



Natural Resources
Canada

Ressources naturelles
Canada



NATURAL RESOURCES CANADA
INTEGRATED
BUSINESS
PLAN
2011-2014

TABLE OF CONTENTS

| | |
|--|----|
| Message from the Deputy Minister and the Associate Deputy Minister | 5 |
| About This Document... .. | 7 |
| Who We Are | 8 |
| What We Are Trying to Achieve | 8 |
| Our Operating Context | 10 |
| Natural Resources Are a Key Economic Driver for Canada | 10 |
| NRCan's Internal Capacity | 12 |
| Our Priorities..... | 15 |
| Our Business Strategy..... | 17 |
| Strategic Outcome 1: Economic Competitiveness..... | 19 |
| Program Activity 1.1: Economic Opportunities for Natural Resources..... | 19 |
| Strategic Outcome 2: Environmental Responsibility..... | 27 |
| Program Activity 2.1: Clean Energy | 27 |
| Program Activity 2.2: Ecosystem Risk Management | 33 |
| Strategic Outcome 3: Safety, Security and Stewardship | 38 |
| Program Activity 3.1: Adapting to a Changing Climate and Hazard Risk Management | 38 |
| Program Activity 3.2: Natural Resource and Landmass Knowledge and Systems | 43 |
| Our Corporate Directions and Priorities..... | 47 |
| Annex 1 - Program Activity Architecture | 53 |
| Annex 2 - Our Governance Structure | 54 |
| Annex 3 - Our People | 56 |
| Annex 4 – Real Property and Environmental Management | 67 |
| Annex 5 – Information Management and Technology and Project Management | 70 |

MESSAGE FROM THE DEPUTY MINISTER AND THE ASSOCIATE DEPUTY MINISTER

We are pleased to present NRCan's second Integrated Business Plan (IBP), the 2011-2014 edition. The IBP communicates how we are collectively contributing to the department's goals and priorities. It highlights our recent accomplishments and presents clear deliverables for our business and management priorities. It also includes comprehensive information on how internal services are contributing to deliver results.

In the 2010 NRCan Employees Survey, you collectively expressed your desire to learn more about the department's strategic direction and increase your organizational awareness. The IBP can help in this regard.

The IBP outlines the links between the Government's and NRCan's priorities. We are a key player in delivering on the next phase of the Government's Economic Action Plan, as outlined in the recent Speech from the Throne and Federal Budget.

Through our strategic outcomes, we collectively contribute to supporting the economic competitiveness of the natural resource sectors, enhancing the environmental responsibility of natural resources development, and ensuring the safety, security and stewardship of natural resources and Canadians.

The IBP presents the full range of our activities to achieve this. You can thus see how your work and the work of other employees fit in - how you contribute to meeting NRCan's business and management priorities.

While reading the plan, you will familiarize yourself with NRCan's four medium-term corporate directions which form the basis of our management priorities for 2011-12:

- Asserting our policy leadership by enhancing and bringing to bear our analytical capabilities and science to better inform decision making.
- Mobilizing our science by developing corporate-wide tools to plan our R&D efforts, setting out goals and promoting S&T excellence.
- Transforming our business by leveraging new technology, practices and partnerships to serve our business needs.
- Growing our human capital by maximizing the contribution and development of our people from their first to last year of service.

We will use the IBP to help manage priorities and obtain meaningful results. Everyone has a role in delivering on our plan, which will be updated to reflect emerging priorities and challenges as we go forward throughout the year.

The IBP represents a key tool to help guide discussions and engagement on how we advance our work and actions as an organization. We encourage you to read the Plan and discuss with your colleagues and managers how we can all contribute to the success of our department and improve the lives of Canadians.



Serge P. Dupont
Deputy Minister



Karen Ellis
Associate Deputy Minister

ABOUT THIS DOCUMENT

WHAT THIS DOCUMENT IS...

The Integrated Business Plan is a roadmap of how NRCan is working to achieve its vision and how its activities support the achievement of priorities.

It tells us what we are doing, why and how.

It is used to measure how well we are achieving what we set out to do, allow for an in-year review of plans and possible mid-course correction. It also helps us make the right investments for the future.

...AND WHAT YOU CAN GET FROM IT

You can better understand what NRCan does and how activities support our mandate and the Government of Canada's agenda.

You can see how NRCan employees are helping create a sustainable resource advantage for Canadians.

Managers can use this document to discuss how their work and that of their employees contributes to NRCan's overall mandate, objectives and priorities.



