

The department undertakes an annual environmental scan which provides external trends relevant to NRCan. The trends identified in the scan are for the most part, global with specific implications for Canada highlighted. The environmental scan informs and supports integration of sustainable development considerations into decision-making throughout the department. PSMC uses the environmental scan as the basis to stimulate discussions on the department's challenges, opportunities and future directions.

New Engagement Policy

. Sustainable development recognizes that stakeholder participation is key to assessing environmental and social values and integrating them into decision-making. Consequently, NRCan is building departmental capacity for sustainable development decision-making by developing a Public Consultation and Engagement Policy and related tools. These will foster inclusive, transparent, and effective public consultation/engagement practices and culture, and will strengthen stakeholder consultation and engagement initiatives ensuring departmental policy and program decisions are informed by sound and credible external input. By providing guidance and tools, and setting our roles and responsibilities, the policy will ensure a more strategic use of stakeholder knowledge and expertise through consultation and engagement to drive policy and program development and enhance sustainable development considerations in decision-making at NRCan.

Memoranda to Cabinet

The department's "Guidelines for the Development of Memoranda to Cabinet" identifies the Strategic Framework as a key tool for positioning proposals. This ensures that sustainable development is a fundamental consideration in all decisions sought by NRCan's Minister at cabinet.

Departmental Decision-making and Sustainable Development

Strategic Environmental Assessment Planning Highlights and Commitments

As a department mandated to enhance both the sustainable development and the competitiveness of Canada's natural resource sectors, NRCan is committed to carrying out strategic environmental assessment (SEA), in accordance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals* (the Cabinet Directive) and its guidelines.

The Cabinet Directive specifies that:

Consistent with the government's strong commitment to sustainable development, ministers expect that policy, plan and program proposals of departments and agencies will consider, when appropriate, potential environmental effects.

More specifically, ministers expect a strategic environmental assessment of a policy, plan or program proposal to be conducted when the following two conditions are met:

1. the proposal is submitted to an individual minister or Cabinet for approval; and
2. implementation of the proposal may result in important environmental effects, either positive or negative.

Departments and agencies are also encouraged to conduct strategic environmental assessments for other policy, plan or program proposals when circumstances warrant. An initiative may be selected for assessment to help implement departmental or agency goals in sustainable development, or if there are strong public concerns about possible environmental consequences.

Internal Coordination

NRCan commits to:

- Update internal NRCan policy to incorporate new requirements of the guidelines supporting the Cabinet Directive, such as: analysing within SEAs the impact of policy, plan and program proposals on FSDS goals and targets; reporting on SEA results through Departmental Performance Reports; and describing the impact of policy, plan and program proposals on FSDS goals and targets in SEA public statements
- Update NRCan guidance material (e.g. SEA templates, internal websites, training material, etc.) to ensure that the impact of policy, plan and program proposals on FSDS goals and targets is considered and documented in SEAs
- Deliver briefing and training sessions to NRCan staff
- Provide relevant NRCan SEA materials (e.g. guidance, templates and case studies) to the interdepartmental network of SEA coordinators in support of fostering a community of practice on SEA

Performance measure for FY 2011-12:


- Rate of NRCan compliance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals* and its supporting guidelines


For more information on SEA at NRCan, please see the NRCan website:
<http://www.nrcan-rncan.gc.ca/com/envamb/strstr-eng.php>

Section 3

Elaboration of departmental activities that contribute to the Goals and Targets under the *Federal Sustainable Development Strategy* Themes I-III



	FSDS Theme I – Addressing Climate Change and Air Quality
	FSDS Goal 1 – Climate Change Reduce greenhouse gas emission levels to mitigate the severity and unavoidable impacts of climate change.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Air Agenda
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada’s total greenhouse gas emissions (GHG) 17% by 2020.	1.1.5 Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments. (EC, HC, NRCan, TC)

You will find below details about NRCan’s activities that contribute to this implementation strategy:

- Energy and Mineral Exploration
- Clean Energy Science and Technology
- Energy Efficiency and Alternative Transportation Fuels
- Climate Change Geoscience and Adaptation
- Essential Geographic Information and Support

Energy and Mineral Exploration	This activity is nested within NRCan’s Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.6	Energy and Mineral Exploration

Description

Economic studies consistently show that public geoscience information and data can be an effective tool to lower risks associated with resource energy and mineral exploration, thereby attracting increased exploration spending. Under Sub Activity – Energy and Mineral Exploration (PAA 1.1.6), NRCan delivers new geoscience information and expertise to industry, fostering energy and mineral exploration and, in turn, development throughout Canada which contributes to economic growth. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – New Energy Supply** (PAA 1.1.6.3): NRCan provides relevant data, information and knowledge focussed on encouraging private sector interest and development activities in viable renewable resources such as gas hydrates, shale gas, geothermal and tidal energy supplies that could become an important component of Canada’s future energy.

Relationship to FSDS Target

Capturing and making public new geoscience knowledge and information on viable renewable energy sources through publications, such as the North American Carbon Capture and Storage Atlas, will help encourage industry interest and investment by lowering risks and will provide support to policymakers. This in turn will strengthen Canada’s future energy mix, which will support the reduction of Canada’s total greenhouse gas emissions. Thus,

Sub Activity – Energy and Mineral Exploration contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Sub Activity 1.1.6.3)

Reports & assessments on new energy supply are used by regulators, industry and other government departments.

- Number of citations of NRCan reports and assessments (reporting annually, beginning 2012-2013).

Outputs for 2011-2012 only (Sub Sub Activity 1.1.6.3)

- Provide input on the collaborative initiative “Best Practices Manual on CO2 Geological Storage Associated with EOR” developed with the Weyburn-Midale project (indicated by acknowledgement of receipt by Weyburn-Midale proponents.)
- Publication of a geothermal energy potential evaluation for northern communities (indicated by percentage of reports released within 12 months after end of data collection phase).

Outputs for 2012-2013 only (Sub Sub Activity 1.1.6.3)

- Publish an impact assessment on geological parameters for carbon storage (indicated by percentage of reports released within 12 months after the end of data collection phase).
- Publish a geothermal energy potential evaluation for northern communities (indicated by percentage of reports released within 12 months after end of data collection phase).

Clean Energy Science and Technology	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows:	
	Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.3	Clean Energy Science and Technology

Description

Knowledge and technologies are needed to enable Canada's transition to a clean energy economy and reduce greenhouse gas emissions. Under Sub Activity – Clean Energy Science and Technology (PAA 2.1.3), NRCan funds and undertakes – in partnership with experts in the private, public and academic sectors – the advancement of science and technology solutions that can help to achieve a clean energy system. This work includes generating new knowledge and developing and demonstrating technologies related to clean energy priority areas of oil and gas, transportation, buildings and communities, industry, power generation, bioenergy as well as medical isotopes. This ultimately contributes to clean water, clean air and sustainable land use by improving environmental responsibility in Canadian clean energy production, conversion and end-use.

Relationship to FSDS Target

The advancement of key clean energy science and technology in Canada will help provide long-term solutions to reducing the emissions of greenhouse gases from energy production, conversion and end-use. Thus, Sub Activity – Clean Energy Science and Technology contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FY 2011-2012.

Expected Result and Indicators (Sub Activity 2.1.3)

The advancement of clean energy knowledge and technologies that addresses the needs of partners and stakeholders.

- Ratio of total government investments in clean energy research, development and demonstration versus leveraging funding from partners.
- Scientific knowledge and information (e.g. refereed publications and presentations, and technical and client reports etc.) disseminated to our clients and partners (e.g. industry, other government departments and agencies, other governments, associations, universities and non-governmental organizations).
- Number of published and/or revised standards and codes.

Outputs and Indicators (Sub Activity 2.1.3)

Establish partnerships to research, develop and demonstrate technologies that align with stakeholder clean energy goals.

Review proposals and approve projects.

Review and assess project progress and results.

- o Number of partnerships (e.g. contracts, agreements, memoranda of understanding, projects etc.) established to research, develop and demonstrate clean energy technologies.
- o Percentage of project proposals reviewed and assessed.
- o Percentage of projects monitored and reviewed.

Other FSDS Linkages

Sub Activity – Clean Energy Science and Technology further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- o **1.1.27** - Use the Program on Energy Research and Development (PERD) to research and develop energy technologies that will reduce GHG emissions;
- o **1.1.28** - Use the Clean Energy Fund for transitioning the energy sector by developing and demonstrating new technologies that will reduce GHG emissions;
- o **1.1.37** - Undertake research, development and deployment of new technologies to reduce GHGs.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- o **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- o **2.1.23** - Undertake research, development and deployment of new technologies to reduce GHG and other air - pollutant emissions.

Energy Efficiency and Alternative Transportation Fuels	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows:	
	Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.4	Energy Efficiency and Alternative Transportation Fuels

Description

The Government of Canada has set a target to reduce Canada's total greenhouse gas emissions by 17% from 2005 levels by 2020. Under Sub Activity – Energy Efficiency and Alternative Transportation Fuels (PAA 2.1.4), NRCan works to improve energy efficiency and increase the production and use of alternative transportation fuels. Different sectors of the economy are targeted using a variety of policy tools to reach this goal such as incentives, regulations, research, information dissemination, and training through workshops. Initiatives under this Sub Activity that contribute to this FSDS implementation strategy include promotion of smart energy use and purchase of efficient technologies, and information on alternative transportation fuels.

Relationship to FSDS Target

Greenhouse gas emissions that contribute to climate change can be reduced through energy efficiency improvements and use of cleaner alternative transportation fuels. Thus, Sub Activity – Energy Efficiency and Alternative Transportation Fuels contributes directly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FYs 2011-2012, 2012-2013 and 2013-2014.

Expected Result and Indicator (Sub Activity 2.1.4)

Improved energy efficiency in all sectors.

- o Percent improvements in energy efficiency and the resulting number of petajoules energy savings.

Other FSDS Linkages

Sub Activity – Energy Efficiency and Alternative Transportation Fuels further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.13** - Enhance energy-efficiency regulations for consumer and commercial products;
- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;

- **1.1.40** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through the following implementation strategies:

- **2.1.2** - Undertake scientific research and reporting in support of regulatory and other programs delivered, including data analysis, inventory development, monitoring, modeling, and assessment of the effectiveness of efforts as well as research on options, costs and benefits including economic and social and technology assessments;
- **2.1.11** - Work on energy-efficiency regulations for consumer and commercial products;
- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.27** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

Climate Change Geoscience and Adaptation	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows:	
	Strategic Outcome 3 – Safety, Security, and Stewardship	
	Program Activity 3.1	Adapting to a Changing Climate and Hazard Risk Management
	Sub Activity 3.1.3	Climate Change Geoscience and Adaptation

Description

The world's climate is changing, and Canadians require knowledge on the effects of climate change in order to adapt. Under Sub Activity – Climate Change Geoscience and Adaptation (PAA 3.1.3), NRCan provides climate change information so that key stakeholders and Canadians can better understand the effects of a changing climate on their communities and make decisions based on the resulting risks and opportunities. Through the outreach activities under this Sub Activity, NRCan facilitates collaboration and issues management to help Canadians prepare for and adapt to a changing climate. Under this Sub Activity are two key Sub Sub Activities that contribute to this FSDS implementation strategy.

- **Sub Sub Activity – Climate Change Science** (PAA 3.1.3.1): NRCan performs research and disseminates data, information and knowledge to governments and communities in order to inform Northerners on the use of adaptation measures.
- **Sub Sub Activity – Climate Impact and Adaptation** (PAA 3.1.3.2): NRCan creates and funds regional adaptation collaboratives and supports the development, dissemination and training in decision-support tools for adaptation.

Relationship to FSDS Target

New geoscience information and outreach activities for decision-makers across Canada will facilitate climate change issues management and help communities prepare for and adapt to a changing climate. These activities will also contribute to advancing the knowledge and communications around climate change mitigation and will ultimately help to reduce Canada's total greenhouse gas emissions (GHG). Thus, the initiatives under Sub Activity – Climate Change Geoscience and Adaptation contribute indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 3.1.3)

Key stakeholders use impacts and adaptation information and support for decision-making.

- Number of NRCan citations used by public/private sector professionals (e.g. urban planners and engineers) (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 3.1.3.1)

Governments and communities in Canadas North (north of 60 latitude) have access to adaptation measures.

- Number of reports released on climate change adaptation measures specific to the North (reported annually, beginning in 2012-2013).

Expected Results and Indicators (Sub Sub Activity 3.1.3.2)

- A. Practitioners in targeted regions are trained in how to use adaptation tools for decision-making.
 - o Number of regions whose practitioners receive training (reporting annually).
- B. Key issues are discussed collaboratively.
 - o Number of issues discussed (reporting annually).

Other FSDS Linkages

Sub Activity – Climate Change Geoscience and Adaptation further contributes to Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.31** - Work with Aboriginal and northern communities, organizations and governments on climate change issues through the development of sustainable energy initiatives and supporting them in managing vulnerabilities and opportunities created by changing climate;
- o **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions.

Essential Geographic Information and Support	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 3 – Safety, Security, and Stewardship	
	Program Activity 3.2	Natural Resource and Landmass Knowledge and Systems
	Sub Activity 3.2.1	Essential Geographic Information and Support

Description

Evidence-based geographic knowledge and information is essential to govern the country and to facilitate development of its natural resources. Without such knowledge, boundaries could not be determined, authoritative land management and development could not be undertaken and sovereign rights could not be upheld.

Under Sub Activity – Essential Geographical Information and Support (PAA 3.2.1), NRCan delivers essential geographic information and derived products to the Canadian public and private sectors, which support decision-making in key economic, environmental and social activities, such as Canada's submission to the United Nations Convention on the Law of the Sea (UNCLOS). With this knowledge, NRCan delivers on Canada's commitment and obligations related to legal boundaries, shares its knowledge internationally and enables scientific activities to be undertaken in Canada's Arctic. Under this Sub Activity are three key Sub Sub Activities that contribute to this FSDS implementation strategy:

- o **Sub Sub Activity – Canada's Geographic Foundation** (PAA 3.2.1.2): NRCan ensures up-to-date, accurate and relevant data and knowledge on Canada's landmass and waters is available to the public and private sectors for decision-making.
- o **Sub Sub Activity – Earth Observation** (PAA 3.2.1.3): NRCan delivers data/derived products including geographic coordinates and satellite data to federal departments, the Canadian public and private sectors for decision-making in areas such as sustainable resource development, land-use management, forest fire and climate monitoring.
- o **Sub Sub Activity – GeoConnections** (PAA 3.2.1.5): NRCan is leading the knowledge, development and implementation of policies that will ensure geographic data is created with uniform standards and data frameworks.

Relationship to FSDS Target

With sound geographic knowledge and information, such as digital topographic and remotely-sensed data, land-use and development decisions can be made supported by an evidence-based foundation. Earth Observation science also ensures that Canadian natural resource authorities can make use of remote sensing applications such as ice monitoring and mapping and other effects of climate change. These tools can enhance decision-making thereby reducing the impact of development and ultimately contributing to the reduction of Canada's total greenhouse gas emissions. Thus, Sub Activity – Essential Geographic Information and Support contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 3.2.1)

Program data is used in value-added applications that support decision making (geographic information systems, etc).

- Value-added applications are used in public and private sector activities on issues of governance and economic development of natural resources (reported annually beginning in 2011-2012).

Output and Indicator (Sub Sub Activity 3.2.1.2)

Geographic data sets updated (transportation, boundaries, elevation, place names, reference points, satellite imagery and water).

- Number of data sets updated (reported annually, beginning in 2011-2012).

Output and Indicator (Sub Sub Activity 3.2.1.3)

Satellite images are received, processed, archived and disseminated.

- Percentage of satellite images in near real-time and archived products available within planned targets (reported annually, beginning in 2011-2012).

Output and Indicator (Sub Sub Activity 3.2.1.5)

Tools, methodologies and standards are released.

- Number of tools, methodologies and standards developed and disseminated (reported annually beginning in 2011-2012).


Other FSDS Linkages

Sub Activity – Essential Geographic Information and Support also contributes to FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through one implementation strategy:

- **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

This Sub Activity also contributes to Target 6.4 – Managing Threats to Ecosystems through one implementation strategy:

- **6.4.1** - Fulfill federal responsibilities related to prevention, detection, rapid response and management of invasive alien species. Key activities are related to governance (including international cooperation legislation/regulation, science and technology, risk analysis, information management and sharing, performance promotion, management and mitigation).

	FSDS Target 1.1	FSDS Implementation Strategy Clean Air Agenda
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.13 Enhance energy-efficiency regulations for consumer and commercial products. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Energy Efficiency and Alternative Transportation Fuels	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.4	Energy Efficiency and Alternative Transportation Fuels

Description

The Government of Canada has set a target to reduce Canada's total greenhouse gas emissions by 17% from 2005 levels by 2020. Under Sub Activity – Energy Efficiency and Alternative Transportation Fuels (PAA 2.1.4), NRCan works to improve energy efficiency and increase the production and use of alternative transportation fuels. Different sectors of the economy are targeted using a variety of policy tools to reach this goal such as incentives, regulations, research, information dissemination, and training through workshops. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Equipment** (PAA 2.1.4.1): NRCan excludes the least energy efficient equipment from the market and influences consumers to select, and manufacturers to produce, higher performance products. This Sub Sub Activity targets energy consumers and manufacturers of energy using equipment. Key initiatives include energy efficiency regulations, EnerGuide and ENERGY STAR labelling and promotion.

Relationship to FSDS Target

Greenhouse gas emissions that contribute to climate change can be reduced through energy efficiency improvements. Thus, Sub Sub Activity – Equipment, under Sub Activity - Energy Efficiency and Alternative Transportation Fuels, contributes directly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FYs 2011-2012, 2012-2013 and 2013-2014.

Expected Result and Indicator (Sub Sub Activity 2.1.4.1)

Increased energy efficiency in equipment from NRCan programming.

- o Energy savings (petajoules).


Other FSDS Linkages

Sub Activity – Energy Efficiency and Alternative Transportation Fuels further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessment;
- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- o **1.1.40** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through the following implementation strategies:

- **2.1.2** - Undertake scientific research and reporting in support of regulatory and other programs delivered, including data analysis, inventory development, monitoring, modeling, and assessment of the effectiveness of efforts as well as research on options, costs and benefits including economic and social and technology assessments;
- **2.1.11** - Work on energy-efficiency regulations for consumer and commercial products;
- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.27** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Energy
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.20 Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities. (EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Domestic and International Energy Policy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only through a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals.

To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (PAA 1.1.7), NRCan manages federal regulatory responsibilities and delivers current and timely energy related analysis, advice and recommendations to NRCan senior management on a variety of domestic and international energy issues, including the Canada-US Clean Energy Dialogue (CED). The CED is the primary vehicle to advance bilateral cooperation with the US on clean energy technologies that support greenhouse gas mitigation efforts.

Relationship to FSDS Target

Activities under the Canada-US Clean Energy Dialogue will help to increase the uptake of clean energy technologies that can lead to reduced emissions of greenhouse gases. Thus, Sub Activity – Domestic and International Energy Policy indirectly contributes to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This initiative sunsets in FY 2010-2011 and will be reported on in the DPR 2010-2011. Non-Financial Performance Expectations apply to:

FY 2010-2011 only.

Output and Indicator

Implementation of recommendations in the Clean Energy Dialogue Action Plan.

- o Percentage of Action Plan projects and initiatives implemented through the CED process.

Other FSDS Linkages


Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.30** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments, and between governments and the private sector, to maximize and expedite the development of renewable energy sources in the region;
- o **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions;
- o **1.1.48.2** - Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues;

- **1.1.49.1** - Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation;
- **1.1.50** - *Asia-Pacific Partnership*: Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies;
- **1.1.53** - *Carbon Capture and Storage (CCS)*: Participate in a variety of policy and technical multilateral cooperation fora including the Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.19** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Energy
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.22 Continue to work with industry stakeholders to encourage and promote the adoption and adaptation of new technologies such as information and communications technologies, biotechnology and clean energy technology. (IC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Green Mining Initiative	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.1	Green Mining Initiative

Description

Recognizing the need for innovative technological solutions to advance sustainable mining, the Green Mining Initiative (GMI) (PAA 2.2.1) was launched in 2009 as a proactive effort to improve Canada's mining environmental performance. GMI research aims to find alternative means for waste disposal, reduced water use and protection of air quality at all stages of the mining cycle.

As an example, NRCan collaborated with Canadian mining equipment manufacturer Mining Technologies International to develop the world's first hybrid mining vehicle – a diesel-electric scoop tram, which has a significant positive impact on the economic viability and competitiveness of underground mining operations, the energy costs associated with ventilation as well as the health of mine workers. Activities going forward in the next three years will be aimed at transitioning from the first world-wide prototype to a pre-commercial scoop tram model.

Relationship to FSDS Target

Extending the life of a mine often means extracting from greater depths. Ventilation is one of the most significant operating costs, and uses of energy, in deep as well as shallow mines. Because it always burns fuel in optimal engine conditions and that its peak power demand is supplied by batteries, the hybrid scoop tram can achieve greater efficiency and much lower emissions compared to similar size conventional equipment performing the same tasks. As a result, it uses less carbon-based fuel and requires less energy-intensive ventilation and air heating / air conditioning to maintain the same air quality for miners. Thus, promotion of adoption of the scoop tram, under Sub Activity – Green Mining Initiative, indirectly contributes to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FY 2013-2014.


Indicator

- o Number of underground hybrid equipment used in Canada.

Other FSDS Linkages

Sub Activity – Green Mining Initiative also contributes to FSDS Target 2.1 – Air Pollutants through the following implementation strategy:

- o **2.1.23** - Undertake research, development and deployment of new technologies to reduce GHG and other air pollutant emissions.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Energy
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.26 Supply financial aid and develop capacity to reduce GHGs through adoption of emission-reducing technologies and practices. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

- Renewable Energy Deployment
- Clean Energy Science and Technology
- Energy Efficiency and Alternative Transportation Fuels

Renewable Energy Deployment	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.2	Renewable Energy Deployment

Description

The Government of Canada has committed to build on its successful clean electricity system by leading the world in clean energy generation. Under Sub Activity – Renewable Energy Deployment (PAA2.1.2), NRCan provides an incentive to electricity producers to increase Canada's supply of clean electricity from renewable sources like wind, biomass, small hydro, solar photovoltaic and ocean energy. In addition to reducing Canadian greenhouse gas emissions, this Sub Activity will help to create a more sustainable and diversified energy mix. Sub Activity – Renewable Energy Deployment is supported by the ecoENERGY for Renewable Power and the Wind Power Production Incentive programs.

Financial incentives provided to qualifying renewable electricity producers under the ecoENERGY for Renewable Power Program will encourage the growth of more than 4,000 MW of new renewable electricity capacity in Canada and is expected to reduce GHG emissions between 6 and 6.7 megatonnes per year by 2012. Under the Wind Power Production Incentive program, 924 MW of new wind energy capacity has been developed in Canada and reduces GHG emissions by approximately 1.5 megatonnes per year.

Relationship to FSDS Target

Financial incentives towards clean electricity projects will result in reduction of greenhouse gas emissions that contribute to climate change. Thus, Sub Activity – Renewable Energy Deployment contributes directly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

The ecoENERGY for Renewable Power program sunsets in FY 2010-2011 and will be reported on in DPR 2010-2011. Non-financial performance expectations apply to:

FY 2010-2011 only.

Expected Result and Indicator (Sub Activity 2.1.2)

Increased production of renewable electricity supply in Canada.

- Amount of clean electricity generation from low-impact renewable sources.

Outputs and Indicators (Sub Activity 2.1.2)

Project applications reviewed for funding.

- Number of projects reviewed under the ecoENERGY for Renewable Power program.

Contribution agreements signed.

- Number of contribution agreements signed for qualified projects under the ecoENERGY for Renewable Power program.

Other FSDS Linkages

Sub Activity – Renewable Energy Deployment also contributes to FSDS Target 2.1 – Air Pollutants through one implementation strategy:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction.

Clean Energy Science and Technology	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.3	Clean Energy Science and Technology

Description

Knowledge and technologies are needed to enable Canada's transition to a clean energy economy and reduce greenhouse gas emissions. Under Sub Activity – Clean Energy Science and Technology (PAA 2.1.3), NRCan funds and undertakes – in partnership with experts in the private, public and academic sectors – the advancement of science and technology solutions that can help to achieve a clean energy system. This work includes generating new knowledge and developing and demonstrating technologies related to clean energy priority areas of oil and gas, transportation, buildings and communities, industry, power generation, bioenergy as well as medical isotopes. This ultimately contributes to clean water, clean air and sustainable land use by improving environmental responsibility in Canadian clean energy production, conversion and end-use.

Relationship to FSDS Target

The advancement of key clean energy science and technology in Canada will help provide long-term solutions to reducing the emissions of greenhouse gases from energy production, conversion and end-use. Thus, Sub Activity – Clean Energy Science and Technology contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FY 2011-2012.

Expected Result and Indicators (Sub Activity 2.1.3)

The advancement of clean energy knowledge and technologies that addresses the needs of partners and stakeholders.

- Ratio of total government investments in clean energy research, development and demonstration versus leveraging funding from partners.
- Scientific knowledge and information (e.g. refereed publications and presentations, and technical and client reports etc.) disseminated to our clients and partners (e.g. industry, other government departments and agencies, other governments, associations, universities and non-governmental organizations).
- Number of published and/or revised standards and codes.

Outputs and Indicators (Sub Activity 2.1.3)

Establish partnerships to research, develop and demonstrate technologies that align with stakeholder clean energy goals.

Review proposals and approve projects.

Review and assess project progress and results.

- Number of partnerships (e.g. contracts, agreements, memoranda of understanding, projects etc.) established to research, develop and demonstrate clean energy technologies.
- Percentage of project proposals reviewed and assessed.
- Percentage of projects monitored and reviewed.

Other FSDS Linkages

Sub Activity – Clean Energy Science and Technology further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;

- o **1.1.27** - Use the Program on Energy Research and Development (PERD) to research and develop energy technologies that will reduce GHG emissions;
- o **1.1.28** - Use the Clean Energy Fund for transitioning the energy sector by developing and demonstrating new technologies that will reduce GHG emissions;
- o **1.1.37** - Undertake research, development and deployment of new technologies to reduce GHGs.

This Sub Activity also contributes to Target 2.1 – Air Pollutants through two implementation strategies:

- o **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- o **2.1.23** - Undertake research, development and deployment of new technologies to reduce GHG and other air pollutant emissions.

Energy Efficiency and Alternative Transportation Fuels	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.4	Energy Efficiency and Alternative Transportation Fuels

Description

The Government of Canada has set a target to reduce Canada's total greenhouse gas emissions by 17% from 2005 levels by 2020. Under Sub Activity – Energy Efficiency and Alternative Transportation Fuels (PAA 2.1.4), NRCan works to improve energy efficiency and increase the production and use of alternative transportation fuels. Different sectors of the economy are targeted using a variety of policy tools to reach this goal such as incentives, regulations, research, information dissemination, and training through workshops. Under this Sub Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Alternative Transportation Fuels (PAA 2.1.4.6):** In order to limit greenhouse gas emissions, NRCan targets alternative transportation fuel producers and end-users. Activities inform the public of and encourage and facilitate the production and end use of alternative fuels in Canada such as biodiesel, ethanol, natural gas, hydrogen and electricity. This includes ecoENERGY for Biofuels, which provides operating incentives to producers of renewable alternatives to gasoline and diesel based on production levels and market conditions.

Relationship to FSDS Target

Improvements in energy efficiency and the increased production and use of alternative transportation fuels help to reduce greenhouse gas emissions by reducing electricity demand and fuel consumption. Thus, Sub Sub Activity – Alternative Transportation Fuels, under Sub Activity – Energy Efficiency and Alternative Transportation Fuels, contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation

Non-Financial Performance Expectations

FYs 2011-2012, 2012-2013 and 2013-2014.

Expected Result and Indicators (Sub Activity 2.1.4)

Increased production and use of alternative transportation fuels.

- o Renewable fuel production as a percentage of total gasoline and distillate pools.
- o Alternative fuel use as a percentage of total on-road transportation use.

Expected Result and Indicator (Sub Sub Activity 2.1.4.6)

Increased domestic capacity and actual production of renewable alternatives to gasoline and diesel from NRCan programming, contributing towards Canada's role in the development and use of natural resources.

- o Total domestic production of renewable alternatives to gasoline and diesel directly funded by ecoEnergy for Biofuels, in litres and by fuel type.


Other FSDS Linkages

Sub Activity – Energy Efficiency and Alternative Transportation Fuels further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- **1.1.13** - Enhance energy-efficiency regulations for consumer and commercial products;
- **1.1.40** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through the following implementation strategies:

- **2.1.2** - Undertake scientific research and reporting in support of regulatory and other programs delivered, including data analysis, inventory development, monitoring, modeling, and assessment of the effectiveness of efforts as well as research on options, costs and benefits including economic and social and technology assessments;
- **2.1.11** - Work on energy-efficiency regulations for consumer and commercial products;
- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.27** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Energy
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.27 Use the Program on Energy Research and Development (PERD) to research and develop energy technologies that will reduce GHG emissions. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Clean Energy Science and Technology	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.3	Clean Energy Science and Technology

Description

Knowledge and technologies are needed to enable Canada's transition to a clean energy economy and reduce greenhouse gas emissions. Under Sub Activity – Clean Energy Science and Technology (PAA 2.1.3), NRCan funds and undertakes – in partnership with experts in the private, public and academic sectors – the advancement of science and technology solutions that can help to achieve a clean energy system. This work includes generating new knowledge and developing and demonstrating technologies related to clean energy priority areas of oil and gas, transportation, buildings and communities, industry, power generation, bioenergy as well as medical isotopes. This ultimately contributes to clean water, clean air and sustainable land use by improving environmental responsibility in Canadian clean energy production, conversion and end-use.

Under Sub Activity – Clean Energy Science and Technology, the Program on Energy Research and Development funds research and development designed to ensure a sustainable energy future for Canada in the best interests of both our economy and our environment. The Program is specifically targeted to activities of federal departments and agencies.

Relationship to FSDS Target

Research and development supported by the Program on Energy Research and Development helps to advance key clean energy technologies in Canada that will contribute to a reduction of greenhouse gas emissions in the future. Thus, this program under Sub Activity – Clean Energy Science and Technology contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FY 2011-2012.

Expected Result and Indicators (Sub Activity 2.1.3)

The advancement of clean energy knowledge and technologies that addresses the needs of partners and stakeholders.

- o Ratio of total government investments in clean energy research, development and demonstration versus leveraging funding from partners.
- o Scientific knowledge and information (e.g. refereed publications and presentations, and technical and client reports etc.) disseminated to our clients and partners (e.g. industry, other government departments and agencies, other governments, associations, universities and non-governmental organizations).
- o Number of published and/or revised standards and codes.

Outputs and Indicators (Sub Activity 2.1.3)

Establish partnerships to research, develop and demonstrate technologies that align with stakeholder clean energy goals.

Review proposals and approve projects.

Review and assess project progress and results.

- o Number of partnerships (e.g. contracts, agreements, memoranda of understanding, projects etc.) established to research, develop and demonstrate clean energy technologies.
- o Percentage of project proposals reviewed and assessed.

- Percentage of projects monitored and reviewed.


Other FSDS Linkages

Sub Activity – Clean Energy Science and Technology further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- **1.1.28** - Use the Clean Energy Fund for transitioning the energy sector by developing and demonstrating new technologies that will reduce GHG emissions;
- **1.1.37** - Undertake research, development and deployment of new technologies to reduce GHGs.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.23** - Undertake research, development and deployment of new technologies to reduce GHG and other air pollutant emissions.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Energy
Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.		1.1.28 Use the Clean Energy Fund for transitioning the energy sector by developing and demonstrating new technologies that will reduce GHG emissions. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Clean Energy Science and Technology	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.3	Clean Energy Science and Technology

Description

Knowledge and technologies are needed to enable Canada's transition to a clean energy economy and reduce greenhouse gas emissions. Under Sub Activity -Clean Energy Science and Technology (PAA 2.1.3), NRCan funds and undertakes – in partnership with experts in the private, public and academic sectors – the advancement of science and technology solutions that can help to achieve a clean energy system. This work includes generating new knowledge and developing and demonstrating technologies related to clean energy priority areas of oil and gas, transportation, buildings and communities, industry, power generation, bioenergy as well as medical isotopes. This ultimately contributes to clean water, clean air and sustainable land use by improving environmental responsibility in Canadian clean energy production, conversion and end-use. Under Sub Activity – Clean Energy Science and Technology, the Clean Energy Fund is providing nearly \$795 million over five years to advance Canadian leadership in clean energy technologies. The Fund is specifically investing in large-scale carbon capture and storage demonstration projects and smaller-scale demonstration projects of renewable and alternative energy technologies.

Relationship to FSDS Target

The advancement of key clean energy science and technology in Canada through the Clean Energy Fund will help provide long-term solutions to reducing the emissions of greenhouse gases from energy production, conversion and end-use. Thus, this Fund under Sub Activity – Clean Energy Science and Technology contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FY 2011-2012.

Expected Result and Indicators (Sub Activity 2.1.3)

The advancement of clean energy knowledge and technologies that addresses the needs of partners and stakeholders.

- o Ratio of total government investments in clean energy research, development and demonstration versus leveraging funding from partners.
- o Scientific knowledge and information (e.g. refereed publications and presentations, and technical and client reports etc.) disseminated to our clients and partners (e.g. industry, other government departments and agencies, other governments, associations, universities and non-governmental organizations).
- o Number of published and/or revised standards and codes.

Outputs and Indicators (Sub Activity 2.1.3)

Establish partnerships to research, develop and demonstrate technologies that align with stakeholder clean energy goals.

Review proposals and approve projects.

Review and assess project progress and results.

- o Number of partnerships (e.g. contracts, agreements, memoranda of understanding, projects etc.) established to research, develop and demonstrate clean energy technologies.
- o Percentage of project proposals reviewed and assessed.
- o Percentage of projects monitored and reviewed.


Other FSDS Linkages

Sub Activity – Clean Energy Science and Technology further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- o **1.1.27** - Use the Program on Energy Research and Development (PERD) to research and develop energy technologies that will reduce GHG emissions;
- o **1.1.37** - Undertake research, development and deployment of new technologies to reduce GHGs.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- o **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- o **2.1.23** - Undertake research, development and deployment of new technologies to reduce GHG and other air pollutant emissions.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Energy
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.29 Finance projects that would, among other things, help to optimize resource use, valuing residual resources, and contribute to eco-efficiency. (DEC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Minerals and Metals Markets, Innovation and Investment	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.1	Minerals and Metals Markets, Innovation and Investment

Description

The mining sector is highly competitive, involves multiple stakeholders and is managed by multiple jurisdictions that all require information to make informed decisions. Under Sub Activity – Minerals and Metals Markets, Innovation and Investment (PAA 1.1.1), NRCan assists in the coordination and increased coherence for jurisdictions and stakeholders to make decisions that position the sector to remain competitive.

Under this Sub Activity, the Recycling Program promotes and enhances recycling in Canada by providing information about metals and minerals recycling and recycling in general. NRCan promotes recycling of electronic waste, encouraging the electronics manufacturing and retail industries to think in terms of materials, life cycles; contributing to the sustainable management of rare elements found in electronic components; and promoting recycling as an environmentally sound alternative to sending to landfills the often hazardous components found in electronic equipment.

The Recycling Program includes a significant dimension aimed at public and industry education, enabling capacity to reduce emissions that impact air quality, as well as GHG emissions. Key products stemming from the program are the Canadian Metals and Minerals Recycling Database, listing Canadian companies involved in metals and minerals recycling, and the Industry Framework, which offers a complete listing of all commodities recycled in Canada and information on the recycling of these commodities.

Currently, NRCan is developing a recycling strategy to enhance recovery practices across Canada. This work targets the Institutional, Commercial and Industrial (IC&I) sectors of the economy and will contain discrete projects designed to enable the Federal Government to add value to national recycling efforts.

Relationship to FSDS Target

Promotion and enhancement of recycling of metals and minerals encourages reduction of greenhouse gas emissions because it takes less energy to manufacture materials from recovered materials than it does from virgin sources. For example, energy savings of 95% can be realized by recycling aluminum cans as opposed to making those cans from primary aluminum ore. Reduced energy use means fewer GHGs emitted. Thus, the Recycling Program under Sub Activity – Minerals and Metals Markets, Innovation and Investment contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

The Recycling Strategy is expected to be developed in FY 2011-2012, at which time, performance indicators will be developed.


Other FSDS Linkages

Sub Activity – Minerals and Metals Markets, Investment and Promotion also contributes to FSDS Target 2.1 – Air Pollutants through one implementation strategy:

- o **2.1.17** - Finance projects that would, among other things, help to minimize resource use, valuing residual resources, and contribute to eco-efficiency.

This Sub Activity also contributes to FSDS Target 2.3 – Chemicals Management through one implementation strategy:

- o **2.3.6** - Apply life-cycle thinking, sustainable materials management and environmentally sound management of hazardous wastes to promote sustainable consumption and minimize the impacts of products and wastes on the environment and human health.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Energy
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.30 The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communications among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region. (ACOA, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Domestic and International Energy Policy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only by a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals.

To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (PAA 1.1.7), NRCan delivers current and timely energy related analysis, advice and recommendations to NRCan senior management on a variety of domestic and international issues, including clean energy, climate change, renewable electricity, nuclear energy, uranium and radioactive wastes, and federal-provincial-territorial energy relations.

In particular, under this Sub Activity, NRCan will promote and facilitate the development of clean and renewable energy sources in Atlantic Canada through the Atlantic Energy Gateway initiative. This initiative seeks to bring together the federal and provincial governments, the private and public utilities, the private sector, and other energy stakeholders across Atlantic Canada to develop a regional strategy for the development of clean and renewable energy projects.

Relationship to FSDS Target

The Atlantic Energy Gateway initiative will foster regional cooperation and collaboration in the planning and operations of the Atlantic electricity sector, which will facilitate the development of clean and renewable energy in the region, thereby displacing GHG-emitting sources of electricity. Thus this initiative under Sub Activity – Domestic and International Energy Policy contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This initiative sunsets in FY 2011-2012. *Non Financial Performance Expectations apply to:*

FYs 2010-2011 and 2011-2012.

Expected Result and Indicators (Sub Activity 1.1.7)

NRCan senior management has access to quality advice and information for timely decisions on energy-related issues.

- o Sector-specific advice, analysis and recommendations are available as requested by senior management.
- o Senior management satisfaction with relevance and usefulness of advice, analysis and recommendations provided.

Other FSDS Linkages


Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.20** - Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities;

- **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions;
- **1.1.48.2** - Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues;
- **1.1.49.1** - Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation;
- **1.1.50** - *Asia-Pacific Partnership*: Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies;
- **1.1.53** - *Carbon Capture and Storage (CCS)*: Participate in a variety of policy and technical multilateral cooperation fora including the Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.19** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Energy
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.31 Work with Aboriginal and northern communities, organizations and governments on climate change issues through the development of sustainable energy initiatives and supporting them in managing vulnerabilities and opportunities created by changing climate. (INAC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Climate Change Geoscience and Adaptation	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 3 – Safety, Security, and Stewardship	
	Program Activity 3.1	Adapting to a Changing Climate and Hazard Risk Management
	Sub Activity 3.1.3	Climate Change Geoscience and Adaptation

Description

The world's climate is changing, and Canadians require knowledge on the effects of climate change in order to adapt. Under Sub Activity – Climate Change Geoscience and Adaptation (PAA 3.1.3), NRCan provides climate change information so that key stakeholders and Canadians can better understand the effects of a changing climate on their communities and make decisions based on the resulting risks and opportunities. Through the outreach activities under this Sub Activity, NRCan facilitates collaboration and issues management to help Canadians prepare for and adapt to a changing climate. Under this Sub Activity are two key Sub Sub Activities that contribute to this FSDS implementation strategy.

- o **Sub Sub Activity – Climate Change Science** (PAA 3.1.3.1): NRCan performs research and disseminates data, information and knowledge to governments and communities in order to inform Northerners on the use of adaptation measures.
- o **Sub Sub Activity – Climate Impact and Adaptation** (PAA 3.1.3.2): NRCan creates and funds regional adaptation collaboratives and supports the development, dissemination and training in decision-support tools for adaptation.

Relationship to FSDS Target

Changes to Canada's northern climate will likely be more profound than in other regions. Adaptation measures will need to be carefully designed in order to preserve Canada's sensitive Arctic and sub-Arctic environments. As well, successfully planning for and managing the impacts of climate change require not only the exploration of the risks and opportunities created by a changing climate but also co-operation among multiple levels of decision-makers. This program's research, outreach and information will enable Aboriginal and northern governments, organizations and communities to better understand and apply climate change adaptation measures. Thus, the Sub Sub Activities under Sub Activity – Climate Change Geoscience and Adaptation contribute indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 3.1.3)

Key stakeholders use impacts and adaptation information and support for decision-making.

- o Number of NRCan citations used by public/private sector professionals (e.g. urban planners and engineers) (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 3.1.3.1)

Governments and communities in Canada's North (north of 60 latitude) have access to adaptation measures.

- o Number of reports released on climate change adaptation measures specific to the North (reported annually, beginning in 2012-2013).

Expected Results and Indicators (Sub Sub Activity 3.1.3.2)

A. Practitioners in targeted regions are trained in adaptation.

- Number of regions whose practitioners receive training. (Reporting annually.)


B. Key issues are discussed collaboratively.

- Number of issues discussed. (Reporting annually)

Other FSDS Linkages

Sub Activity – Climate Change Geoscience and Adaptation further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions.

	FSDS Target 1.1	FSDS Implementation Strategy Clean Transportation
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.37 Undertake research, development and deployment of new technologies to reduce GHGs. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Clean Energy Science and Technology	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.3	Clean Energy Science and Technology

Description

Knowledge and technologies are needed to enable Canada's transition to a clean energy economy and reduce greenhouse gas emissions. Under Sub Activity – Clean Energy Science and Technology (PAA 2.1.3), NRCan funds and undertakes – in partnership with experts in the private, public and academic sectors – the advancement of science and technology solutions that can help to achieve a clean energy system. This work includes generating new knowledge and developing and demonstrating technologies related to clean energy priority areas of oil and gas, transportation, buildings and communities, industry, power generation, bioenergy as well as medical isotopes. This ultimately contributes to clean water, clean air and sustainable land use by improving environmental responsibility in Canadian clean energy production, conversion and end-use.

Relationship to FSDS Target

The advancement of key clean energy science and technology in Canada will help provide long-term solutions to reducing the emissions of greenhouse gases from energy production, conversion and end-use. Thus, Sub Activity – Clean Energy Science and Technology contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FY 2011-2012.

Expected Result and Indicators (Sub Activity 2.1.3)

The advancement of clean energy knowledge and technologies that addresses the needs of partners and stakeholders.

- o Ratio of total government investments in clean energy research, development and demonstration versus leveraging funding from partners.
- o Scientific knowledge and information (e.g. refereed publications and presentations, and technical and client reports etc.) disseminated to our clients and partners (e.g. industry, other government departments and agencies, other governments, associations, universities and non-governmental organizations).
- o Number of published and/or revised standards and codes.