THE IBP IS ORGANIZED INTO SIX SECTIONS:

- "Who We Are and What We Do" outlines the department's roles and responsibilities.
- "Our Operating Context" describes NRCan's external and internal environment and the steps taken to prepare us for the future.
- "Our Priorities" presents our business and management priorities, including our role in delivering on the Next Phase of Canada's Economic Action Plan.
- Our "Business Strategy" describes our strategic outcomes and program activities, how we deliver on them and our priorities and how we will measure success.
- Our "Management Agenda" presents our medium-term corporate priorities and directions and how internal services are supporting the business of the organization.
- The "Annexes" provide further information on our program activity architecture, governance structure, HR, real property and information management and technology and public affairs and portfolio management.

A **summary** of this document is available on the Integrated Business Plan page of the [NRCan Wiki](#).



WHO WE ARE

Our role is to enhance the responsible development and use of Canada's natural resources, including energy, forests, minerals and metals.

We are responsible for federal policies, programs and science and technology that support the sustainable development of natural resources and the competitiveness of the sectors.

We are about 4,500 employees — scientists, engineers, economists, program experts, policy advisors and internal services professionals.

We are passionate and committed to our work and the vision we share: improving the quality of life of Canadians by creating a sustainable resource advantage.



WHAT WE ARE TRYING TO ACHIEVE

We work to achieve our three strategic outcomes:

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



OUR KEY ACHIEVEMENTS IN 2010-11



- Drove a robust assessment of the effectiveness of clean energy and energy efficiency initiatives to inform the next generation of measures.
- Successfully negotiated the Canada-Quebec Accord, enabling a historic agreement on the shared management of offshore energy resources.
- Launched key forestry initiatives, such as the Investments in Forest Industry Transformation Program, to improve the long-term competitiveness of the forest sector.
- Built a stronger foundation of partnerships with mining stakeholders to further the implementation of the Green Mining Initiatives.
- Developed a whole-of-government strategy to modernize the federal regulatory system for project reviews and improve integration with provinces.
- Enhanced our scientific and technical capacity to support Northern economic development, setting a new record for publishing northern topographic maps and data sets.
- Launched the Non-reactor-based Isotope Supply Contribution Program and increased collaboration among public, private and academic stakeholders in 7 provinces across Canada.
- Outlined NRCan's medium-term corporate priorities and directions to drive tangible results in an evolving environment.
- Deepened renewal at NRCan and strengthened the department's approach to risk management.
- Launched the Key NRCan Competencies to translate the departmental vision and mission into individual behaviours and actions.
- Implemented a new financial system (Felix/SAP) and received a GTEC Gold Medal for implementation of e-functionality for back office functions, such as e-authorization and e-payment.

OUR OPERATING CONTEXT

As the primary federal department responsible for natural resources, we have and will continue to assist the Government to be responsive to factors impacting the sectors and our partners, while looking at the long-term opportunities and challenges. As outlined below, natural resource sectors have been and will continue to be an engine of growth and job creation for Canada.

Our ability to be responsive and effective is itself dependent on our resources —our people, physical and information assets, as well as financial resources.

Natural Resources Are a Key Economic Driver for Canada

In the aftermath of the global recession, natural resources are once again prominent on the global and national stage. Canada is fortunate to have one of the largest, most diverse natural resource endowments in the world. Its oil and gas reserves, including unconventional sources (e.g., oil sands, shale gas), place it among the leading producers and exporters, globally. It ranks second to China in the production of hydroelectricity, with 78 percent of its electrical power generation coming from non-emitting sources. Canada is home to 10 percent of the world's forests, and is the third largest exporter of forest products. It ranks in the top five in the production of key minerals and metals, including nickel, aluminum and diamonds. And it is the world's top potash producer.

Canada's competitive advantage in these and other areas is based on more than just the volume of resources. It is based on Canada's reputation as a politically-stable resource-rich country and on the existence of a skilled workforce, strong economic fundamentals and a sophisticated innovation system. It is anchored on the strengths of Canadian-based resource firms, many of whom recognize the need for a continuous focus on cost competitiveness; on adding value through new technologies, processes and product lines; on improving environmental performance; and on diversifying market presence globally. And it is drawn from the fact that Canada's resource value chain extends into other parts of the economy — into world-leading financial services, a growing clean technology sector, engineering and environmental services and downstream manufacturing.

Building on these factors, the natural resource sectors are positioned to play a critical role in Canada's future, in terms of high-paying jobs for Canadians, business investment and overall economic growth.