Outputs and Indicators (Sub Activity 2.1.3)

Establish partnerships to research, develop and demonstrate technologies that align with stakeholder clean energy goals.

Review proposals and approve projects.

Review and assess project progress and results.

- o Number of partnerships (e.g. contracts, agreements, memoranda of understanding, projects etc.) established to research, develop and demonstrate clean energy technologies.
- o Percentage of project proposals reviewed and assessed.
- o Percentage of projects monitored and reviewed.


Other FSDS Linkages

Sub Activity – Clean Energy Science and Technology further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- **1.1.27** - Use the Program on Energy Research and Development (PERD) to research and develop energy technologies that will reduce GHG emissions;
- **1.1.28** - Use the Clean Energy Fund for transitioning the energy sector by developing and demonstrating new technologies that will reduce GHG emissions.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.23** - Undertake research, development and deployment of new technologies to reduce GHG and other air pollutant emissions.

 FSDS Target 1.1	FSDS Implementation Strategy Clean Transportation
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.

You will find below details about NRCan's activities that contribute to this implementation strategy:

Materials for Energy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.1	Materials for Energy

Description

There is a requirement to enhance the understanding of material properties to optimize research and development that supports energy efficiency in vehicles, power generation and pipelines in order to address transportation, nuclear and oil and gas industry issues. Sub Activity – Materials for Energy (PAA 2.1.1) involves multi-disciplinary collaborative research and development, directly contributing to the commercialization of innovative materials and processes that enable emission reduction and improved efficiency in areas such as next generation vehicles, power generation, and reliable and safe pipelines. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Innovative Materials and Processing Technologies** (PAA 2.1.1.1): Current materials do not support the transportation industries' new requirements for moving towards lightweighting vehicles and its powertrain to promote fuel efficiency and reduce greenhouse gas emissions. In order to accommodate the new requirements, the Vehicle Structural Materials (VSM) research program under this Sub Sub Activity develops the advanced materials, processes and fabrication techniques required to significantly improve the energy efficiency of the next generation of vehicles. The VSM program focuses on advancing the structural, powertrain and chassis materials now used on conventional vehicles for use on next-generation vehicles. Lightweighting is one of the major thrust areas that enables the reduction in greenhouse gas emissions, increases fuel economy and enhances safety, a key enabling technology for the development of hybrid, fuel cell, bio-diesel and other eco-friendly fueled vehicles. Through substantial collaboration, this program will develop a new generation of researchers in metallurgical alloys and materials to enhance the competitiveness of the Canadian automotive industry and transfer key technology to the benefit of all Canadians.

Relationship to FSDS Target

The energy efficiency of the current vehicles can be improved by lightweighting and advanced powertrains. Advanced research into new materials, conducted in partnership with other stakeholders – including automotive manufacturers, universities and federal labs – promotes adoption of innovative new light-weight automotive structures powered by advanced powertrains that can significantly reduce the overall weight of a vehicle and improve the performance resulting in fuel savings and reduced carbon emissions. Thus, the Vehicle Structural Materials research program under Sub Activity – Materials for Energy contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non Financial Performance Expectations

FYs 2011-2012, 2012-2013 and 2013-2014.

Expected Result and Indicator (Sub Activity 2.1.1)

Development and innovative use of materials that contribute to clean energy and energy efficiency is increased.

- Number of collaborative interactions measured by the number of demonstrations in private-sector facilities of technologies developed. (On-going)

Expected Result and Indicator (Sub Sub Activity 2.1.1.1)

Knowledge is transferred.

- Number of publications accepted in peer-reviewed conference proceedings. (Ongoing)


Outputs and Indicators (Sub Sub Activity 2.1.1.1)

New alloys or materials or processes developed and tested with industry.

- Number of new alloys or materials or processes developed and tested with industry. (Ongoing)

Demonstration projects in private sector facilities of technologies developed.

- Number of demonstration projects. (On-going)

	FSDS Target 1.1	FSDS Implementation Strategy Clean Transportation
Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.		1.1.40 Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Energy Efficiency and Alternative Transportation Fuels	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.4	Energy Efficiency and Alternative Transportation Fuels

Description

The Government of Canada has set a target to reduce Canada's total greenhouse gas emissions by 17% from 2005 levels by 2020. Under Sub Activity – Energy Efficiency and Alternative Transportation Fuels (PAA 2.1.4), NRCan works to improve energy efficiency and increase the production and use of alternative transportation fuels. Different sectors of the economy are targeted using a variety of policy tools to reach this goal such as incentives, regulations, research, information dissemination, and training through workshops. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Transportation (PAA 2.1.4.5):** NRCan aims to introduce more fuel efficient vehicles into the Canadian market, to influence consumer demand for those vehicles, and to influence vehicle operations and vehicle maintenance. This Sub Sub Activity targets the Canadian vehicle market, individual drivers, and operators of commercial vehicle fleets. NRCan use a variety of policy tools such as fuel efficient training and awareness to ensure drivers understand the effects of their purchasing, operation and maintenance behaviours.

Relationship to FSDS Target

More efficient driving practices and vehicle choices help to reduce greenhouse gas emissions by decreasing fuel consumption. Thus, Sub Sub Activity – Transportation, under Sub Activity – Energy Efficiency and Alternative Transportation Fuels, contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FYs 2011-2012, 2012-2013 and 2013-2014.

Expected Result and Indicator (Sub Sub Activity 2.1.4.5)

Improved energy efficiency in road transportation from NRCan programming.

- o Energy (fuel) savings.


Other FSDS Linkages

Sub Activity – Energy Efficiency and Alternative Transportation Fuels further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- o **1.1.13** - Enhance energy-efficiency regulations for consumer and commercial products;
- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through the following implementation strategies:

- **2.1.2** - Undertake scientific research and reporting in support of regulatory and other programs delivered, including data analysis, inventory development, monitoring, modeling, and assessment of the effectiveness of efforts as well as research on options, costs and benefits including economic and social and technology assessments;
- **2.1.11** - Work on energy-efficiency regulations for consumer and commercial products;
- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.27** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

	FSDS Target 1.1	FSDS Implementation Strategy International Work on Climate Change
Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.		1.1.43 Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions. (EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

- Domestic and International Energy Policy
- Climate Change Geoscience and Adaptation

Domestic and International Energy Policy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only by a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals.

To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (PAA 1.1.7), NRCan delivers current and timely energy related analysis, advice and recommendations to NRCan senior management on a variety of domestic and international issues, including clean energy, climate change, renewable electricity, nuclear energy, uranium and radioactive wastes, and federal-provincial-territorial energy relations. Capacity building in these areas contributes to this FSDS implementation strategy by increasing NRCan's knowledge of emission reducing technologies and practices that support policy analysis and advice on climate change mitigation.

Under this Sub Activity NRCan also supports the development of Canada's negotiating position in international fora related to climate change and clean energy. By working with international partners, NRCan supports the development and deployment of clean technologies to developing countries, thus facilitating the achievements of commitments under the Copenhagen Accord.

Relationship to FSDS Target

The Copenhagen Accord includes GHG emission reduction targets or mitigation actions for 85 countries, including all major emitters. Contributing to its implementation will therefore contribute to climate change mitigation. Thus, efforts under Sub Activity – Domestic and International Energy Policy contribute indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This initiative sunsets in FY 2010-2011 and will be reported on in DPR 2010-2011. Non Financial Performance Expectations apply to:

FY 2010-2011 only.

Output and Indicators (Sub Activity 1.1.7)

Advice, recommendations and analysis on specific international engagement in energy-related fora and projects.

- Advice, recommendations and analysis in support of international working groups, meetings and/or projects.
- Advice, recommendations and analysis in support of international climate change engagement.

Other FSDS Linkages

Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.20** - Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities;
- o **1.1.30** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments, and between governments and the private sector, to maximize and expedite the development of renewable energy sources in the region;
- o **1.1.48.2** - Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues;
- o **1.1.49.1** - Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation;
- o **1.1.50** - *Asia-Pacific Partnership*: Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies;
- o **1.1.53** - *Carbon Capture and Storage (CCS)*: Participate in a variety of policy and technical multilateral cooperation fora including the Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- o **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- o **2.1.19** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region.

Climate Change Geoscience and Adaptation	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 3 – Safety, Security, and Stewardship	
	Program Activity 3.1	Adapting to a Changing Climate and Hazard Risk Management
	Sub Activity 3.1.3	Climate Change Geoscience and Adaptation

Description

The world's climate is changing, and Canadians require knowledge on the effects of climate change in order to adapt. Under Sub Activity – Climate Change Geoscience and Adaptation (PAA 3.1.3), NRCan provides climate change information so that key stakeholders and Canadians can better understand the effects of a changing climate on their communities and make decisions based on the resulting risks and opportunities. Through the outreach activities under this Sub Activity, NRCan facilitates collaboration and issues management to help Canadians prepare for and adapt to a changing climate. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Climate Change Science (PAA 3.1.3.1)**: NRCan performs research and disseminates data, information and knowledge to governments and communities in order to inform Northerners on the use of adaptation measures.

Relationship to FSDS Target

Research, outreach and information provided under Sub Activity - Climate Change Geoscience and Adaptation will enable northern governments and communities to understand and apply climate change adaptation measures and influence long-term planning in the North. These activities will contribute to infrastructure plans and advancing the knowledge and communications around climate change, which are communicated internationally. Thus initiatives under Sub Activity – Climate Change Geoscience and Adaptation, contribute indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 3.1.3)

Key stakeholders use impacts and adaptation information and support for decision-making.

- Number of NRCan citations used by public/private sector professionals (e.g. urban planners and engineers) (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 3.1.3.1)


Governments and communities in Canada's North (north of 60 latitude) have access to adaptation measures.

- Number of reports released on climate change adaptation measures specific to the North (reported annually, beginning in 2012-2013).

Other FSDS Linkages

Sub Activity – Climate Change Geoscience and Adaptation further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- **1.1.31** - Work with Aboriginal and northern communities, organizations and governments on climate change issues through the development of sustainable energy initiatives and supporting them in managing vulnerabilities and opportunities created by changing climate.

	FSDS Target 1.1	FSDS Implementation Strategy International Work on Climate Change
Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.		1.1. 48 <i>United Nations</i> 1.1.48.2 Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Domestic and International Energy Policy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only by a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals. To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (PAA 1.1.7) NRCan delivers current and timely energy related analysis, advice and recommendations to NRCan senior management on a variety of domestic and international issues including: clean energy, climate change, renewable electricity, nuclear energy, uranium and radioactive wastes, and federal-provincial-territorial energy relations. Under this sub activity, NRCan also supports the development of Canada's negotiating position in international fora related to climate change and clean energy, like the United Nations Framework Convention on Climate Change (UNFCCC).

Relationship to FSDS Target

Canada supports constructive and ambitious global action that will contribute to climate change mitigation in the long term. By leading in technology negotiations, NRCan seeks an agreement that will support the development and deployment of clean technologies, which is a key element of climate change mitigation. Thus, Sub Activity – Domestic and International Energy Policy contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This initiative sunsets in FY 2010-2011 and will be reported on in DPR 2010-2011. Non Financial Performance Expectations apply to:

FY 2010-2011 only.

Output and Indicators (Sub Activity 1.1.7)

Advice, recommendations and analysis on specific international engagement in energy-related fora and projects.

- Advice, recommendations and analysis in support of international working groups, meetings and/or projects.
- Advice, recommendations and analysis in support of international climate change engagement.

Other FSDS Linkages


Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.20** - Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities;
- **1.1.30** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments, and between governments and the private sector, to maximize and expedite the development of renewable energy sources in the region;

- **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions;
- **1.1.49.1** - Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation;
- **1.1.50** - *Asia-Pacific Partnership*: Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies;
- **1.1.53** - *Carbon Capture and Storage (CCS)*: Participate in a variety of policy and technical multilateral cooperation fora including the Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.19** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region.

	FSDS Target 1.1	FSDS Implementation Strategy International Work on Climate Change
Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.		1.1. 48 <i>United Nations</i> 1.1.48.4 Develop and submit a complete and compliant annual national GHG Inventory Report and Common Reporting Format tables to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat by April 15 to meet UNFCCC and Kyoto Protocol reporting requirements. (EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Forest Ecosystem Science and Application	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.2	Forest Ecosystem Science and Application

Description

Canada needs the scientific knowledge to manage risks, to maintain healthy ecosystems, and to meet international obligations and priorities. Under Sub-Activity – Forest Ecosystem Science and Application (PAA 2.2.2), NRCan conducts research as well as national assessments and monitoring to develop, synthesize and integrate scientific knowledge of Canada's forest ecosystems. This knowledge is used by governments, industry, and non-governmental organizations in the development of forest management practices and policies, and informs federal departments in the formation of Canada's negotiating position on international environmental issues related to forests.

Under this Sub Activity, NRCan conducts forest carbon cycle research and national assessment of forest carbon budgets which contribute to this FSDS implementation strategy. The main objective of these initiatives is to further the understanding and knowledge of forest ecosystems from a national perspective and to report on results on carbon accounting to the UNFCCC.

Relationship to FSDS Target

Improved understanding of forest carbon dynamics provided under Sub Activity – Forest Ecosystem Science and Application, will better inform decision makers on options that can lead to reduced greenhouse gas emissions. Thus, work under Sub Activity – Forest Ecosystem Science and Application contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

Data is collected and reported annually, and projects extend to March 31, 2013.

Expected Result

NRCan provides data and forecasts associated with Canada's vast forest landscapes estimates of forest-related land use change (afforestation/reforestation) and GHG emissions and removal to meet reporting requirements for GHG emission levels (e.g. UNFCCC, Kyoto Protocol).


Other FSDS Linkages

Sub Activity – Forest Ecosystem Science and Application further contributes to FSDS Target 1.1 – Climate Change Mitigation through one implementation strategy:

- o **1.1.54** - Support the development and provision of scientific knowledge, modeling, data and tools that inform forest carbon budgets.

This Sub Activity also contributes to FSDS Target 7.3 – Sustainable Forest Management through one implementation strategy:

- o **7.3.2** - Generate and disseminate scientific knowledge related to forest ecosystems.

	FSDS Target 1.1	FSDS Implementation Strategy International Work on Climate Change
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.49 <i>Multilateral Organizations Outside of the UNFCCC</i> 1.1.49.1 Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Domestic and International Energy Policy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only by a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals. To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (P.A.A 1.1.7), NRCan delivers current and timely energy related analysis, advice and recommendations to NRCan senior management and government on a variety of domestic and international issues including clean energy, climate change, renewable electricity, nuclear energy, uranium and radioactive wastes, and federal-provincial-territorial energy relations.

Under this Sub Activity, NRCan contributes to Canada's participation in high-level climate change-related international fora, including technology partnerships such as Clean Energy Ministerial (CEM), Carbon Sequestration Leadership Forum and Global Carbon Capture and Storage Institute. NRCan also actively participates in and provides input into various multilateral fora, such as the G8, G20 and APEC, whose focus includes green growth, the promotion of clean energy research and development and the enhancement of trade in environmental goods and services.

Relationship to FSDS Target

In the high-level climate change-related international fora (including technology partnerships such as Clean Energy Ministerial (CEM), Carbon Sequestration Leadership Forum and Global Carbon Capture and Storage Institute), Canada supports constructive and ambitious global action for climate change mitigation. By facilitating the development and deployment of clean technologies and undertaking concrete actions within international initiatives, NRCan contributes to reduce GHG emissions. For example, NRCan participates in the Global Superior Energy Performance Partnership under the CEM, which will support improvements in energy efficiency in buildings. Improvements in energy efficiency help to reduce GHG emissions associated with energy use by decreasing electricity demand. Thus, initiatives under Sub Activity – Domestic and International Energy Policy contribute indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This initiative sunsets in FY 2010-2011 and will be reported on in DPR 2010-2011. Non Financial Performance Expectations apply to:

FY 2010-2011 only.

Output and Indicators (Sub Activity 1.1.7)

Advice, recommendations and analysis on specific international engagement in energy-related fora and projects.

- Advice, recommendations and analysis in support of international working groups, meetings and/or projects
- Advice, recommendations and analysis in support of international climate change engagement.

Other FSDS Linkages

Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.20** - Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities;
- **1.1.30** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments, and between governments and the private sector, to maximize and expedite the development of renewable energy sources in the region;
- **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions;
- **1.1.48.2** - Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues;
- **1.1.50** - *Asia-Pacific Partnership*: Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies;
- **1.1.53** - *Carbon Capture and Storage (CCS)*: Participate in a variety of policy and technical multilateral cooperation fora including the Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.19** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region.

	FSDS Target 1.1	FSDS Implementation Strategy International Work on Climate Change
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.50 <i>Asia-Pacific Partnership</i> : Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies. (EC, NRCAN, IC)

You will find below details about NRCAN's activities that contribute to this implementation strategy:

Domestic and International Energy Policy	This activity is nested within NRCAN's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only by a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals. To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (PAA 1.1.7), NRCAN delivers current and timely energy related analysis, advice and recommendations to NRCAN senior management on a variety of domestic and international issues including clean energy, climate change, renewable electricity, nuclear energy, uranium and radioactive wastes, and federal-provincial-territorial energy relations.

The Asia-Pacific Partnership on Clean Development and Climate (APP) is a public-private partnership that seeks to accelerate the development, deployment and diffusion of clean energy technologies. The Partnership focuses on expanding investment and trade in cleaner energy technologies, goods and services in key energy-intensive and energy supply sectors that offer the greatest potential to address climate change and air pollution challenges. Participating countries collectively represent approximately 45 percent of the world's population, 49 percent of GDP, 50 percent of global emissions of CO2 from combustion sources.

Since Canada's engagement in the APP in 2007, the Government has invested a total of \$11.75M in 28 APP projects, which have leveraged more than \$77M in investments. NRCAN has contributed significant technical and scientific expertise to a number of the APP task forces, including Building and Appliances, Renewable Energy and Distributed Generation, Power Generation and Transmission, and Coal Mining. The Department has also ensured that private sector stakeholders have had the opportunity to participate in APP projects.

Relationship to FSDS Target

NRCAN's participation in the APP supports Canada's domestic and international efforts to address climate change. APP partner countries work together with private sector partners to meet goals for energy security, national air pollution reduction, and climate change in ways that promote sustainable economic growth and poverty reduction. APP projects also help open foreign markets to Canadian goods and services, helping to create new jobs and promoting domestic expertise. Thus, efforts under Sub Activity – Domestic and International Energy Policy contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This initiative sunsets in FY 2010-2011 and will be reported on in DPR 2010-2011. Non Financial Performance Expectations apply to:

FY 2010-2011 only.

The Partnership focuses on expanding investment and trade in cleaner energy technologies, goods and services in key energy-intensive and energy supply sectors that offer the greatest potential to address climate change and air pollution challenges.

Output and Indicator (Sub Activity 1.1.7)

Advice, recommendations and analysis on specific international engagement in energy-related fora and projects.

- o Advice, recommendations and analysis in support of international working groups, meetings and/or projects.
- o Advice, recommendations and analysis in support of international climate change engagement.


Other FSDS Linkages

Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.20** - Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities;
- **1.1.30** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments, and between governments and the private sector, to maximize and expedite the development of renewable energy sources in the region;
- **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions;
- **1.1.48.2** - Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues;
- **1.1.49.1** - Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation;
- **1.1.53** - *Carbon Capture and Storage (CCS)*: Participate in a variety of policy and technical multilateral cooperation fora including the Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.19** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region.

	FSDS Target 1.1	FSDS Implementation Strategy International Work on Climate Change
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.53 Carbon Capture and Storage: Participate in a variety of technical multilateral cooperation for a including Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Domestic and International Energy Policy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only by a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals. To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (PAA 1.1.7), NRCan delivers current and timely energy related analysis, advice and recommendations to NRCan senior management on a variety of domestic and international issues including: clean energy, climate change, renewable electricity, nuclear energy, uranium and radioactive wastes, and federal-provincial-territorial energy relations. Carbon Capture and Storage has been recognized by the International Energy Agency, the G8 and other prominent organisations as being a key technology to be deployed in order to meet long-term GHG reduction targets. Under this Sub Activity, NRCan contributes to Canada's participation in high-level climate change-related international fora, including technology partnerships such as Clean Energy Ministerial, Carbon Sequestration Leadership Forum and Global Carbon Capture and Storage Institute.

Relationship to FSDS Target

NRCan's contributions to Canada's engagement in the international Carbon Capture and Storage fora contributes to the global deployment of this technology and supports domestic demonstration projects, where appropriate. Thus this work under Sub Activity – Domestic and International Energy Policy contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This initiative sunsets in FY 2010-2011 and will be reported on in DPR 2010-2011. Non Financial Performance Expectations apply to:

FY 2010-2011 only.

Output and Indicators (Sub Activity 1.1.7)

Advice, recommendations and analysis on specific international engagement in energy-related fora and projects.

- o Advice, recommendations and analysis in support of international working groups, meetings and/or projects.
- o Advice, recommendations and analysis in support of international climate change engagement.

Other FSDS Linkages


Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.20** - Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities;

- **1.1.30** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments, and between governments and the private sector, to maximize and expedite the development of renewable energy sources in the region;
- **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions;
- **1.1.48.2** - Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues;
- **1.1.49.1** - Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation;
- **1.1.50** - *Asia-Pacific Partnership*: Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through two implementation strategies:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- **2.1.19** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region.

	FSDS Target 1.1	FSDS Implementation Strategy Forestry
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.54 Support the development and provision of scientific knowledge, modeling, data and tools that inform forest carbon budgets. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Forest Ecosystem Science and Application	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.2	Forest Ecosystem Science and Application

Description

Canada needs the scientific knowledge to manage risks, to maintain healthy ecosystems, and to meet international obligations and priorities. Under Sub Activity – Forest Ecosystem Science and Application, NRCan conducts research as well as national assessments and monitoring to develop, synthesize and integrate scientific knowledge of Canada's forest ecosystems. This knowledge is used by governments, industry, and non-governmental organizations in the development of forest management practices and policies, and informs federal departments in the formation of Canada's negotiating position on international environmental issues related to forests.

Under this Sub Activity, NRCan conducts forest carbon cycle research and national assessment of forest carbon budgets which contribute to this FSDS implementation strategy. The main objective of these initiatives is to further the understanding and knowledge of forest ecosystems from a national perspective and to report on results on carbon accounting to the UNFCCC. This work will allow the federal government, Canadians and their institutions to have an authoritative scientific foundation on forest ecosystems at the national scale.

Relationship to FSDS Target

Knowledge and capacity to track exchanges of carbon between forests and the atmosphere acquired under Sub Activity - Forest Ecosystem Science and Application contributes to reports on greenhouse gas emission levels. Through the National Forest Inventory and the State of Canada's Forest Report, NRCan provides information for government decision-makers and enables the public's access to information on Canada's forest. Thus, work under Sub Activity – Forest Ecosystem Science and Application contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

Data is collected and reported annually, and projects extend to March 31, 2013.

Expected Result and Indicator (Sub Activity 2.2.2)

Increased use of scientific knowledge of Canada's forest ecosystems.

- o Trend in use of scientific knowledge.

Output and Indicator (Sub Activity 2.2.2)

Scientific knowledge of Canada's forest ecosystems.

- o Number of knowledge transfer activities.
- o Percentage of peer-reviewed ecosystems publications cited over a rolling 5-year period.


Other FSDS Linkages

Sub Activity – Forest Ecosystem Science and Application further contributes to FSDS Target 1.1 – Climate Change Mitigation through one implementation strategy:

- o **1.1.48.4** - Develop and submit a complete and compliant annual national GHG Inventory Report and Common Reporting Format tables to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat by April 15 to meet UNFCCC and Kyoto Protocol reporting requirements.

This Sub Activity also contributes to FSDS Target 7.3 – Sustainable Forest Management through one implementation strategy:

- o **7.3.2** - Generate and disseminate scientific knowledge related to forest ecosystems.

	FSDS Target 1.1	FSDS Implementation Strategy Forestry
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.55 Support the development of clean energy technologies in the forest sector and the use of wood as a green building material in Canada and abroad. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

- Forest Products Market Access and Development
- Forest Product Innovation
- Pulp and Paper Green Transformation

Forest Products Market Access and Development	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.2	Forest Products Market Access and Development

Description

Canada must develop new wood products and end uses, and diversify markets to expand sales and reduce barriers to market access. Under Sub Activity – Forest Products Market Access and Development (PAA 1.1.2), NRCan provides financial contributions to Canadian forest industry associations to support initiatives aimed at expanding exports to international markets, increasing the use of wood in North American non-residential construction, and improving market opportunities for value-added wood product manufacturers. Under this Sub Activity are two key Sub Sub Activities that contribute to this FSDS implementation strategy:

- **Sub Sub Activity – Market Opportunities Expansion** (PAA 1.1.2.1): NRCan provides financial contributions aimed at expanding wood use in international wood product markets and North American non-residential construction, and improving market opportunities for value-added wood product manufacturers (Canada Wood Export Program, North American Wood Initiative, Value to Wood)
- **Sub Sub Activity – Leadership for Environmental Advantage in Forestry** (PAA 1.1.2.2): NRCan, in collaboration with the provinces, provides science-based information to forest sector stakeholders to support market outreach activities, as well as financial contributions aimed at promoting the environmental credentials of Canada's forest practices and policies in international markets.

Relationship to FSDS Target

Life cycle analysis of wood building products conducted under Sub Activity - Forest Products Market Access and Development demonstrates lower carbon and environmental impact of forest products compared to other building materials. As a result of the increase use of wood construction platforms, activities under Sub Activity - Forest Products Market Access and Development Contribute indirectly to FSDS Target 1.1 - Climate Change Mitigation.

Non-Financial Performance Expectations

Expected Result and Indicators (Sub Sub Activity 1.1.2.1)

Increased wood products in international markets and new market segments.

- Percentage increase in share of Canadian wood product exports to targeted offshore markets.
- Use of wood products in non-residential construction projects.
- Number value-added wood products and processes developed and/or modified.

Data is collected annually, and the project ends on March 31, 2012.

Expected Result and Indicators (Sub Sub Activity 1.1.2.2)

Positive perception of Canadian forest practices and products among targeted stakeholders in key international markets.

- Percentage of targeted stakeholders who have a positive perception of Canadian forest practices and products.

Other FSDS Linkages

Sub Activity – Forest Products Market Access and Development further contributes to FSDS Target 1.1 – Climate Change Mitigation through one other implementation strategy:

- o **1.1.58** - Negotiate international agreement to reduce emissions from deforestation and forest degradation (REDD).

Forest Product Innovation	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.3	Forest Product Innovation

Description

Canada's forest sector, traditionally the world's largest exporter of forest products, has experienced a decrease in its market share as a result of changing global and regional demand and increasing competition. To regain its competitive position, the sector must develop new products and processes to extract more value from Canada's forest. Through Sub Activity – Forest Product Innovation, NRCan conducts research through its Canadian Wood Fibre Centre and provides financial contributions to FPInnovations (to which the Canadian Wood Fibre Centre is a partner), and other forest sector research partners to develop new products and processes.

Under this Sub Activity, NRCan provides financial contributions to eligible forest product companies to implement new and advanced technologies (e.g. bioenergy, biomaterials, biochemicals, and next generation building products). A key Sub Sub Activity under Sub Activity – Forest Product Innovation contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Investment in Forest Industry Transformation (IFIT) (PAA 1.1.3.2):** The primary objective is to demonstrate and deploy new and advanced technologies in the forest sector through investments in innovative processes.

Relationship to FSDS Target

Through financial contributions, this initiative may result in products which will reduce the demand for petroleum-based products and reduce GHG emissions. Thus, Sub Activity – Forest Product Innovation contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This data is collected annually, and the project ends on March 31, 2014.

Expected Result and Indicators (Sub Sub Activity 1.1.3.2)

A diversified mix of higher-value Canadian Forest Products is available for commercial application.

- o Trend in number of bio-products produced by project proponents.
- o Trend in number of new or modified facilities that are implementing innovative processes.

Other FSDS Linkages

Sub Activity – Forest Product Innovation further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.55.1** - Investment in Forest Industry Transformation (IFIT): Enable renewal and transformation in the forest sector by supporting the development, commercialization and implementation of advanced clean energy technologies in the forest sector;
- o **1.1.56** - Develop multidisciplinary assessments of the risks associated with the new and emerging bio-technology in the Forest sectors and the risks they may have on the environment.

Pulp and Paper Green Transformation

This activity is nested within NRCan's Program Activity Architecture (PAA) as follows:
Strategic Outcome 2 – Environmental Responsibility

Program Activity 2.1	Clean Energy
Sub Activity 2.1.5	Pulp and Paper Green Transformation

Description

The pulp and paper manufacturing process is energy intensive. Efficiency improvements as well as increases in the production of renewable energy have the potential to deliver significant environmental benefits, including reduced greenhouse gas emissions reductions.

Under Sub Activity – Pulp and Paper Green Transformation (PAA 2.1.5), NRCan provides funding to eligible pulp and paper mills in Canada to improve their environmental sustainability in areas such as improved energy efficiency and increased production of renewable energy from biomass.

Relationship to FSDS Target

Through financial contributions provided under Sub Activity – Pulp and Paper Green Transformation, NRCan supports industry improvements in energy efficiency, the increased generation of renewable energy, and other environmental benefits such as reducing the industry's greenhouse gas emissions and improving its air quality emissions. Thus, Sub Activity – Pulp and Paper Green Transformation contributes directly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This data is collected annually. While the program ends March 31, 2012, data will be collected for another 2 years (to March 31, 2014).

Non-financial performance expectations include a more sustainable pulp and paper industry through improved energy efficiency, increased renewable energy production from biomass, and other environmental benefits, such as the reduction of greenhouse gas emissions.

Expected Results and Indicators (Sub Activity 2.1.5)

Increased energy efficiency by participating Canadian pulp and paper companies.

- o Quantity of energy consumed by participating pulp and paper companies.


Production of renewable energy by participating Canadian pulp and paper companies.

- o Quantity of renewable energy produced by participating pulp and paper companies.

Other FSDS Linkages

Sub Activity – Pulp and Paper Green Transformation further contributes to FSDS Target 1.1 – Climate Change Mitigation through one other implementation strategy:

- o **1.1.55.2** - Pulp and Paper Green Transformation Program: Support innovation and environmentally friendly investments in pulp and paper mills in areas such as energy efficiency and renewable energy production. The aim is for pulp and paper mills in Canada to further reduce their greenhouse gas emissions while helping to position them as leaders in the production of renewable energy from forest biomass.

	FSDS Target 1.1	FSDS Implementation Strategy Forestry
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.55.1 Investment in Forest Industry Transformation (IFIT): Enable renewal and transformation in the forest sector by supporting the development, commercialization and implementation of advanced clean energy technologies in the forest sector. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Forest Product Innovation	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.3	Forest Product Innovation

Description

Canada's forest sector, traditionally the world's largest exporter of forest products, has experienced a decrease in its market share as a result of changing global and regional demand and increasing competition. To regain its competitive position, the sector must develop new products and processes to extract more value from Canada's forest. Under Sub Activity – Forest Product Innovation (PAA 1.1.3), NRCan conducts research through its Canadian Wood Fibre Centre and provides financial contributions to forest sector research partners to develop new products and processes. Under this Sub Activity is a key Sub Sub Activity which contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Investment in Forest Industry Transformation (IFIT) (PAA 1.1.3.2):** The primary objective is to demonstrate and deploy new and advanced technologies in the forest sector through investments in innovative processes.

Relationship to FSDS Target

Financial contributions provided under Sub Activity - Forest Product Innovation may result in products which will reduce the demand for petroleum-based products and reduce greenhouse gas emissions. Thus, initiatives under Sub Activity – Forest Product Innovation contributes indirectly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This data is collected annually; the IFIT Program ends March 31, 2014.

Expected Result and Indicators (Sub Sub Activity 1.1.3.2)


A diversified mix of higher-value Canadian Forest Products is available for commercial application.

- o Trend in number of bio-products produced by project proponents.
- o Trend in number of new or modified facilities that are implementing innovative processes.

Other FSDS Linkages

Sub Activity – Forest Product Innovation further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.55** - Support the development and adoption of clean energy technologies in the forest sector and the use of wood as a green building material in Canada and abroad;
- o **1.1.56** - Develop multidisciplinary assessments of the risks associated with the new and emerging bio-technology in the Forest sectors and the risks they may have on the environment.

	FSDS Target 1.1	FSDS Implementation Strategy Forestry
Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.		1.1.55.2 Pulp and Paper Green Transformation Program: Support innovation and environmentally friendly investments in pulp and paper mills in areas such as energy efficiency and renewable energy production. The aim is for pulp and paper mills in Canada to further reduce their greenhouse gas emissions while helping to position them as leaders in the production of renewable energy from forest biomass. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Pulp and Paper Green Transformation	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.5	Pulp and Paper Green Transformation

Description

The pulp and paper manufacturing process is energy intensive. Efficiency improvements as well as increases in the production of renewable energy have the potential to deliver significant environmental benefits, including reduced greenhouse gas emissions reductions. Under Sub Activity – Pulp and Paper Green Transformation (PAA 2.1.5), NRCan, through the Pulp and Paper Green Transformation Program, provides funding to eligible pulp and paper mills in Canada to improve their environmental sustainability in areas such as improved energy efficiency and increased production of renewable energy from biomass.

Relationship to FSDS Target

Through financial contributions provided under Sub Activity - Pulp and Paper Green Transformation, NRCan supports industry improvements in energy efficiency, the increased generation of renewable energy, and other environmental benefits such as reducing the industry's greenhouse gas emissions and improving its air quality emissions. Thus, Sub Activity – Pulp and Paper Green Transformation contributes directly to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

This data is collected annually. While the program ends March 31, 2012, data will be collected for another 2 years (to March 31, 2014).

Expected Results and Indicators (Sub Activity 2.1.5)

Increased energy efficiency by participating Canadian pulp and paper companies.

- o Quantity of energy consumed by participating pulp and paper companies.


Production of renewable energy by participating Canadian pulp and paper companies.

- o Quantity of renewable energy produced by participating pulp and paper companies.

Other FSDS Linkages

Sub Activity – Pulp and Paper Green Transformation further contributes to FSDS Target 1.1 – Climate Change Mitigation through one other implementation strategy:

- o **1.1.55** - Support the development and adoption of clean energy technologies in the forest sector and the use of wood as a green building material in Canada and abroad.

	FSDS Target 1.1	FSDS Implementation Strategy Forestry
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.56 Develop multidisciplinary assessments of the risks associated with the new and emerging bio-technology in the Forest sectors and the risks they may have on the environment. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Forest Product Innovation	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.3	Forest Product Innovation

Description

Canada's forest sector, traditionally the world's largest exporter of forest products, has experienced a decrease in its market share as a result of changing global and regional demand and increasing competition. To regain its competitive position, the sector must develop new products and processes to extract more value from Canada's forest. Under Sub Activity – Forest Product Innovation (PAA 1.1.3), NRCan conducts research through its Canadian Wood Fibre Centre and provides financial contributions to forest sector research partners to develop new products and processes.

Under this Sub Activity, NRCan assesses the role of bioenergy and biorefining in a transformed forest sector. This analysis will determine the policy implications and tradeoffs between different biomass uses, strategies and products, taking into account the diversity of policy drivers including climate change, rural economy and industry competitiveness that can lead to different outcomes. The main objective of this work is to understand the role of bioenergy and biorefining as part of a more diversified, market-driven product focus for the sector that aims at generating more value from the forest, while not compromising Canada's global leadership in demonstrated forest sustainability. This work will lead to an improved understanding through studies of what impacts are expected from supplying biomass to bioplants: ecological sustainability; biophysical potential and economic solutions; regional/national level employment impacts, and understanding of policy tradeoffs around biomass use.

Relationship to FSDS

On-the-ground research and analysis conducted under Sub Activity – Forest Product Innovation contributes to quantifying (through lifecycle and carbon footprint analyses) the potential carbon benefits of utilizing forest biomass based products and energy to replace more carbon intensive technologies and products. Thus, this project under Sub Activity - Forest Product Innovation indirectly contributes to Target 1.1 - Climate Change Mitigation.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 1.1.3)

New forest products and processes.


- o Number of new forest products and processes produced.

Studies will be completed before March 31, 20123.

Other FSDS Linkages

Sub Activity – Forest Product Innovation further contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.55** - Support the development and adoption of clean energy technologies in the forest sector and the use of wood as a green building material in Canada and abroad;
- o **1.1.55.1** - Investment in Forest Industry Transformation (IFIT): Enable renewal and transformation in the forest sector by supporting the development, commercialization and implementation of advanced clean energy technologies in the forest sector.

	FSDS Target 1.1	FSDS Implementation Strategy Forestry
	Climate Change Mitigation Relative to 2005 emission levels, reduce Canada's total greenhouse gas emissions (GHG) 17% by 2020.	1.1.58 Negotiate international agreement to reduce emissions from deforestation and forest degradation. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Forest Products Market Access and Development	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.2	Forest Products Market Access and Development

Description

Canada can no longer rely solely on traditional markets and/or traditional products to remain competitive. Canada must develop new wood products and end uses, and diversify markets to expand sales and reduce barriers to market access. Under Sub Activity – Forest Products Market Access and Development (PAA 1.1.2), NRCan provides financial contributions to Canadian forest industry associations to support initiatives aimed at expanding exports to international markets, increasing the use of wood in North American non-residential construction, and improving market opportunities for value-added wood product manufacturers.

Under this Sub Activity, NRCan also promotes sustainable forest management efforts in developing countries and participates in international climate change negotiations with the aim of reaching a legally-binding agreement to reduce emissions from deforestation and forest degradation (REDD).

Relationship to FSDS Target

Scientific knowledge of the forest sector and Canada's greenhouse gas inventories attained under Sub Activity - Forest Products Market Access and Development contributes to Canada's negotiations on climate change. Thus, this work under Sub Activity – Forest Products Market Access and Development contributes indirectly to FSDS Target 1.1 – Climate Change mitigation.

Non-Financial Performance Expectations

Data on performance indicators are collected annually, to March 31, 2012.

Expected Result and Indicators


The development of positions and advice, and participating in key meetings on financing and implementation of REDD+ initiatives and associated Sustainable Forest Management strategies.


- o Technical support to REDD+.
- o Participation in key meetings.

Other FSDS Linkages

Sub Activity – Forest Products Market Access and Development further contributes to FSDS Target 1.1 – Climate Change Mitigation through one other implementation strategy:

- o **1.1.55** - Support the development and adoption of clean energy technologies in the forest sector and the use of wood as a green building material in Canada and abroad.

	FSDS Theme I – Addressing Climate Change and Air Quality
	FSDS Goal 2 – Air Pollution Minimize the threats to air quality so that the air Canadians breathe is clean and supports healthy ecosystems

	FSDS Target 2.1	FSDS Implementation Strategy Clean Air Regulatory Agenda
Air Pollutants Reduce air pollutants in order to maintain or improve air quality across the country and achieve the emission targets which are currently under development in consultations with the provinces and stakeholders.		2.1.2 Undertake scientific research and reporting in support of regulatory and other programs delivered, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, including economic and social and technology assessments. (EC, HC, NRCan, TC)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Energy Efficiency and Alternative Transportation Fuels	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.4	Energy Efficiency and Alternative Transportation Fuels

Description

The Government of Canada has set a target to reduce Canada's total greenhouse gas emissions by 17% from 2005 levels by 2020. Under Sub Activity – Energy Efficiency and Alternative Transportation Fuels (PAA 2.1.4), NRCan works to improve energy efficiency and increase the production and use of alternative transportation fuels. Different sectors of the economy are targeted using a variety of policy tools to reach this goal such as incentives, regulations, research, information dissemination, and training through workshops. Initiatives under this Sub Activity that contribute to this FSDS implementation strategy include promotion of smart energy use and purchase of efficient technologies, and information on alternative transportation fuels.

Relationship to FSDS Target

Improvements in energy efficiency help to reduce air pollutants by reducing energy use. Thus, Sub Activity – Energy Efficiency and Alternative Transportation Fuels contributes indirectly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

FYs 2011-2012, 2012-2013 and 2013-2014.

Expected Result and Indicator (Sub Activity 2.1.4)

Improved energy efficiency in all sectors.

- o Percent improvements in energy efficiency and the resulting number of petajoules energy savings.

Other FSDS Linkages


Sub Activity – Energy Efficiency and Alternative Transportation Fuels further contributes to FSDS Target 2.1 - Air Pollutants through the following implementation strategies:

- o **2.1.11** - Work on energy-efficiency regulations for consumer and commercial products;

- o **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- o **2.1.27** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

This Sub Activity also contributes to Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- o **1.1.13** - Enhance energy-efficiency regulations for consumer and commercial products;
- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- o **1.1.40** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

	FSDS Target 2.1	FSDS Implementation Strategy Clean Air Regulatory Agenda
Air Pollutants Reduce air pollutants in order to maintain or improve air quality across the country and achieve the emission targets which are currently under development in consultations with the provinces and stakeholders.		2.1.11 Work on energy-efficiency regulations for consumer and commercial products. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Energy Efficiency and Alternative Transportation Fuels	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.4	Energy Efficiency and Alternative Transportation Fuels

Description

The Government of Canada has set a target to reduce Canada's total greenhouse gas emissions by 17% from 2005 levels by 2020. Under Sub Activity - Energy Efficiency and Alternative Transportation Fuels(PAA 2.1.4), NRCan works to improve energy efficiency and increase the production and use of alternative transportation fuels. Different sectors of the economy are targeted using a variety of policy tools to reach this goal such as incentives, regulations, research, information dissemination, and training through workshops. Initiatives under this Sub Activity that contribute to this FSDS implementation strategy include promotion of smart energy use and purchase of efficient technologies, and information on alternative transportation fuels. Under this Sub Activity a key Sub Sub Activity contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Equipment** (PAA 2.1.4.1): NRCan excludes the least energy efficient equipment from the market and influences consumers to select, and manufacturers to produce, higher performance products. This Sub Sub Activity targets energy consumers and manufacturers of energy using equipment. Key activities include energy efficiency regulations, EnerGuide and ENERGY STAR labelling and promotion.

Relationship to FSDS Target

Improvements in energy efficiency in equipment help to reduce air pollutants by reducing energy use. Thus, Sub Sub Activity – Equipment, under Sub Activity – Energy Efficiency and Alternative Transportation Fuels, contributes directly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

FYs 2011-2012, 2012-2013 and 2013-2014.

Expected Result and Indicator (Sub Sub Activity 2.1.4.1)

Increased energy efficiency in equipment from NRCan programming.

- o Energy savings (petajoules).


Other FSDS Linkages

Sub Activity – Energy Efficiency and Alternative Transportation Fuels further contributes to FSDS Target 2.1 – Air Pollutants through the following implementation strategies:

- o **2.1.2** - Undertake scientific research and reporting in support of regulatory and other programs delivered, including data analysis, inventory development, monitoring, modeling, and assessment of the effectiveness of efforts as well as research on options, costs and benefits including economic and social and technology assessments;
- o **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction;
- o **2.1.27** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

This Sub Activity also contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- o **1.1.13** - Enhance energy-efficiency regulations for consumer and commercial products;
- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- o **1.1.40** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

	FSDS Target 2.1	FSDS Implementation Strategy Clean Energy
	Air Pollutants Reduce air pollutants in order to maintain or improve air quality across the country and achieve the emission targets which are currently under development in consultations with the provinces and stakeholders.	2.1.16 ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction. (NRCan, TC, INAC)

You will find below details about NRCan's activities that contribute to this implementation strategy:

- Domestic and International Energy Policy
- Renewable Energy Deployment
- Clean Energy Science and Technology
- Energy Efficiency and Alternative Transportation Fuels

Domestic and International Energy Policy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only by a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals.