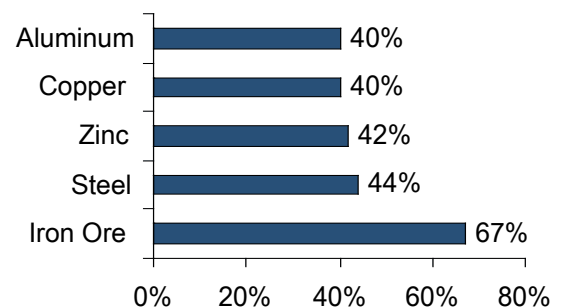
Challenges and Opportunities in the Natural Resource Sectors

Coming out of the recession, it is evident that the world economy is moving at two speeds. Global growth is being driven by emerging economies that are expected to account for about 60 percent of the world economy by 2030. Higher commodity prices (e.g., oil, metals and minerals, food) are increasing the risk of inflation in many countries. As well, geopolitical concerns, particularly in North Africa and the Middle East and disasters (e.g., Gulf of Mexico oil spill, Japan's nuclear crisis) are raising the bar on the need for secure access to vital resources and raising questions on the environmental sustainability of current practices.

Emerging Economies are Shaping the Future...

With the rise of emerging economies and their demographic trends (e.g., large youth cohorts, expanding middle class), demand for energy and other resources is expected to continue to increase. The impact of China alone is hard to overstate. It is the second largest world economy and could displace the U.S. for the number one spot as early as 2020. It is already the world's largest consumer of energy. With rapid urbanization, increasing wealth and per capita incomes and extensive infrastructure

China's Share of the Global Consumption of Metals, 2010



Source: AME, IAI, IISI, WCI

development, China is already a top consumer of many vital resources, such as coal, steel and copper.

China, India and other emerging economies will continue to require increasing quantities of natural resources, including energy to power their industrial, residential and transportation sectors; wood products for housing and construction; and metals for their manufacturing industries. This trend should create new opportunities for Canadian exports. Canada could also fill supply gaps in key markets arising from trade restrictions by suppliers seeking to ensure their own domestic supply (e.g., China's export restrictions on rare earth elements). Conversely, competition in Canada's traditional export markets is likely to further intensify. For example, lower cost producers, such as Brazil and Indonesia, are already challenging Canada's share of the U.S. forest products market.

Emerging economies have also become important global investors in natural resources. China and Brazil are major competitors to Canadian multinationals for metals and minerals. Today, their top oil and gas and materials companies are ranked among the world's super-tier of resource multinationals in terms of market value (e.g., PetroChina, Petrobras, and Vale). In addition to competing with Canadians abroad, they are also a relatively new source of needed investment capital for major resource projects in Canada.

...While the World Moves to a Lower-Carbon Economy

Over the medium-term, the world is being shaped by another mega trend—the beginning of a transition towards a lower-carbon economy. While fossil fuels will remain a dominant source of global energy for decades to come, leading economies, including the U.S. and China, are making major investments to position themselves as low-carbon leaders. They have targeted significant portions of their stimulus funding toward clean energy initiatives

in the interest of generating new growth opportunities while reducing GHG emissions. One estimate puts the global value for low-carbon products and services at \$6.5 trillion in 2007-08. In addition, more attention is being placed on improving energy and resource efficiency and environmental performance.

Growing demand for natural resources and the long-term transition towards a low-carbon economy will affect the whole of Canada's economy, especially given energy's role as a key input. How Canada develops and uses its assets, from its resource base through to its skilled workforce and emerging clean tech sector, will be a deciding factor in strengthening its overall competitiveness in today's uncertain world.

Canada's Natural Resource Sectors are Well-Positioned Yet Face Key Challenges

Canada has emerged from the global recession in solid shape and growth has returned to Canada's resource economy, spurred by the oil and gas, and mining sectors. The forest sector is finally showing signs of recovery after years of structural and cyclical shocks. Yet, even though economic activity has picked up across the country, there is an overall sense that the future of natural resources is less predictable than in the past.

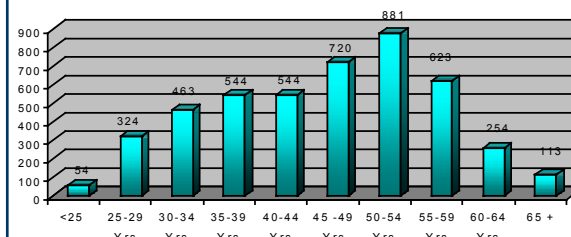
Looking ahead, there are a number of critical competitiveness imperatives for the natural resource sectors. To stay competitive in sectors that are global in scope, Canada will need to maintain an open investment climate. In addition, Canadian resource companies need to further diversify their global market presence and business partnerships. As well, new resource projects need to show, individually and cumulatively, that they are environmentally sustainable and socially acceptable. To succeed, the way forward will need to focus on strengthening the conditions for sustainable resource-led growth and job creation.