To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (PAA 1.1.7), NRCan delivers current and timely energy related analysis, advice and recommendations to NRCan senior management on a variety of domestic and international issues including: clean energy, climate change, renewable electricity, nuclear energy, uranium and radioactive wastes, and federal-provincial-territorial energy relations. Capacity building in these areas relates to this FSDS implementation strategy by increasing NRCan's knowledge of technologies and practices that reduce air emissions, including pollutants.

Relationship to FSDS Target

Knowledge of domestic and international technologies and practices supports the delivery of departmental programming on clean energy and climate change. Thus, this work under Sub Activity – Domestic and International Energy Policy contributes indirectly to FSDS Target 21 – Air Pollutants.

Non-Financial Performance Expectations

This initiative sunsets in FY 2010-2011 and will be reported on in DPR 2010-2011. Non Financial Performance Expectations apply to:

FY 2010-2011 only.

Expected Result and Indicators (Sub Activity 1.1.7)

NRCan senior management has access to quality advice and information for timely decisions on energy-related issues.

- Sector-specific advice, analysis and recommendations are available as requested by senior management.
- Senior management satisfaction with relevance and usefulness of advice, analysis and recommendations provided.

Other FSDS Linkages

Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 2.1 – Air Pollutants through one other implementation strategy:

- o **2.1.19** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region.

This Sub Activity also contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.20** - Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities;
- o **1.1.30** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments, and between governments and the private sector, to maximize and expedite the development of renewable energy sources in the region;
- o **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions;
- o **1.1.48.2** - Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues;
- o **1.1.49.1** - Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation;
- o **1.1.50** - *Asia-Pacific Partnership*: Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies;
- o **1.1.53** - *Carbon Capture and Storage (CCS)*: Participate in a variety of policy and technical multilateral cooperation fora including the Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group.

Renewable Energy Deployment	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.2	Renewable Energy Deployment

Description

The Government of Canada has committed to build on its successful clean electricity system by leading the world in clean energy generation. Under Sub Activity – Renewable Energy Deployment (PAA 2.1.2), NRCan provides an incentive to electricity producers to increase Canada's supply of clean electricity from renewable sources like wind, biomass, small hydro, solar photovoltaic and ocean energy. In addition to reducing Canadian greenhouse gas emissions, this sub-activity will help to create a more sustainable and diversified energy mix. Sub Activity Renewable Energy Deployment is supported by the ecoENERGY for Renewable Power and the Wind Power Production Incentive programs.

Financial incentives provided to qualifying renewable electricity producers under the ecoENERGY for Renewable Power Program will encourage the growth of more than 4,000 MW of new renewable electricity capacity in Canada and is expected to reduce GHG emissions between 6 and 6.7 megatonnes per year by 2012. Under the Wind Power Production Incentive program, 924 MW of new wind energy capacity was developed in Canada and reduces GHG emissions by approximately 1.5 megatonnes per year since 2008.

Relationship to FSDS Target

Financial incentives towards clean electricity projects will result in reductions of greenhouse gas emissions and air pollutants. Thus, Sub Activity – Renewable Energy Deployment contributes directly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

The ecoENERGY for Renewable Power program sunsets in FY 2010-2011 and will be reported on in DPR 2010-2011. Non-financial performance expectations apply to:

FY 2010-2011 only.

Expected Result and Indicator (Sub Activity 2.1.2)

Increased production of renewable electricity supply in Canada.

- o Amount of clean electricity generation from low-impact renewable sources.

Outputs and Indicators (Sub Activity 2.1.2)

Project applications reviewed for funding.

- o Number of projects reviewed under the ecoENERGY for Renewable Power program.

Contribution agreements signed.

- o Number of contribution agreements signed for qualified projects under the ecoENERGY for Renewable Power program.

Other FSDS Linkages

Sub Activity – Renewable Energy Deployment also contributes to FSDS Target 1.1 – Climate Change Mitigation through one implementation strategy:

- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices.

Clean Energy Science and Technology	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows:	
	Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.3	Clean Energy Science and Technology

Description

Knowledge and technologies are needed to enable Canada's transition to a clean energy economy and reduce greenhouse gas emissions. Under Sub Activity – Clean Energy Science and Technology (PAA 2.1.3), NRCan funds and undertakes – in partnership with experts in the private, public and academic sectors – the advancement of science and technology solutions that can help to achieve a clean energy system. This work includes generating new knowledge and developing and demonstrating technologies related to clean energy priority areas of oil and gas, transportation, buildings and communities, industry, power generation, bioenergy as well as medical isotopes. This ultimately contributes to clean water, clean air and sustainable land use by improving environmental responsibility in Canadian clean energy production, conversion and end-use.

Relationship to FSDS Target

The advancement of key clean energy science and technology in Canada will help provide long-term solutions to reducing the emissions of greenhouse gases and air pollutant emissions from energy production, conversion and end-use. Thus, Sub Activity – Clean Energy Science and Technology contributes indirectly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

FY 2011-2012.

Expected Result and Indicators (Sub Activity 2.1.3)

The advancement of clean energy knowledge and technologies that addresses the needs of partners and stakeholders.

- o Ratio of total government investments in clean energy research, development and demonstration versus leveraging funding from partners.
- o Scientific knowledge and information (e.g. refereed publications and presentations, and technical and client reports etc.) disseminated to our clients and partners (e.g. industry, other government departments and agencies, other governments, associations, universities and non-governmental organizations).
- o Number of published and/or revised standards and codes.

Outputs and Indicators (Sub Activity 2.1.3)

Establish partnerships to research, develop and demonstrate technologies that align with stakeholder clean energy goals.

Review proposals and approve projects.

Review and assess project progress and results.

- Number of partnerships (e.g. contracts, agreements, memoranda of understanding, projects etc.) established to research, develop and demonstrate clean energy technologies.
- Percentage of project proposals reviewed and assessed.
- Percentage of projects monitored and reviewed.

Other FSDS Linkages

Sub Activity – Clean Energy Science and Technology further contributes to FSDS Target 2.1 – Air Pollutants through one other implementation strategy:

- **2.1.23** - Undertake research, development and deployment of new technologies to reduce GHG and other air pollutant emissions.

This Sub Activity also contributes to FSDS Target 1.1 - Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- **1.1.27** - Use the Program on Energy Research and Development (PERD) to research and develop energy technologies that will reduce GHG emissions;
- **1.1.28** - Use the Clean Energy Fund for transitioning the energy sector by developing and demonstrating new technologies that will reduce GHG emissions;
- **1.1.37** - Undertake research, development and deployment of new technologies to reduce GHGs.

Energy Efficiency and Alternative Transportation Fuels	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.4	Energy Efficiency and Alternative Transportation Fuels

Description

The Government of Canada has set a target to reduce Canada's total greenhouse gas emissions by 17% from 2005 levels by 2020 Under Sub Activity – Energy Efficiency and Alternative Transportation Fuels (PAA 2.1.4), NRCan works to improve energy efficiency and increase the production and use of alternative transportation fuels. Different sectors of the economy are targeted using a variety of policy tools to reach this goal such as incentives, regulations, research, information dissemination, and training through workshops. Initiatives under this Sub Activity that contribute to this FSDS implementation strategy include promotion of smart energy use and purchase of efficient technologies, and information on alternative transportation fuels. Under this Sub Activity, a key Sub Sub activity contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Alternative Transportation Fuels (PAA 2.1.4.6):** NRCan targets alternative transportation fuel producers and end-users. Activities inform the public of and encourage and facilitate the production and end use of alternative fuels in Canada such as biodiesel, ethanol, natural gas, hydrogen and electricity. This includes ecoENERGY for Biofuels, which provides operating incentives to producers of renewable alternatives to gasoline and diesel based on production levels and market conditions.

Relationship to FSDS Target

Alternative transportation fuels can reduce air pollutants, based on fuel types. Thus, Sub Sub Activity – Alternative Transportation Fuels, under Sub Activity – Energy Efficiency and Alternative Transportation Fuels contributes indirectly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

FYs 2011-2012, 2012-2013 and 2013-2014.

Expected Result and Indicators (Sub Activity 2.1.4)

Increased production and use of alternative transportation fuels.

- Renewable fuel production as a percentage of total gasoline and distillate pools.
- Alternative fuel use as a percentage of total on-road transportation use.

Expected Result and Indicator (Sub Sub Activity 2.1.4.6)

Increased domestic capacity and actual production of renewable alternatives to gasoline and diesel from NRCan programming, contributing towards Canada's role in the development and use of natural resources.

- Total domestic production of renewable alternatives to gasoline and diesel directly funded by ecoEnergy for Biofuels, in litres and by fuel type.


Other FSDS Linkages

Sub Activity – Energy Efficiency and Alternative Transportation Fuels further contributes to FSDS Target 2.1 – Air Pollutants through the following implementation strategies:

- **2.1.2** - Undertake scientific research and reporting in support of regulatory and other programs delivered, including data analysis, inventory development, monitoring, modeling, and assessment of the effectiveness of efforts as well as research on options, costs and benefits including economic and social and technology assessments;
- **2.1.11** - Work on energy-efficiency regulations for consumer and commercial products;
- **2.1.27** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

This Sub Activity also contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- **1.1.13** - Enhance energy-efficiency regulations for consumer and commercial products;
- **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- **1.1.40** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

	FSDS Target 2.1	FSDS Implementation Strategy Clean Energy
Air Pollutants Reduce air pollutants in order to maintain or improve air quality across the country and achieve the emission targets which are currently under development in consultations with the provinces and stakeholders.		2.1.17 Finance projects that would, among other things, help to optimize resource use, valuing residual resources, and contribute to eco-efficiency. (DEC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Minerals and Metals Markets, Innovation and Investment	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.1	Minerals and Metals Markets, Innovation and Investment

Description

The mining sector is highly competitive, involves multiple stakeholders and is managed by multiple jurisdictions that all require information to make informed decisions. Under Sub Activity – Minerals and Metals Markets, Innovation and Investment (PAA 1.1.1), NRCan assists in the coordination and increased coherence for jurisdictions and stakeholders to make decisions that position the sector to remain competitive.

Under this Sub Activity, the Recycling Program promotes and enhances recycling in Canada by providing information about metals and minerals recycling and recycling in general. NRCan promotes recycling of electronic waste, encouraging the electronics manufacturing and retail industries to think in terms of materials, life cycles; contributing to the sustainable management of rare elements found in electronic components; and promoting recycling as an environmentally sound alternative to sending to landfills the often hazardous components found in electronic equipment.

The Recycling Program includes a significant dimension aimed at public and industry education, enabling capacity to reduce emissions and impact air quality, as well as GHG emissions. Key products stemming from the program are the Canadian Metals and Minerals Recycling Database, a listing Canadian companies involved in metals and minerals recycling and the Industry Framework, which offers a complete listing of all commodities recycled in Canada and information on the recycling of these commodities.

Currently, NRCan is developing a recycling strategy to enhance recovery practices across Canada. This work targets the Institutional, Commercial and Industrial (IC&I) sectors of the economy and will contain discrete projects designed to enable the Federal Government to add value to national recycling efforts.

Relationship to FSDS

NRCan's recycling program includes a significant dimension aimed at public and industry education, enabling capacity to reduce emissions that impact air quality, as well as GHG emissions. Thus, this work under Sub Activity – Minerals and Metals Markets, Innovation and Investment contributes indirectly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

Development of a recycling strategy to enhance recovery practices across Canada, specifically targeting the Institutional, Commercial and Industrial (IC&I) sectors of the economy.

The recycling strategy will be completed in FY 2011-2012.


Other FSDS Linkages

Sub Activity – Minerals and Metals Markets, Innovation and Investment also contributes to FSDS Target 1.1 – Climate Change Mitigation through one implementation strategy:

- o **1.1.29** - Finance projects that would, among other things, help to optimize resource use, valuing residual resources, and contribute to eco-efficiency.

This Sub Activity also contributes to FSDS Target 2.3 – Chemicals Management through one implementation strategy:

- o **2.3.6** - Apply life-cycle thinking, sustainable materials management and environmentally sound management of hazardous wastes to promote sustainable consumption and minimize the impacts of products and wastes on the environment and human health.

	FSDS Target 2.1	FSDS Implementation Strategy Clean Energy
Air Pollutants Reduce air pollutants in order to maintain or improve air quality across the country and achieve the emission targets which are currently under development in consultations with the provinces and stakeholders.		2.1.19 The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments and the private sector, to maximize and expedite the development of renewable energy sources in the region. (ACOA, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Domestic and International Energy Policy	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.7	Domestic and International Energy Policy

Description

The development of Canada's energy resources is an important component of Canadian prosperity, and can be achieved only by a globally competitive energy sector that is governed in a manner that is consistent with Canada's social and environmental goals.

To support such governance and the responsible development of Canada's energy resources, under Sub Activity – Domestic and International Energy Policy (PAA 1.1.7), NRCan delivers current and timely energy related analysis, advice and recommendations to NRCan senior management on a variety of domestic and international issues including clean energy, climate change, renewable electricity, nuclear energy, uranium and radioactive wastes, and federal-provincial-territorial energy relations.

In particular, under this Sub Activity, NRCan will promote and facilitate the development of clean and renewable energy sources in Atlantic Canada through the Atlantic Energy Gateway initiative. This initiative seeks to bring together the federal and provincial governments, the private and public utilities, the private sector, and other energy stakeholders across Atlantic Canada to develop a regional strategy for the development of clean and renewable energy projects.

Relationship to FSDS Target

The Atlantic Energy Gateway initiative will foster regional cooperation and collaboration in the planning and operations of the Atlantic electricity sector, which will facilitate the development of clean and renewable energy in the region, thereby displacing sources of electricity that emit greenhouse gases and other air pollutants. Thus, this work under Sub Activity – Domestic and International Energy Policy contributes indirectly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

This initiative sunsets in FY 2011-2012. *Non-Financial Performance Expectations apply to:*

FYs 2010-2011 and 2011-2012.

Expected Result and Indicators (Sub Activity 1.1.7)

NRCan senior management has access to quality advice and information for timely decisions on energy-related issues.

- o Sector-specific advice, analysis and recommendations are available as requested by senior management.
- o Senior management satisfaction with relevance and usefulness of advice, analysis and recommendations provided.


Other FSDS Linkages

Sub Activity – Domestic and International Energy Policy further contributes to FSDS Target 2.1 – Air Pollutants through one other implementation strategy:

- **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction.

This Sub Activity also contributes to FSDS Target 1.1 - Climate Change Mitigation through the following implementation strategies:

- **1.1.20** - Develop climate change strategies aligned with the United States including working collaboratively through the Canada-U.S. Clean Energy Dialogue to advance clean energy priorities;
- **1.1.30** - The Atlantic Energy Gateway initiative aims to facilitate development of the Atlantic renewable energy sector by fostering collaboration, common understanding, and communication among governments, and between governments and the private sector, to maximize and expedite the development of renewable energy sources in the region;
- **1.1.43** - Work with international partners to implement commitments in the Copenhagen Accord such as mitigation targets and actions; short and long-term financing; mechanisms for technology and reducing emissions from deforestation and forest degradation; adaptation actions; and provisions for transparency and accountability of climate change actions;
- **1.1.48.2** - Participate in strategic international climate change negotiations and engagement in the United Nations Framework Convention on Climate Change (UNFCCC), including leadership on key issues;
- **1.1.49.1** - Advance Canadian interests in a range of high-level climate change-related international fora, such as the G8, the Major Economies Forum on Energy and Climate (MEF), including the MEF initiated Clean Energy Ministerial; and the Asia-Pacific Economic Cooperation;
- **1.1.50** - *Asia-Pacific Partnership*: Manage Canadian Asia-Pacific Partnership-funded projects that promote the development, diffusion and deployment of clean technologies;
- **1.1.53** - *Carbon Capture and Storage (CCS)*: Participate in a variety of policy and technical multilateral cooperation fora including the Global CCS Institute, the Carbon Sequestration Leadership Forum, the International Energy Agency and the MEF Clean Energy Ministerial Carbon Capture and Storage Action Group.

	FSDS Target 2.1	FSDS Implementation Strategy Clean Transportation
Air Pollutants Reduce air pollutants in order to maintain or improve air quality across the country and achieve the emission targets which are currently under development in consultations with the provinces and stakeholders.		2.1.23 Undertake research, development and deployment of new technologies to reduce GHGs. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

- Clean Energy Science and Technology
- Green Mining Initiative

Clean Energy Science and Technology	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.3	Clean Energy Science and Technology

Description

Knowledge and technologies are needed to enable Canada's transition to a clean energy economy and reduce greenhouse gas emissions. Under Sub Activity – Clean Energy Science and Technology (PAA 2.1.3), NRCan funds and undertakes – in partnership with experts in the private, public and academic sectors – the advancement of science and technology solutions that can help to achieve a clean energy system. This work includes generating new knowledge and developing and demonstrating technologies related to clean energy priority areas of transportation, buildings and communities, industry, power generation, bioenergy as well as medical isotopes. This ultimately contributes to clean water, clean air and sustainable land use by improving environmental responsibility in Canadian clean energy production, conversion and end-use.

Relationship to FSDS Target

The advancement of key clean energy science and technology in Canada will provide long-term solutions to reducing the emissions of greenhouse gases and air pollutant emissions from energy production, conversion and end-use. Thus, Sub Activity – Clean Energy Science and Technology contributes indirectly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

FY 2011-2012.

Expected Result and Indicators (Sub Activity 2.1.3)

The advancement of clean energy knowledge and technologies that addresses the needs of partners and stakeholders.

- Ratio of total government investments in clean energy research, development and demonstration versus leveraging funding from partners.
- Scientific knowledge and information (e.g. refereed publications and presentations, and technical and client reports etc.) disseminated to our clients and partners (e.g. industry, other government departments and agencies, other governments, associations, universities and non-governmental organizations).
- Number of published and/or revised standards and codes.

Outputs and Indicators (Sub Activity 2.1.3)

Establish partnerships to research, develop and demonstrate technologies that align with stakeholder clean energy goals.

Review proposals and approve projects.

Review and assess project progress and results.

- Number of partnerships (e.g. contracts, agreements, memoranda of understanding, projects etc.) established to research, develop and demonstrate clean energy technologies.
- Percentage of project proposals reviewed and assessed.
- Percentage of projects monitored and reviewed.

Other FSDS Linkages

Sub Activity – Clean Energy Science and Technology further contributes to FSDS Target 2.1 – Air Pollutants through one other implementation strategy:

- o **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction.

This Sub Activity also contributes to FSDS Target 1.1 - Climate Change Mitigation through the following implementation strategies:

- o **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- o **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- o **1.1.27** - Use the Program on Energy Research and Development (PERD) to research and develop energy technologies that will reduce GHG emissions;
- o **1.1.28** - Use the Clean Energy Fund for transitioning the energy sector by developing and demonstrating new technologies that will reduce GHG emissions;
- o **1.1.37** - Undertake research, development and deployment of new technologies to reduce GHGs.

Green Mining Initiative	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.1	Green Mining Initiative

Description

Recognizing the need for innovative technical solutions to advance sustainable mining, the Green Mining Initiative (GMI) (PAA 2.2.1) was launched in 2009 as a proactive effort to improve Canada's mining environmental performance. GMI research aims to find alternative means for waste disposal, reduced water use and protection of air quality at all stages of the mining cycle.

As an example, NRCan collaborated with Canadian mining equipment manufacturer Mining Technologies International to develop the world's first hybrid mining vehicle – a diesel-electric scoop tram, which has a significant positive impact on the economic viability and competitiveness of underground mining operations, the energy costs associated with ventilation as well as the health of mine workers. Activities going forward in the next three years will be aimed at transitioning from the first world-wide prototype to a pre-commercial scoop tram model.

Relationship to FSDS Target

Extending the life of a mine often means extracting from greater depths. Ventilation is one of the most significant operating costs, and uses of energy, in deep as well as shallow mines. Because it always burns fuel in optimal engine conditions and that its peak power demand is supplied by batteries, the hybrid scoop tram can achieve greater efficiency and much lower emissions compared to similar size conventional equipment performing the same tasks. As a result, it uses less carbon-based fuel and requires less energy-intensive ventilation and air heating / air conditioning to maintain the same air quality for miners. Thus, promotion of adoption of the scoop tram, under Sub Activity – Green Mining Initiative, indirectly contributes to FSDS Target 1.1 – Climate Change Mitigation.

Non-Financial Performance Expectations

FY 2013-2014.


Indicator

- o Number of underground hybrid equipment used in Canada.

Other FSDS Linkages

Sub Activity – Green Mining Initiative also contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation Strategy:

- o **1.1.2.2** - Continue to work with industry stakeholders to encourage and promote the adoption and adaptation of new technologies such as information and communications technologies, biotechnology and clean energy technology.

 FSDS Target 2.1	FSDS Implementation Strategy Clean Transportation	
	Air Pollutants Reduce air pollutants in order to maintain or improve air quality across the country and achieve the emission targets which are currently under development in consultations with the provinces and stakeholders.	2.1.27 Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Energy Efficiency and Alternative Transportation Fuels	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.1	Clean Energy
	Sub Activity 2.1.4	Energy Efficiency and Alternative Transportation Fuels

Description

The Government of Canada has set a target to reduce Canada's total greenhouse gas emissions by 17% from 2005 levels by 2020. Under Sub Activity – Energy Efficiency and Alternative Transportation Fuels (PAA 2.1.4), NRCan works to improve energy efficiency and increase the production and use of alternative transportation fuels. Different sectors of the economy are targeted using a variety of policy tools to reach this goal such as incentives, regulations, research, information dissemination, and training through workshops. Initiatives under this Sub Activity that contribute to this FSDS implementation strategy include promotion of smart energy use and purchase of efficient technologies, and information on alternative transportation fuels. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Transportation (PAA 2.1.4.5):** NRCan aims to introduce more fuel efficient vehicles into the Canadian market, to influence consumer demand for those vehicles, and to influence vehicle operations and vehicle maintenance. This Sub Sub Activity targets the Canadian vehicle market, individual drivers, and operators of commercial vehicle fleets. NRCan use a variety of policy tools such as fuel efficient training and awareness to ensure drivers understand the effects of their purchasing, operation and maintenance behaviours.

Relationship to FSDS Target

More efficient driving practices and vehicle choices help to reduce greenhouse gas emissions and other pollutants by decreasing fuel consumption. Thus, Sub Sub Activity – Transportation, under Sub Activity – Energy Efficiency and Alternative Transportation Fuels, contributes indirectly to FSDS Target 2.1 – Air Pollutants.

Non-Financial Performance Expectations

FYs 2011-2012, 2012, 2013 and 2013-2014.

Expected Result and Indicator (Sub Sub Activity 2.1.4.5)

Improved energy efficiency in all sectors.

- o Energy (fuel) savings.


Other FSDS Linkages

Sub Activity – Energy Efficiency and Alternative Transportation Fuels further contributes to FSDS Target 2.1 – Air Pollutants through the following implementation strategies:

- o **2.1.2** - Undertake scientific research and reporting in support of regulatory and other programs delivered, including data analysis, inventory development, monitoring, modeling, and assessment of the effectiveness of efforts as well as research on options, costs and benefits including economic and social and technology assessments;
- o **2.1.11** - Work on energy-efficiency regulations for consumer and commercial products;
- o **2.1.16** - ecoACTION programs reduce GHG emissions and can directly or indirectly contribute to air pollutant emission reduction.

This Sub Activity also contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments;
- **1.1.13** - Enhance energy-efficiency regulations for consumer and commercial products;
- **1.1.26** - Supply financial aid and develop capacity to reduce GHGs through adoption of emission reducing technologies and practices;
- **1.1.40** - Offer information programs and decision-making tools which help Canadians purchase, drive and maintain their vehicles in a manner which reduces fuel consumption and GHG emissions.

	FSDS Target 2.3	FSDS Implementation Strategy
Chemicals Management Reduce the risks to Canadians and impacts on the environment posed by harmful substances as a result of decreased environmental concentrations and human exposure to such substances.		2.3.6 Apply life-cycle thinking, sustainable materials management and environmentally sound management of hazardous wastes to promote sustainable consumption and minimize the impacts of products and wastes on the environment and human health. (EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Minerals and Metals Markets, Innovation and Investment	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competitiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.1	Minerals and Metals Markets, Innovation and Investment

Description

The mining sector is highly competitive, involves multiple stakeholders and is managed by multiple jurisdictions that all require information to make informed decisions. Under Sub Activity – Minerals and Metals Markets, Innovation and Investment (PAA 1.1.1), NRCan assists in the coordination and increased coherence for jurisdictions and stakeholders to make decisions that position the sector to remain competitive.

Under this Sub Activity, the Recycling Program promotes and enhances recycling in Canada by providing information about metals and minerals recycling and recycling in general. NRCan promotes recycling of electronic waste, encouraging the electronics manufacturing and retail industries to think in terms of materials life cycles; contributing to the sustainable management of rare elements found in electronic components; and promoting recycling as an environmentally sound alternative to sending to landfills the often hazardous components found in electronic equipment.

The Recycling Program includes a significant dimension aimed at public and industry education, enabling capacity to reduce emissions that impact air quality, as well as GHG emissions. Key products from the program are the Canadian Metals and Minerals Recycling Database, a listing of Canadian companies involved in metals and minerals recycling, and the Industry Framework, which offers a complete listing of all commodities recycled in Canada and information on the recycling of these commodities. Currently, NRCan is developing a recycling strategy to enhance recovery practices across Canada. This work targets the Institutional, Commercial and Industrial (IC&I) sectors of the economy and will contain discrete projects designed to enable the Federal Government to add value to national recycling efforts.

Relationship to FSDS Target

Efforts of the Recycling program under this Sub Activity promote recycling as an environmentally sound alternative to sending to landfills the often hazardous components found in electronic equipment. Thus, this work under Sub Activity – Minerals and Metals Markets, Innovation and Investment contributes indirectly to FSDS Target 2.3 – Chemicals Management.

Non-Financial Performance Expectations

Development of a recycling strategy to enhance recovery practices across Canada, specifically targeting the Institutional, Commercial and Industrial (IC&I) sectors of the economy.

The recycling strategy will be completed in FY 2011-2012.


Other FSDS Linkages


Sub Activity – Minerals and Metals Markets, Innovation and Investment also contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategy:

- o **1.1.29** - Finance projects that would, among other things, help to optimize resource use, valuing residual resources, and contribute to eco-efficiency.

This Sub Activity also contributes to FSDS Target 2.1 – Air Pollutants through one implementation strategy:

- o **2.1.17** - Finance projects that would, among other things, help to minimize resource use, valuing residual resources, and contribute to eco-efficiency.

	FSDS Theme II – Maintaining Water Quality and Availability
	FSDS Goal 3 – Water Quality Protect and enhance the quality of water so that it is clean, safe and secure for all Canadians and supports healthy ecosystems.

	FSDS Target 3.1	FSDS Implementation Strategy
Fresh Water Quality Complete federal actions to restore beneficial uses in Canadian Areas of Concern in the Great Lakes by 2020.		3.1.5 Advance clean-up of historic radioactive wastes in the Port Hope area, which has been identified as an Area of Concern by the International Joint Commission. (NRCan)

You will find below details about NRCan’s activities that contribute to this implementation strategy:

Radioactive Waste Management	This activity is nested within NRCan’s Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.4	Radioactive Waste Management

Description

Past nuclear industry and uranium mining activities were not subject to modern regulations and, in some cases, have resulted in a legacy of radioactive waste or contaminated lands. When the original or current owner cannot be held responsible for this material, government intervention is required to develop and implement interim and long-term management expectations. Under Sub Activity – Radioactive Waste Management (PAA 2.2.4), NRCan is involved in policy and program development and implementation aimed at establishing long-term management solutions for radioactive waste for which the federal government has responsibilities. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Historic Waste** (PAA 2.2.4.1): NRCan provides oversight for the management of historic low-level radioactive wastes, including funding and policy direction, which helps to decrease health and safety risks for Canadians. In particular, through the Port Hope Area Initiative, the Government of Canada is responding to community-recommended solutions for the cleanup and long-term safe management of historic low-level radioactive waste in the Port Hope area.

Relationship to FSDS Target

The Port Hope Area Initiative will remediate the Port Hope Harbour and reduce the inflow of contaminated water into Lake Ontario. Thus the work of Sub Sub Activity – Historic Waste, under Sub Activity – Radioactive Waste Management contributes directly to FSDS Target 3.1 –Fresh Water Quality.

Non-Financial Performance Expectations

The Expected Results and Indicators apply annually unless otherwise indicated.

Expected Results and Indicators (Sub Sub Activity 2.2.4.1)

Contaminated sites are cleaned up.

- o Achievement of Legal Agreement obligations.

Proper waste management facilities are established.

- Compliance with applicable Canadian Nuclear Safety Commission institutional controls/ licenses in FY 2011-2012.


Outputs and Indicators (Sub Sub Activity 2.2.4.1)

Strategic Plan to consolidate known historic waste in long-term management facility(s).

- Progress on site cleanups and implementation of long-term management approach.

Detailed designs, regulatory approvals.

- Licenses issued (will not apply after 2011-2012).

	FSDS Target 3.1	FSDS Implementation Strategy
Fresh Water Quality Complete federal actions to restore beneficial uses in Canadian Areas of Concern in the Great Lakes by 2020.		3.1.9 Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario. (EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Environmental Geoscience	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Groundwater Geoscience** (PAA 2.2.3.2): NRCan's aquifer mapping and assessment activities (in collaboration with the provinces and territories) support informed decision-making on groundwater management issues, such as: increased pressures on water resources with urbanization, economic expansion and growing energy demands. Mapping of key aquifers supports the responsible development of Canada's natural resources.

Relationship to FSDS Target

With nearly one third of all Canadians, and up to 80% of the rural population depending on groundwater supply for drinking water, Canada is increasingly reliant on this source for sustained quality of life. The Government of Canada is collaborating with the Province of Ontario and other areas to set standards, complete mapping and assessment requirements for the Great Lakes region. This scientific research will contribute to sustainable management of this highly populated key region. Thus, Sub Activity – Environmental Geoscience contributes indirectly to FSDS Target 3.1 – Fresh Water Quality.

Non-Financial Performance Expectations

Expected Result and Indicators (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- o Number of communities using the National Groundwater Inventory information in groundwater management and related decision-making (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 2.2.3.2)

Governments and decision-makers are better equipped to manage Canada's groundwater resources.

- o The National Groundwater Inventory Network is populated with the most recent aquifer assessment data (reported annually, beginning in 2011-2012).

Output and Indicator (Sub Sub Activity 2.2.3.2)

Aquifer assessments are completed.

- o Number of assessments completed (reported only for 2012-2013).

Other FSDS Linkages

Sub Activity – Environmental Geoscience also contributes to FSDS Target 4.1 – Water Resource Management and Use through the following implementation strategies:


- **4.1.4** - Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians;
- **4.1.5** - Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision;
- **4.1.9** - Continue the development and implementation of Water Availability Indicators;
- **4.1.10** - Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians better understand and manage underground water resources.


This Sub Activity also contributes to FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through the following implementation strategy:

- **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

This Sub Activity also contributes to FSDS Target 6.3 – Marine Ecosystems through the following implementation strategies:

- **6.3.1** - Develop a federal-provincial-territorial network of Marine Protected Areas;
- **6.3.5** - Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities;
- **6.3.8** - Complete feasibility assessments for two potential national marine conservation areas.

	<h2>FSDS Theme II – Maintaining Water Quality and Availability</h2>
	<h3>FSDS Goal 4 – Water Availability</h3> <p>Enhance information to ensure that Canadians can manage and use water resources in a manner consistent with the sustainability of the resource.</p>

	<h3>FSDS Target 4.1</h3>	<h3>FSDS Implementation Strategy</h3>
<h4>Water Resource Management and Use</h4> <p>Promote the conservation and wise use of water to affect a 30% reduction or increased efficiency in water use in various sectors by 2025 (based on 2009 water use levels).</p>	<p>4.1.4 Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians. (EC, NRCan)</p>	

You will find below details about NRCan's activities that contribute to this implementation strategy:

<h2>Environmental Geoscience</h2>	<p>This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility</p>	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Groundwater Geoscience** (PAA 2.2.3.2): NRCan's aquifer mapping and assessment activities (in collaboration with the provinces and territories) support informed decision-making on groundwater management issues, such as: increased pressures on water resources with urbanization, economic expansion and growing energy demands. Mapping of key aquifers supports the responsible development of Canada's natural resources.

Relationship to FSDS Target

In order to improve the knowledge of water, its nature, extent, availability, Federal/Provincial/Territorial collaboration on aquifer mapping and assessment standards and tools is required. Under the Sub Sub Activity – Groundwater Geoscience, NRCan partners with provinces and territories in order to develop standards in the mapping and assessment of groundwater. Thus, Sub Sub Activity Groundwater Geoscience, under Sub Activity – Environmental Geoscience, contributes indirectly to FSDS Target 4.1 – Water Resource Management and Use.

Non-Financial Performance Expectations

Expected Result and Indicators (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- Number of communities using the National Groundwater Inventory information in groundwater management and related-decision-making (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 2.2.3.2)

Governments and decision-makers are better equipped to manage Canada's groundwater resources.

- The National Groundwater Inventory Network is populated with the most recent aquifer assessment data (reported annually, beginning in 2011-2012).

Output and Indicator (Sub Sub Activity 2.2.3.2)

Aquifer assessments are completed.

- Number of assessments (reported only for 2012-2013).

Other FSDS Linkages

Sub Activity – Environmental Geoscience further contributes to FSDS Target 4.1 – Water Resource Management and Use through the following implementation strategies:

- **4.1.5** - Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision;
- **4.1.9** - Continue the development and implementation of Water Availability Indicators;
- **4.1.10** - Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians better understand and manage underground water resources.

This Sub Activity also contributes to FSDS Target 3.1 – Fresh Water Quality through one implementation strategy:


- **3.1.9** - Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario.

This Sub Activity also contributes to the FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through one implementation strategy:

- **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

This Sub Activity also contributes to FSDS Target 6.3 – Marine Ecosystems through the following implementation strategies:

- **6.3.1** - Develop a federal-provincial-territorial network of Marine Protected Areas;
- **6.3.5** - Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities;
- **6.3.8** - Complete feasibility assessments for two potential national marine conservation areas.

	FSDS Target 4.1	FSDS Implementation Strategy
Water Resource Management and Use Promote the conservation and wise use of water to affect a 30% reduction or increased efficiency in water use in various sectors by 2025 (based on 2009 water use levels).		4.1.5 Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision. (EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Environmental Geoscience	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Groundwater Geoscience** (PAA 2.2.3.2): NRCan's aquifer mapping and assessment activities (in collaboration with the provinces and territories) support informed decision-making on groundwater management issues, such as: increased pressures on water resources with urbanization, economic expansion and growing energy demands. Mapping of key aquifers supports the responsible development of Canada's natural resources.

Relationship to FSDS Target

Under Sub Sub Activity – Groundwater Geoscience, NRCan delivers open files, a national network, journals and other geoscientific information to various levels of government, including maps, standards and assessments in a comprehensive and timely manner for consideration in decision-making around Canada's groundwater. Thus, Sub Sub Activity – Groundwater Geoscience, under Sub Activity – Environmental Geoscience, contributes indirectly to FSDS Target 4.1 – Water Resource Management and Use.

Non-Financial Performance Expectations

Expected Result and Indicators (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- Number of communities using the National Groundwater Inventory information in groundwater management and related-decision-making (reported annually, beginning in 2011-2012.)

Expected Result and Indicator (Sub Sub Activity 2.2.3.2)

Governments and decision-makers are better equipped to manage Canada's groundwater resources.

- The National Groundwater Inventory Network is populated with the most recent aquifer assessment data (reported annually, beginning in 2011-2012).

Output and Indicator (Sub Sub Activity 2.2.3.2)

Aquifer assessments are completed.

- Number of assessments completed (reported only for 2012-2013).

Other FSDS Linkages

Sub Activity – Environmental Geoscience further contributes to FSDS Target 4.1 – Water Resource Management and Use through the following implementation strategies:

- **4.1.4** - Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians;
- **4.1.9** - Continue the development and implementation of Water Availability Indicators;
- **4.1.10** - Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians better understand and manage underground water resources.

This Sub Activity also contributes to FSDS Target 3.1 – Fresh Water Quality through one implementation strategy:


- **3.1.9** - Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario.

This Sub Activity also contributes to the FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through one implementation strategy:

- **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

This Sub Activity also contributes to FSDS Target 6.3 – Marine Ecosystems through the following implementation strategies:

- **6.3.1** - Develop a federal-provincial-territorial network of Marine Protected Areas;
- **6.3.5** - Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities;
- **6.3.8** - Complete feasibility assessments for two potential national marine conservation areas.

	FSDS Target 4.1	FSDS Implementation Strategy
Water Resource Management and Use	Promote the conservation and wise use of water to affect a 30% reduction or increased efficiency in water use in various sectors by 2025 (based on 2009 water use levels).	4.1.9 Continue the development and implementation of Water Availability Indicators. (HC, EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Environmental Geoscience	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Groundwater Geoscience** (PAA 2.2.3.2): NRCan's aquifer mapping and assessment activities (in collaboration with the provinces and territories) support informed decision-making on groundwater management issues, such as: increased pressures on water resources with urbanization, economic expansion and growing energy demands. Mapping of key aquifers supports the responsible development of Canada's natural resources.

Relationship to FSDS Target

Under Sub Sub Activity – Groundwater Geoscience, NRCan is working with Health Canada to determine the geoscience information necessary with regards to the development and implementation of Water Availability Indicators. NRCan supports this endeavour with its Groundwater Inventory Network and work on the development of maps assessments and common standards for Canada's transboundary aquifers. Thus, Sub Sub Activity – Groundwater Geoscience, under Sub Activity - Environmental Geoscience, contributes indirectly to FSDS Target 4.1 – Water Resource Management and Use.

Non-Financial Performance Expectations

Expected Result and Indicators (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- o Percentage of federally-regulated major development project feasibility studies using NRCan geoscience (reported annually, beginning in 2011-2012).
- o Number of citations of NRCan geoscience in public regulations or policy (reported annually, beginning in 2011-2012).
- o Number of communities using the National Groundwater Inventory information in groundwater management and related-decision-making (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 2.2.3.2)

Governments and decision-makers are better equipped to manage Canada's groundwater resources.

- o Completed aquifer mapping and assessment data are available through the National Groundwater Inventory within 12 months of completion (reported annually, beginning in 2011-2012).

Output and Indicator (Sub Sub Activity 2.2.3.2)

Aquifer assessments are completed.

- Complete and release the assessment and mapping of 7 of 30 key Canadian Aquifers (reported only for 2011-2012 and 2012-2013).

Other FSDS Linkages

Sub Activity – Environmental Geoscience further contributes to FSDS Target 4.1 - Water Resource Management and Use through the following implementation strategies:

- **4.1.4** - Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians;
- **4.1.5** - Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision;
- **4.1.10** - Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians better understand and manage underground water resources.

This Sub Activity also contributes to FSDS Target 3.1 - Fresh Water Quality through one implementation strategy:


- **3.1.9** - Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario.

This Sub Activity also contributes to the FSDS Target 6.2 - Terrestrial Ecosystem and Habitat through one implementation strategy:

- **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

This Sub Activity also contributes to FSDS Target 6.3 - Marine Ecosystems through the following implementation strategies:

- **6.3.1** - Develop a federal-provincial-territorial network of Marine Protected Areas;
- **6.3.5** - Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities;
- **6.3.8** - Complete feasibility assessments for two potential national marine conservation areas.

	FSDS Target 4.1	FSDS Implementation Strategy
Water Resource Management and Use Promote the conservation and wise use of water to affect a 30% reduction or increased efficiency in water use in various sectors by 2025 (based on 2009 water use levels).		4.1.10 Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians to better understand and manage underground water resources. (HC, EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Environmental Geoscience	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- o **Sub Sub Activity – Groundwater Geoscience** (PAA 2.2.3.2): NRCan's aquifer mapping and assessment activities (in collaboration with the provinces and territories) support informed decision-making on groundwater management issues, such as: increased pressures on water resources with urbanization, economic expansion and growing energy demands. Mapping of key aquifers supports the responsible development of Canada's natural resources.

Relationship to FSDS Target

In order to improve the knowledge of water, its nature, extent, availability, Federal/ Provincial/Territorial collaboration on aquifer mapping and assessment standards and tools is required. Under Sub Sub Activity – Groundwater Geoscience, NRCan will carry out mapping and assessment activities on 15 of Canada's key regional aquifers and develop a national groundwater inventory to facilitate collaboration activities and Canada's understanding and management of underground water resources. Thus, Sub Sub Activity – Groundwater Geoscience, under Sub Activity – Environmental Geoscience, contributes indirectly to FSDS Target 4.1 – Water Resource Management and Use.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- o Number of communities using the National Groundwater Inventory information in groundwater management and related-decision-making (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 2.2.3.2)

Governments and decision-makers are better equipped to manage Canada's groundwater resources.

- o The National Groundwater Inventory Network is populated with the most recent aquifer assessment data (reported annually, beginning in 2011-2012).

Output and Indicator (Sub Sub Activity 2.2.3.2)

Aquifer assessments are completed.

- o Number of assessments completed (reported only for 2012-2013).

Other FSDS Linkages

Sub Activity – Environmental Geoscience further contributes to FSDS Target 4.1 – Water Resource Management and Use through the following implementation strategies:

- **4.1.4** - Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians;
- **4.1.5** - Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision;
- **4.1.9** - Continue the development and implementation of Water Availability Indicators.

This Sub Activity also contributes to FSDS Target 3.1 – Fresh Water Quality through one implementation strategy:


- **3.1.9** - Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario.


This Sub Activity also contributes to the FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through one implementation strategy:

- **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

This Sub Activity also contributes to FSDS Target 6.3 – Marine Ecosystems through the following implementation strategies:

- **6.3.1** - Develop a federal-provincial-territorial network of Marine Protected Areas;
- **6.3.5** - Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities;
- **6.3.8** - Complete feasibility assessments for two potential national marine conservation areas.

	FSDS Theme III – Protecting Nature
	FSDS Goal 6 – Ecosystem Habitat Conservation and Protection Maintain productive and resilient ecosystems with the capacity to recover and adapt; and protect areas in ways that leave them unimpaired for present and future generations.

	FSDS Target 6.2	FSDS Implementation Strategy
	Terrestrial Ecosystem and Habitat Park Protected Habitat: Maintain or improve the overall ecological integrity of national parks from March 2008 to March 2013.	6.1.13 Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion. (PC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

- Environmental Geoscience
- Essential Geographic Information and Support

Environmental Geoscience	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Environmental Stewardship** (PAA 2.2.3.1): As required by the *Canadian Environmental Assessment Act*, NRCan provides geoscience information and expertise in reviews of projects undergoing federal environmental assessment, including public assessments of non-renewable mineral and energy resources as required for the creation of National Parks and National Marine Protected Areas.

Relationship to FSDS Target

Under Sub Sub Activity – Environmental Stewardship, NRCan delivers expertise, information and data to other government departments, enabling a clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development of national parks, protected areas and use of Canada's natural resources. Thus, Sub Sub Activity Environmental Stewardship, under Sub Activity – Environmental Geoscience, contributes indirectly to FSDS Target 6.2 – Terrestrial Ecosystem and Habitat.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- o Percentage of federally-regulated major development project feasibility studies using NRCan geoscience (reporting annually, beginning in 2011-2012).

Expected Result, Output and Indicators (Sub Sub Activity 2.2.3.1)

Assessments and scientific knowledge and expertise are readily available to governments, regulatory bodies and industry.

- o Assessments (including Environmental Assessments (EA) and Mineral and Energy Resource Assessments (MERA)) are produced and readily available to governments and industry (reporting annually, beginning in 2011-2012).

Mineral and Energy Resource Assessments (MERA) are produced.

- o MERA assessments are completed on time (reported annually, beginning in 2011-2012).

Other FSDS Linkages

Sub Activity – Environmental Geoscience also contributes to FSDS Target 3.1 – Freshwater Quality through one implementation strategy:

- o **3.1.9** - Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario.

This Sub Activity also contributes to FSDS Target 4.1 – Water Resource Management and Use through the following implementation strategies:

- o **4.1.4** - Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians;
- o **4.1.5** - Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision;
- o **4.1.9** - Continue the development and implementation of Water Availability Indicators;
- o **4.1.10** - Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians better understand and manage underground water resources.

This Sub Activity also contributes to FSDS Target 6.3 – Marine Ecosystems through the following implementation strategies:

- o **6.3.1** - Develop a federal-provincial-territorial network of Marine Protected Areas;
- o **6.3.5** - Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities;
- o **6.3.8** - Complete feasibility assessments for two potential national marine conservation areas.

Essential Geographic Information and Support	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows:	
	Strategic Outcome 3 – Safety, Security, and Stewardship	
	Program Activity 3.2	Natural Resource and Landmass Knowledge and Systems
Sub Activity 3.2.1	Essential Geographic Information and Support	

Description

Evidence-based geographic knowledge and information is essential to govern the country and to facilitate development of its natural resources. For example, without such knowledge, boundaries could not be determined, authoritative land management and development could not be undertaken and sovereign rights could not be upheld.

Under Sub Activity – Essential Geographic Information and Support (PAA 3.2.1), NRCan delivers essential geographic information and derived products to the Canadian public and private sectors, which support decision-making in key economic, environmental and social activities. With this knowledge, NRCan delivers on Canada's commitment and obligations related to legal boundaries, shares its knowledge internationally and enables scientific activities to be undertaken in Canada's Arctic. Under Sub Activity – Essential Geographic Information and Support is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Earth Observation** (PAA 3.2.1.3): NRCan delivers data/derived products to federal departments, the Canadian public and private sectors for decision-making in areas such as sustainable resource development, land-use management, forest fire and climate monitoring.

Relationship to FSDS Target

Under Sub Sub Activity – Earth Observation, NRCan provides authoritative geodetic reference points, which enables accurate boundaries to be surveyed, demarcated and approved. This information is also used for mapping and assessment purposes, as well as to uphold boundaries and support the protection of national parks. Thus, Sub Sub Activity – Earth Observation, under Sub Activity – Essential Geographic Information and Support, contributes indirectly to FSDS Target 6.2 – Terrestrial Ecosystem and Habitat.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 3.2.1)

Geographic and geoscience information is used in public and private sectors' discussions on issues of governance (land use, boundaries, etc) and the economic development of natural resources.

- Public planning documents contain geographic and/or geoscience information developed by the program (reporting annually, beginning in 2011-2012).

Expected Result and Indicators (Sub Sub Activity 3.2.1.3)

Governments, industry and Canadians have access to up-to-date remote sensing imagery applications and geodetic reference points for the purpose of technology applications.

- Percentage increase in number of downloads of satellite imagery (reporting annually beginning in 2011-2012).
- Percentage increase in number of data requests for geodetic reference points (reporting annually, beginning in 2011-2012).


Other FSDS Linkages

Sub Activity – Essential Geographic Information and Support also contributes to FSDS Target 1.1 – Climate Change Mitigation through one implementation strategy:

- **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments.

This Sub Activity also contributes to FSDS Target 6.4 – Managing Threats to Ecosystems through the following implementation strategy:

- **6.4.1** - Fulfill federal responsibilities related to prevention, detection, rapid response and management of invasive alien species. Key activities are related to governance (including international cooperation legislation/regulation, science and technology, risk analysis, information management and sharing, performance promotion, management and mitigation).

	FSDS Target 6.3	FSDS Implementation Strategy
Marine Ecosystems Improve the conservation of ocean areas and marine ecosystems by 2012.		6.3.1 Develop a federal-provincial-territorial network of Marine Protected Areas. (DFO, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Environmental Geoscience	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Environmental Stewardship** (PAA 2.2.3.1): As required by the Canadian Environmental Assessment Act, NRCan provides geoscience information and expertise in reviews of projects undergoing federal environmental assessment, including public assessments of non-renewable mineral and energy resources as required for the creation of National Parks and National Marine Protected Areas.

Relationship to FSDS Strategy

Geoscience information and expertise is necessary to review and assess resource potential in order to establish marine protected areas. Collaboration with federal-provincial-territory governments to create a network of marine protected areas will facilitate decision-making and the conservation of Canada's ocean areas and marine ecosystems. Thus, NRCan's efforts under Sub Sub Activity – Environmental Stewardship, under Sub Activity – Environmental Geoscience, contributes indirectly to FSDS Target 6.3 – Marine Ecosystems.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- Percentage of federally-regulated major development project feasibility studies using NRCan geoscience (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 2.2.3.1)

Assessments and scientific knowledge and expertise are readily available to governments, regulatory bodies and industry.

- Assessments (including Environmental Assessments (EA) and Mineral and Energy Resource Assessments (MERA), are produced and readily available to governments and industry (reporting annually, beginning in 2011-2012).

Other FSDS Linkages

Sub Activity – Environmental Geoscience further contributes to FSDS Target 6.3 – Marine Ecosystems through the following implementation strategies:

- **6.3.5** - Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities;
- **6.3.8** - Complete feasibility assessments for two potential national marine conservation areas.

This Sub Activity also contributes to FSDS Target 3.1 – Freshwater Quality through one implementation strategy:


- o **3.1.9** - Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario.

This Sub Activity also contributes to FSDS Target 4.1 – Water Resource Management and Use through the following implementation strategies:

- o **4.1.4** - Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians;
- o **4.1.5** - Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision;
- o **4.1.9** - Continue the development and implementation of Water Availability Indicators;
- o **4.1.10** - Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians better understand and manage underground water resources.

This Sub Activity also contributes to FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through the following implementation strategy:

- o **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

	FSDS Target 6.3	FSDS Implementation Strategy
Marine Ecosystems Improve the conservation of ocean areas and marine ecosystems by 2012.		6.3.5 Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities. (DFO, EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Environmental Geoscience	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Environmental Stewardship** (PAA 2.2.3.1): As required by the Canadian Environmental Assessment Act, NRCan provides geoscience information and expertise in reviews of projects undergoing federal environmental assessment, including public assessments of non-renewable mineral and energy resources as required for the creation of National Parks and National Marine Protected Areas.

Developing major projects in a sustainable and environmentally responsible manner requires in-depth knowledge of the potential impacts of resource development on the environment. NRCan provides scientific research and assessments as a foundation in decision-making and approval processes for project development, and the development of mitigation strategies in existing projects. This includes environmental assessments as required under the Canadian Environmental Assessment Act and in response to obligations for all federally-regulated projects, such as quarries, deep waters and pipelines to receive approval.

Relationship to FSDS Target

Geoscience information is used to ensure environmental impacts and ecological risks are known in order to provide federally-regulated projects, such as deep water and pipelines approval, which contributes to ecosystem and habitat conservation. Thus, NRCan's efforts under Sub Sub Activity – Environmental Stewardship, under Sub Activity – Environmental Geoscience, contribute indirectly to FSDS Target 6.3 – Marine Ecosystems.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- Percentage of federally-regulated major development project feasibility studies using NRCan geoscience (reported annually, beginning in 2011-2012).

Expected Result and Indicator (Sub Sub Activity 2.2.3.1)

Assessments and scientific knowledge and expertise are readily available to governments, regulatory bodies and industry.

- Assessments (including Environmental Assessments (EA) and Mineral and Energy Resource Assessments (MERA), are produced and readily available to governments and industry (reporting annually, beginning in 2011-2012).

Other FSDS Linkages

Sub Activity – Environmental Geoscience further contributes to FSDS Target 6.3 – Marine Ecosystems through two implementation strategies:

- **6.3.1** - Develop a federal-provincial-territorial network of Marine Protected Areas;
- **6.3.8** - Complete feasibility assessments for two potential national marine conservation areas.

This Sub Activity also contributes to FSDS Target 3.1 – Freshwater Quality through one implementation strategy:


- **3.1.9** - Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario.

This Sub Activity also contributes to FSDS Target 4.1 – Water Resource Management and Use through the following implementation strategies:

- **4.1.4** - Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians;
- **4.1.5** - Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision;
- **4.1.9** - Continue the development and implementation of Water Availability Indicators;
- **4.1.10** - Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians better understand and manage underground water resources.

This Sub Activity also contributes to FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through the following implementation strategy:

- **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

	FSDS Target 6.3	FSDS Implementation Strategy
Marine Ecosystems Improve the conservation of ocean areas and marine ecosystems by 2012.		6.3.8 Complete feasibility assessments for two potential national marine conservation areas. (PC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Environmental Geoscience	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.3	Environmental Geoscience

Description

Governments and Industry require a variety of assessments rooted in sound geoscience in order to develop, monitor and maintain resources responsibly, and to assess risks. Under Sub Activity – Environmental Geoscience (PAA 2.2.3), NRCan delivers expertise, information and data to other government departments and industry, enabling clear understanding of environmental risks and opportunities, which in turn supports environmental responsibility in the development and use of Canada's natural resources. Under this Sub Activity is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Environmental Stewardship** (PAA 2.2.3.1): As required by the Canadian Environmental Assessment Act, NRCan provides geoscience information and expertise in reviews of projects undergoing federal environmental assessment, including public assessments of non-renewable mineral and energy resources as required for the creation of National Parks and National Marine Protected Areas.

Relationship to FSDS Target

Geoscience information and expertise is necessary to review and assess resource potential in order to establish marine protected areas. Utilizing the scientific research and expertise will facilitate decision-making and the conservation of Canada's ocean areas and marine ecosystems. Thus, NRCan's efforts under Sub Sub Activity – Environmental Stewardship, under Sub Activity – Environmental Geoscience contributes indirectly to FSDS Target 6.3 – Marine Ecosystems.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 2.2.3)

NRCan's geoscience supports the development and management of resources in an environmentally responsible manner.

- Percentage of federally-regulated major development project feasibility studies using NRCan geoscience (reporting annually, beginning in 2011-2012.)

Expected Result and Indicator (Sub Sub Activity 2.2.3.1)

Assessments and scientific knowledge and expertise are readily available to governments, regulatory bodies and industry.

- Assessments (including Environmental Assessments (EA) and Mineral and Energy Resource Assessments (MERA), are produced and readily available to governments and industry (reporting annually, beginning in 2011-2012).

Other FSDS Linkages

Sub Activity – Environmental Geoscience further contributes to FSDS Target 6.3 – Marine Ecosystems through the following implementation strategies:

- **6.3.1** - Develop a federal-provincial-territorial network of Marine Protected Areas;
- **6.3.5** - Provide advice to decision-makers on potential environmental impacts and ecological risks associated with specific, high-priority ocean activities.

This Sub Activity also contributes to FSDS Target 3.1 – Freshwater Quality through one implementation strategy:


- o **3.1.9** - Manage/deliver Great Lakes results federally-provincially, between the Government of Canada and the Province of Ontario.

This Sub Activity also contributes to FSDS Target 4.1 –Water Resource Management and Use through the following implementation strategies:

- o **4.1.4** - Improve the knowledge of water, its nature, extent, availability, sector use and best management practices such as Integrated Watershed Management to Canadians;
- o **4.1.5** - Provide web and print based information on the science and knowledge of water to Canadians in a comprehensive and timely manner to enable responsible decision;
- o **4.1.9** - Continue the development and implementation of Water Availability Indicators;
- o **4.1.10** - Complete 15 assessments for Canada's 30 key regional aquifers and produce a national groundwater inventory to help Canadians better understand and manage underground water resources.

This Sub Activity also contributes to FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through one implementation strategy:

- o **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

	FSDS Target 6.4	FSDS Implementation Strategy
Managing Threats to Ecosystems Threats of new alien species entering Canada are understood and reduced by 2015.		6.4.1 Fulfil federal responsibilities related to prevention, detection, rapid response and management of invasive alien species. Key activities are related to governance (including international cooperation legislation/regulation, science and technology, risk analysis, information management and sharing, performance promotion, management and mitigation). (EC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Essential Geographic Information and Support	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 3 – Safety, Security, and Stewardship	
	Program Activity 3.2	Natural Resource and Landmass Knowledge and Systems
	Sub Activity 3.2.1	Essential Geographic Information and Support

Description

Evidenced-based geographic knowledge and information is essential to govern the country and responsible development of its natural resources. Under Sub Activity – Essential Geographic Information and Support (PAA 3.2.1), NRCan delivers essential geographic information and derived products to the Canadian public and private sectors, which support decision-making in key economic, environmental and social activities. With this knowledge, NRCan delivers on Canada's commitment and obligations related to legal boundaries, shares its knowledge internationally and enables scientific activities to be undertaken in Canada's Arctic. Under Sub Activity – Essential Geographic Information and Support is a key Sub Sub Activity that contributes to this FSDS implementation strategy:

- **Sub Sub Activity – Earth Observation (PAA 3.2.1.3).** Under the *Remote Sensing Act*, NRCan manages key initiatives supporting space remote sensing, including satellite ground stations and systems for storing, processing and distributing information on an ongoing basis. Under this Sub Sub Activity, NRCan: a) delivers data and derived products to federal government departments and the Canadian public and private sector for decision-making in areas such as sustainable resource development, land-use management, forest fire and climate change monitoring and to ensure that Canadian authorities responsible for emergency preparedness can make informed decisions; b) receives data from Canadian and international satellites; and c) provides longitude, latitude, height values for geographic coordinates across the country.

Relationship to FSDS Target

This program delivers remote sensing data and derived information to decision-makers that provides evidence-based information received from calibrated and validated space-based, airborne and satellite imagery data, technology and applications. This work provides the geographic knowledge essential for better identification of insect defoliation (area and severity), and other effective monitoring, mapping and management activities related to invasive alien species that will enable legislation/regulation, risk analysis and information management activities, helping to reduce its impact to Canadian habitat. Thus, Sub Sub Activity – Earth Observation, under Sub Activity – Essential Geographical Information and Support – contributes indirectly to FSDS Target 6.4 – Managing Threats to Ecosystems.

Non-Financial Performance Expectations

Expected Result and Indicator (Sub Activity 3.2.1)

Geographic and geoscience information is used in public and private sectors' discussions on issues of governance (land use, boundaries, etc) and the economic development of natural resources.

- Public planning documents contain geographic and/or geoscience information developed by the program (reporting annually, beginning in 2011-2012).

Expected Result and Indicators (Sub Sub Activity 3.2.1.3)

Governments, industry and Canadians have access to up-to-date remote sensing imagery applications and geodetic reference points for the purpose of technology applications.

- o Percentage increase in number of downloads of satellite imagery (reporting annually beginning in 2011-2012).


Other FSDS Linkages


Sub Activity – Environmental Geoscience also contributes to FSDS Target 1.1 –Climate Change Mitigation through the following implementation strategy:

- o **1.1.5** - Undertake and deliver scientific research and reporting in support of regulatory and other programs, including data analysis, inventory development, monitoring, modeling and assessment of the effectiveness of efforts as well as research on options, costs and benefits, and technology assessments.

This Sub Activity also contributes to FSDS Target 6.2 – Terrestrial Ecosystem and Habitat through the following implementation strategy:

- o **6.1.13** - Establish one new national park by March 2013; complete feasibility assessments of five other potential national parks and one proposed expansion.

	FSDS Theme III – Protecting Nature
	FSDS Goal 7 – Biological Resources Sustainable production and consumption of biological resources within ecosystem limits.

	FSDS Target 7.3	FSDS Implementation Strategy
Sustainable Forest Management Improve the management of Canada's forest ecosystems through the development and dissemination of knowledge.		7.3.1 First Nations Forestry Program – support initiatives to enhance first nations' capacity to sustainably manage reserve forests and other forests. (INAC, NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Forest-based Community Partnerships	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 1 – Economic Competiveness	
	Program Activity 1.1	Economic Opportunities for Natural Resources
	Sub Activity 1.1.5	Forest-based Community Partnerships

Description

The forest sector is an important industry in many regions of Canada and provides significant employment in close to 200 forest-dependent communities across the country. In the face of weakened markets and increased global competition, forest-based communities can benefit from dissemination of knowledge and tools to take advantage of emerging economic opportunities. Under Sub Activity – Forest-based Community Partnerships (PAA 1.1.5), NRCan provides financial contributions to forest community partnership organizations at 11 forest-based community sites, and Aboriginal Communities across Canada. Under this Sub Activity, NRCan has two programs that contribute to this FSDS implementation strategy:

- The Forest Communities Program (FCP) supports forest community sustainable development research, knowledge development dissemination and transfer.
- The First Nations Forestry Program (FNFP) assists First Nations across Canada to build capacity in sustainable forest management.

The objective of these programs is to ensure that forest-based communities (both Aboriginal and non-Aboriginal) have the knowledge, products, tools and capacity to achieve sustainable forest management goals and can take advantage of forest sector opportunities.

Relationship to FSDS Target

The development and dissemination of knowledge and information for forest-based communities provided under Sub Activity - Forest-based Community Partnerships contributes to the improved management of Canada's forests. This information is actively disseminated among a broad range of forest communities and takes the form of workshops, fact sheets, annual reports and web-based tools. Moreover, through the National Forest Inventory and the State of Canada's Forest Report, NRCan provides information that enables the public's access to information on Canada's forests. Thus, initiatives under Sub Activity Forest-based Community Partnerships contribute directly to FSDS Target 7.3 -Sustainable Forest Management.

Non Financial Performance Expectations

FNFP: Data is collected annually to March 31, 2011.

FCP: Data is collected annually to March 31, 2012.

Expected Results and Indicators (Sub Activity 1.1.5)

Knowledge products and tools related to economic opportunities in forest-based communities.

- Number of knowledge products accessed.


Investments by forest-based community partners.

- Ratio of program funds leveraged.

Output and Indicator (Sub Activity 1.1.5)

Knowledge products and tools for forest-based communities.

- Number of knowledge products and tools developed.

	FSDS Target 7.3	FSDS Implementation Strategy
Sustainable Forest Management Improve the management of Canada's forest ecosystems through the development and dissemination of knowledge.		7.3.2 Generate and disseminate scientific knowledge related to forest ecosystems. (NRCan)

You will find below details about NRCan's activities that contribute to this implementation strategy:

Forest Ecosystem Science and Application	This activity is nested within NRCan's Program Activity Architecture (PAA) as follows: Strategic Outcome 2 – Environmental Responsibility	
	Program Activity 2.2	Ecosystem Risk Management
	Sub Activity 2.2.2	Forest Ecosystem Science and Application

Description

Canada needs the scientific knowledge to manage risks, to maintain healthy ecosystems, and to meet international obligations and priorities. Through Sub-Activity – Forest Ecosystem Science and Application (PAA 2.2.2), NRCan conducts research as well as national assessments and monitoring to develop, synthesize and integrate scientific knowledge of Canada's forest ecosystems. This knowledge is used by governments, industry, and non-governmental organizations in the development of forest management practices and policies, and by other federal departments in the formation of Canada's negotiating position on international environmental issues related to forests.

Under this Sub Activity, NRCan has six project areas: biodiversity, international model forests network, carbon science, landscape reclamation and national forest information management. The main objective of these projects is to allow the federal government, Canadians and their institutions to have an authoritative scientific foundation on forest ecosystems at the national scale. This knowledge informs and influences the federal government's forest related agenda.

Relationship to FSDS Target

Peer-reviewed scientific publications under Sub Activity – Forest Ecosystem Science and Application contribute to the improved management of Canada's forests. This information is actively disseminated among a broad range of constituents and takes the form of workshops, fact sheets and web-based tools. Moreover, through the National Forest Inventory and the State of Canada's Forest Report, NRCan provides information that enables the public's access to information on Canada's forests. Thus, initiatives under Sub Activity – Forest Ecosystem Science and Application contribute directly to FSDS Target 7.3 – Sustainable Forest Management.

Non-Financial Performance Expectations

Data is collected and reported annually and this program extends to March 31, 2013.

Expected Result and Indicator (Sub Activity 2.2.2)

Increased use of scientific knowledge.

- o Trend in use of scientific knowledge.

Output and Indicator (Sub Activity 2.2.2)

Scientific knowledge of Canada's forest ecosystems.

- o Number of knowledge transfer activities.

Other FSDS Linkages

Sub Activity – Forest Ecosystem Science and Application also contributes to FSDS Target 1.1 – Climate Change Mitigation through the following implementation strategies:

- o **1.1.48.4** - Develop and submit a complete and compliant annual national GHG Inventory Report and Common Reporting Format tables to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat by April 15 to meet UNFCCC and Kyoto Protocol reporting requirements;

- o **1.1.54** - Support the development and provision of scientific knowledge, modeling, data and tools that inform forest carbon budgets.

Section 4

**NRCan Sustainable Development Activities
Not Captured Under
Federal Sustainable Development Strategy
Themes I-III**

Context

Sustainable development is the cornerstone of NRCan's mandate, and consequently, the department designs its initiatives to achieve its vision to "Improve the quality of life of Canadians by creating a sustainable resource advantage". Many of the department's activities and initiatives clearly contribute directly to the themes, goals and targets of the Federal Sustainable Development Strategy. Nevertheless, not all of the departmental activities could be captured within the framework of targets articulated by the FSDS. The list of initiatives contributing to sustainable development but not captured under the FSDS is too extensive to describe in this section. Therefore, NRCan has chosen to highlight only one such initiative.

While the NRCan Program Activity Architecture Sub Activity 2.2.2 – Green Mining Initiative (GMI) has been mapped to two FSDS Implementation Strategies, the specific work described in those cases (scoop tram) is a small component recently brought under the umbrella of the GMI. NRCan would like to take this opportunity to elaborate on the details of the whole Initiative, as it contributes to the economic and environmental pillars of sustainable development, and indirectly supports the social pillar.

Description - Green Mining Initiative

Recognizing the need for innovative technological solutions to advance sustainable mining, the Green Mining Initiative (GMI) was launched in 2009 as a proactive effort to improve Canada's mining environment performance. GMI research aims to find alternative means for waste disposal, reduced water use and protection of air quality at all stages of the mining cycle.

The four pillars of Green Mining are:

- Footprint reduction;
- Innovation in waste management;
- Mine closure and rehabilitation; and,
- Ecosystem risk management.

GMI develops knowledge and innovation to:

- reduce the environmental burden of mining for the benefit of future generations;
- promote a strong, socially responsible economic performance that will help the mining sector support sustainable communities;
- support effective policy and regulation;
- design equipment aimed at stimulating Canadian innovation expertise and export; and
- take advantage of clear technologies market opportunities.

Non-Financial Performance Expectations

The Green Mining Initiative will improve the mining sector's environmental performance through knowledge transfer assets and green technologies. Performance indicators are:

- a. Number of publications on research and development (mid and year-end reviews)
 - Target: 20 publications (March 2012)
- b. Number of projects completed jointly with industry and government stakeholders (mid and year-end reviews)
 - Target: 14 projects completed (March 2012)
- c. Number of green mining technologies transferred (5 year)
 - Target: 1 license and/or 1 patent (March 2012)

Contributions to Sustainable Development

GMI contributes to broad Government of Canada areas of environmental focus such as addressing climate change and air quality, maintaining water quality and protecting nature. GMI takes a full life-cycle approach to greening mining operations, from design to closure of a mine site. While mining minerals and metals economically, the long-term vision is to leave behind only clean water, rehabilitated landscapes and healthy ecosystems.

Footprint reduction includes finding ways to minimize the creation of environmentally hazardous and costly mining waste. CANMET-MMSL is experimenting with explosives-free rock breaking technologies, which cause unnecessary rock breakage of waste material. Using electricity to heat the vein containing valuable minerals creates micro-stress, making small cracks in the rock, so the ore breaks off in small flakes. This is a promising method for reducing the amount of material that needs to be hauled to the surface, treated and disposed of in the environment. Energy is saved both in handling less rock from the mine and in treating these tailings at the end of the mine's economic life-span.

Since it is not possible to completely eliminate mine waste, GMI research also focuses on better managing and disposing of mine waste. This involves preventing and treating acid-related drainage, minimizing and reprocessing waste and developing alternative waste disposal technologies. NRCan is also advancing zero-discharge processes by "re-mining" existing waste materials to recover valuable metals and minerals. One project developed a process to recover approximately 80 percent of the zinc from water treatment sludge, which is the precipitated 'mud' where contaminants settle.

To understand the ecological impact of mine waste, GMI is examining metal toxicology, metals in soils and the biological impacts of submerged tailings. While there is a good understanding of the actual chemistry of waste, less is known about the impacts of waste on ecology, flora and fauna.

GMI also builds on the [National Orphaned and Abandoned Mines Initiative](#) to ensure that they do not leave an ecological footprint. GMI is exploring technologies for mine rehabilitation, habitat restoration, ecological reclamation and climate change adaptation by the mining industry.

Finally, through [Green Mines - Green Energy](#), a multi-stakeholder initiative launched in 2007, NRCan examined the question of how to handle mine tailings — which become acidic when exposed to oxygen and water — and prevent vegetation from growing. Researchers found that applying organic waste from communities and pulp and paper mills to former tailings sites provided a viable soil on which biofuel crops like canola, corn and soy could be grown.

Section 5

FSDS Theme IV – Reducing the Environmental Footprint – Beginning with Government



Copied here for your convenience is NRCan's RPP 2011-2012 Greening Government Operations (GGO) Supplementary Table: the Department's planning for Targets under FSDS Theme IV.

Greening Government Operations (GGO)

Green Building Targets

8.1 As of April 1, 2012, and pursuant to departmental strategic frameworks, new construction and build-to-lease projects, and major renovation projects, will achieve an industry-recognized level of high environmental performance¹.

Performance Measure	RPP	DPR
Target Status		
Number of completed new construction, build-to-lease and major renovation projects in the given fiscal year, as per departmental strategic framework.	2011-12 None planned	
Number of completed new construction, build-to-lease and major renovation projects that have achieved an industry-recognized level of high environmental performance in the given fiscal year, as per departmental strategic framework.	2011-12 None planned	
Existence of strategic framework.	2011-12 Yes	

Strategies / Comments

NRCan's Low Carbon (LoC) Initiative, which has been approved by the Deputy Minister in September 2010, is NRCan's strategic framework. The LoC initiative is in the implementation stage.

8.2 As of April 1, 2012, and pursuant to departmental strategic frameworks, existing crown buildings over 1000m² will be assessed for environmental performance using an industry-recognized assessment tool².

Performance Measure	RPP	DPR
Target Status		
Number of buildings over 1000m ² , as per departmental strategic framework.	25	
Percentage of buildings over 1000m ² that have been assessed using an industry-recognized assessment tool, as per departmental strategic framework.	2011-12 20%	
Existence of strategic framework.	Yes	

Strategies / Comments

Minimum level of assessment: BOMA BEST Level 1

The appropriate threshold (dollar value or floor area): 1000 m²

Applicable building types: All NRCan-owned buildings over 1000 m², excluding sheds, garages or warehouses.

Industry recognized assessment tool used: BOMA BEST

One facility - CanmetENERGY Varennes, QC – achieved BOMA BEST Level 3 certification in 2009.

NRCan's Low Carbon (LoC) Initiative, which has been approved by the Deputy Minister in September 2010, is NRCan's strategic framework. The LoC initiative is in the implementation stage.

8.3 As of April 1, 2012, and pursuant to departmental strategic frameworks, new lease or lease renewal projects over 1000m², where the Crown is the major lessee, will be assessed for environmental performance using an industry-recognized assessment tool³.

Performance Measure	RPP	DPR
Target Status		
Number of completed lease and lease renewal projects over 1000m ² in the given fiscal year, as per departmental strategic framework.	2011-12 1	
Number of completed lease and lease renewal projects over 1000m ² that were assessed using an industry-recognized assessment tool in the given fiscal year, as per departmental strategic framework.	2010-11 1	
Existence of strategic framework.	Yes	

Strategies / Comments

LEED NC Platinum building built in 2010-11 by as McMaster University per NRCan request.

8.4 As of April 1, 2012, and pursuant to departmental strategic frameworks, fit-up and refit projects will achieve an industry-recognized level of high environmental performance⁴.

Performance Measure	RPP	DPR
Target Status		
Number of completed fit-up and refit projects in the given fiscal year, as per departmental strategic framework.	2011-12 67	

Number of completed fit-up and refit projects that have achieved an industry-recognized level of high environmental performance in the given fiscal year, as per departmental strategic framework.	2011-12 0	
Existence of strategic framework.	Yes	

Strategies / Comments

Current three-year Building Management Plan (BMP, 2009-2012) identifies refit and fit-up projects. Approximately, 22% of the 67 projects are expected to improve environmental performance.

Greenhouse Gas Emissions Target

8.5 The federal government will take action now to reduce levels of greenhouse gas emissions from its operations to match the national target of 17% below 2005 by 2020.			
Performance Measure		RPP	DPR
Target Status			
Departmental GHG reduction target: Percentage of absolute reduction in GHG emissions by fiscal year 2020-21, relative to fiscal year 2005-06.		44%	
Departmental GHG emissions in fiscal year 2005-06, in kilotonnes of CO ₂ equivalent.		1.85	
Departmental GHG emissions in the given fiscal year, in kilotonnes of CO ₂ equivalent.	FY 2011-12	1.21	
	FY 2012-13	1.19	
	FY 2013-14	1.17	
	FY 2014-15	1.15	
	FY 2015-16	1.13	
	FY 2016-17	1.11	
	FY 2017-18	1.09	
	FY 2018-19	1.07	
	FY 2019-20	1.05	
	FY 2020-21	1.03	
Percent change in departmental GHG emissions from fiscal year 2005-2006 to the end of the given fiscal year.	FY 2011-12	35%	
	FY 2012-13	36%	
	FY 2013-14	37%	
	FY 2014-15	38%	
	FY 2015-16	39%	
	FY 2016-17	40%	

	FY 2017-18	41%	
	FY 2018-19	42%	
	FY 2019-20	43%	
	FY 2020-21	44%	

Strategies / Comments

Targeted GHG emission sources: Fleet only.

Additional performance indicators, key emissions reductions strategies, implementation plan, opportunities for continuous improvement:

Fleet modernization: A lowering of existing vehicle life cycle retention parameters will further improve upon fuel efficiency, while reducing overall costs. Newer model vehicles are cleaner to operate due to advancements in vehicle technologies.

Acquiring new technology vehicles: plug-in hybrid and electric vehicles are forecast for production in 2011/12. NRCan is committed to being the first department to introduce these types of advanced vehicle classes into its vehicle fleet.

Expanding a vehicle pooling model across the department: NRCan will continue to look for opportunities to open up its vehicle fleet to a wider population of employees through the implementation of Vehicle Pools, thereby helping to further reduce the overall size of its vehicle inventory.

Surplus Electronic and Electrical Equipment Target

8.6 By March 31, 2014, each department will reuse or recycle all surplus electronic and electrical equipment (EEE) in an environmentally sound and secure manner.			
Performance Measure		RPP	DPR
Target Status			
Existence of implementation plan for the disposal of all departmentally-generated EEE.		Yes: to be completed by August 31, 2011	
Total number of departmental locations with EEE implementation plan fully implemented, expressed as a percentage of all locations, by the end of the given fiscal year.	FY 2011-12	100%	
	FY 2012-13	(100%, will have been achieved in FY 2011-12)	
	FY 2013-14	(100%, will have been achieved in FY 2011-	

Strategies / Comments

Definition of location: comprises asset management facilities in NCR and regions (16 facilities)

NRCAN has ensured that our department is following all the requirements provided in the Treasury Board Directive on Disposal of Surplus Materiel, and elaborated on in section 3.4 of the TBS *Guide to Management of Materiel*.

Currently, NRCAN disposes of surplus E-Waste via the three following mechanisms:

1. Computers for Schools [Industry Canada] (30%)
2. Crown Assets Distribution Directorate [PWGSC] (20%)
3. Provincial Extended Producer Responsibility Programs (in select locations) (40%)

We are developing a Departmental E-Waste Plan, to be implemented by summer 2011. As part of this Plan, we will triage our departmental e-waste and also leverage a fourth disposal mechanism:

4. Departmental Individual Standing Offer (DISO*) for E-waste Recycling [PWGSC] (10%)

* For equipment that does not qualify for mechanisms No. 1–3

Printing Unit Reduction Target

8.7 By March 31, 2013, each department will achieve an 8:1 average ratio of office employees to printing units. Departments will apply target where building occupancy levels, security considerations, and space configuration allow.

Performance Measure		RPP	DPR
Target Status			
Ratio of departmental office employees to printing units in fiscal year 2010-11, where building occupancy levels, security considerations and space configuration allow.		3:1	
Ratio of departmental office employees to printing units at the end of the given fiscal year, where building occupancy levels, security considerations and space configuration allow.	FY 2011-12	5:1	
	FY 2012-13	8:1	
	FY 2013-14	10:1	

Strategies / Comments

The printing unit figures were determined using a combination of methods including: Web Jet Admin tool, LANDesk network discovery, procurement and physical inventory.

Although building occupancy levels, and security considerations are factors, space configurations is perhaps the largest challenge in the distribution of printing units here at NRCan. Many of the work areas are lab environments located in older buildings with accessibility issues.

The number of employees was determined via PeopleSoft and our Directory of People and Services (DPS).

Roles and responsibilities: SSO ITS is the division responsible for printer distribution and are about to begin the process of printer consolidation.

Although printer placement will be determined on a case by case basis, some of the strategies for reduction will be the increased use of multifunction printers and the decreased use of personal (local) printers.

Although the reduction of printers does not necessarily mean a reduction of printing, it has been estimated that a goal of a 6:1 ratio will still reduce power consumption by 25% and obviously decrease our amount of ewaste significantly.

Paper Consumption Target

8.8 By March 31, 2014, each department will reduce internal paper consumption per office employee by 20%. Each department will establish a baseline between 2005-2006 and 2011-2012, and applicable scope.

Performance Measure		RPP	DPR
Target Status			
Number of sheets of internal office paper purchased or consumed per office employee in the baseline year selected, as per departmental scope.			
Cumulative reduction (or increase) in paper consumption, expressed as a percentage, relative to baseline year selected.	FY 2011-12		
	FY 2012-13		
	FY 2013-14		

Strategies / Comments

Green Meetings Target

8.9 By March 31, 2012, each department will adopt a guide for

Performance Measure	RPP	DPR
Target Status		
Presence of a green meeting guide.		
Strategies / Comments		

Green Procurement Targets

8.10 As of April 1, 2011, each department will establish at least 3 SMART green procurement targets to reduce environmental impacts.

By March 31, 2014, 100% of vehicles purchased annually are right sized for operational needs and are the most fuel efficient vehicle in its class in the Government Motor Vehicle Ordering Guide and/or are an alternative fuel vehicle.		
Performance Measure	RPP	DPR
Target Status		
By March 31, 2014, 100% of vehicles purchased annually are right sized for operational needs and are the most fuel efficient vehicle in its class in the Government Motor Vehicle Ordering Guide and/or are an alternative fuel vehicle.	100%	
Progress against measure in the given fiscal year.	100%	
Strategies / Comments		
Dollar value of vehicles that meet the target relative to total dollar value of all vehicles in the Department.		
Number of vehicles that meet the target relative to total number of all vehicles in the Department.		
Exclusions may include executive vehicles.		
This target requires that criteria to identify when a vehicle is right-sized are defined.		
It requires the availability of inventory counts / assets management data for reporting, but does not require the availability of procurement data.		
Consideration must be taken when setting the percentage for the target to ensure that vehicles will not need to be prematurely disposed of to meet the target.		

By March 31, 2012, 90% of IT hardware procured will be "environmentally preferred" models (as required via a 4-year life cycle).
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Performance Measure	RPP	DPR
Target Status		
By March 31, 2012, 90% of IT hardware procured will be "environmentally preferred" models (as required via a 4-year life cycle).	90% (in 2011–12)	
Progress against measure in the given fiscal year.	80%	

Strategies / Comments

Last year's Desktop RVD was categorized as "Gold" by EPEAT and Energy Star. We are striving to continue this trend with this year's and all future desktop RVD's. Based on a 4 year life cycle, at the completion of the 4 years all desktops will be "Environmentally preferred" models. Although we can't comment on specific server hardware, we are making great strides with server consolidation.

And virtualization is allowing us to set optimistic greening targets.

By March 31, 2012, 100% of network printer consumables and suppliers used will offer a collect and credit service, i.e. recycling, for toner cartridges.

Performance Measure	RPP	DPR
Target Status		
By March 31, 2012, 100% of network printer consumables and suppliers used will offer a collect and credit service, i.e. recycling, for toner cartridges.	100%	
Progress against measure in the given fiscal year.	100%	

Strategies / Comments

We currently recycle 100 % of all toners and will continue to do so. However given the diversity of our printing environment, the various regions, and number of suppliers, our credit service is minimal. Several companies will recycle toners (even from other suppliers) as a service but do not offer credit for it.

8.11 As of April 1, 2011, each department will establish SMART targets for training, employee performance evaluations, and management processes and controls, as they pertain to procurement decision-making.

Training for select employees: By March 31, 2012, 50% of procurement staff members in regions will complete Green Procurement training.

Performance Measure	RPP	DPR
Target Status		
D) By March 31, 2012, 50% of procurement staff members in regions will complete Green Procurement training.	50% (in 2011–12)	
Progress against measure in the given fiscal year.	0%	

Strategies / Comments

Why this self selected green procurement training target is SMART:

- i. Specific: Refers to specific nature/type of training and target audience
- ii. Measurable: Information is available from regional procurement personnel (HR-related) files (An electronic certificate is issued upon completion of the training.)
- iii. Achievable: Training is “learner friendly”: easily accessible, i.e. online (24/7).
- iv. Relevant: In-house training used: Canada School of Public Service course on Green Procurement (C215)
- v. Time-bound: Date established for target completion, i.e. 100% (March 31, 2014)

Other reporting considerations:

The Green Procurement training implementation experience in NCR will be used as a model to follow for implementation of such training in regions.

As part of the NRCan Regional Organization Review, a “procurement” Regional Functional Working Group has been established, with a Procurement Regional Functional Head as the lead. The Regional Functional Head will be responsible for tracking progress against the green procurement training target.

Employee performance evaluations for personnel of procurement and materiel management.		
By March 31, 2012, 50% of all procurement personnel’s (NCR and regions) Performance Feedback Reports will include the contribution of and support for green procurement policy objectives.		
Performance Measure	RPP	DPR
Target Status		
By March 31, 2012, 50% of all procurement personnel’s (NCR and regions) Performance Feedback Reports will include the contribution of and support for green procurement policy objectives.	50% (in 2011–12)	
Progress against measure in the given fiscal year.	0%	

Strategies / Comments

Why this self selected green procurement performance evaluation target is SMART:

- i. Specific: Refers to specific positions (non manager and non functional head personnel) and functional area (procurement)
- ii. Measurable: information is available from our procurement module (e.g. for service transactions valued at >\$5K a mandatory checklist which includes environmental considerations is completed by the RC Manager)
- iii. Achievable: Contribution of and support for green procurement policy objectives will be reviewed as part of annual evaluations (Performance Feedback Reports).
- iv. Relevant: Environmental considerations may be applied to all procurement requests (albeit to varying degrees* and subject to client specifications).
* e.g. to a lesser extent with services than goods
- v. Time-bound: Date established for target completion, i.e. 100% (March 31, 2014)

Management processes and controls: By March 31, 2012, 95% of the Wireless Services procurement consolidation initiative will be implemented.

Performance Measure	RPP	DPR
Target Status		
By March 31, 2012, 95% of the Wireless Services procurement consolidation initiative will be implemented.	95% (in 2011-12)	
Progress against measure in the given fiscal year.	90%	

Strategies / Comments

Why this self selected green procurement Management processes and controls target is SMART:

- i. Specific: Refers to specific initiative (Wireless Services consolidation) and functional area (procurement)
- ii. Measurable: information is available from our procurement module
- iii. Achievable: Pilot phase (CMSS and another Sector) was successfully completed in 2009-10. Full departmental rollout had already begun as of April 2010.
- iv. Relevant: Decrease in the number of acquisition cards being used only for wireless services procurements/acquisitions (leads to a more efficient use management of the acquisition card.)
- v. Time-bound: Date established for target completion, i.e. 100% (March 31, 2014)

Notes:

- 1 This would be demonstrated by achieving LEED NC Silver, Green Globes Design 3 Globes, or equivalent.
- 2 Assessment tools include: BOMA BEST, Green Globes or equivalent.
- 3 Assessment tools include: BOMA BEST, an appropriately tailored BOMA International Green Lease Standard, or equivalent.
- 4 This would be demonstrated by achieving LEED CI Silver, Green Globes Fit-Up 3 Globes, or equivalent.
- 5 Alternatively, departments and agencies bound by the *Policy on Green Procurement* but not the *Federal Sustainable Development Act (FSDA)* can follow the approach required of FSDA departments for green procurement by setting and reporting on green procurement targets as specified in the "Green Procurement Targets" section in the above table.

Annex – List of Acronyms for Federal Organizations

The following acronyms are used within Federal Sustainable Development Themes 1 through 4 to specify those federal organizations that lead, or share the accountability for, the implementation strategies identified in support of the targets.

AAFC – Agriculture and Agri-Food Canada
ACOA – Atlantic Canada Opportunities Agency
CFIA – Canada Food Inspection Agency
DEC – Canada Economic Development Agency for the Regions of Quebec
DFAIT – Department of Foreign Affairs and International Trade
DFO – Department of Fisheries and Oceans
EC – Environment Canada
FIN – Finance Canada
HC – Health Canada
HRSDC – Human Resources and Skills Development Canada
IC – Industry Canada
INAC – Indian and Northern Affairs Canada
NRCan – Natural Resources Canada
PC – Parks Canada Agency
PWGSC – Public Works and Government Services Canada
Stats Can – Statistics Canada
TC – Transport Canada
WD – Western Economic Diversification