NRCan's Internal Capacity

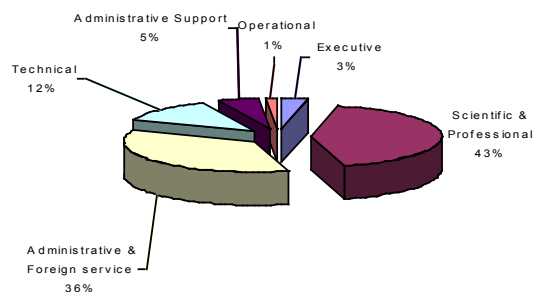
Our People

We have a highly educated workforce, located across the country. We also have solid and well-recognized people-management programs to support and develop our workforce. In fact, a survey of NRCan employees conducted in the fall of 2010 revealed that employees are engaged, highly motivated and have a high degree of satisfaction with their jobs. Our people are encouraged to be part of the collaborative leadership culture and are empowered to innovate.

NRCan Population by Age Band (as of December 31, 2010)



NRCan Population by Occupational Category (as of December 31, 2010)



However, given the ongoing demographic shift and the anticipated increase in retirements, we face the risk of not being able to attract and recruit the highly qualified personnel needed to develop and deliver our programs; by 2016, 30% of our employees and 40% of the executives will be eligible to retire. Meeting this challenge will require effective employee development and retention strategies, succession planning, workplace renewal and a sustained focus on strategic recruitment — focusing on employees who have the right mix of competencies and are engaged in taking on change management.

Annex 3, *Our People*, provides more information on our HR-related challenges and our strategies to address them.

Our Facilities

We have nineteen major laboratories and many other facilities located across the country. We are close to natural resources and to our partners and stakeholders, which enables us to have a national presence and a regional impact. Notably, we have recently inaugurated a new state-of-art CANMET Materials Technology Laboratory in Hamilton, Ontario. This strategic location will position us to enhance partnerships and collaboration on research and innovation in Canada's industrial sector, particularly in our automotive and manufacturing industries.



In the years to come, life cycle investments will be required to address the aging real property and S&T equipment and ongoing maintenance required. Recent investments in federal labs through the Accelerated Infrastructure Program (as part of Canada's Economic Action Plan) have allowed us to inject much needed capital in our facilities; however, unfunded pressures related to real property remain.

Annex 4, *Real Property and Environmental Management*, provides more information on our facilities-related challenges and our strategies to address them.

Our Information Assets

The creation and dissemination of knowledge is central to our mandate: knowledge is made available to the public, industries and stakeholders and used to support the government's role in developing policies, supporting innovation, maintaining boundaries and ensuring public safety. As such, NRCan relies on a suite of information technology (IT) applications, a robust infrastructure, physical assets (i.e., S&T laboratories, libraries, publications, etc.) and on the knowledge of its employees.

The department has been at the forefront of Government in the use of Web 2.0 tools — we were amongst the first to have a departmental Wiki and video-sharing site (our very own [NRTube](#)). Our investments in systems and infrastructure support collaboration among geographically dispersed employees and encourage greater knowledge sharing. These are key elements of our strategy to retain knowledge we loose due to employee departures.

As IT evolves quickly, so does the need for replacing equipment that has an increasingly short life-cycle. We are also actively engaged in managing IT-related risks/threats,

DID YOU KNOW

The NRCan Wiki hosts 9,740 articles, and counting. It houses the Natural Resources Dashboard, which tracks commodity prices and other statistics to help us understand and keep abreast of changes in the natural resource sectors.



including possibilities for cyber attack and industrial espionage. To that effect we are actively assessing our vulnerabilities and developing stronger IT security measures.

Annex 5, *Information Management and Technology and Project Management*, provides more information on our IT-related challenges and our strategies to address them.

Our Management Capacity

We have solid management processes in place and a strong performance to show for it. We can demonstrate value for money to Canadians:

- We monitor the effectiveness and efficiency of our programs on an ongoing basis.
- We have a track record of being responsive to government priorities, such as through our timely and effective implementation of Canada's Economic Action Plan initiatives.
- We have demonstrated resilience and excellence in responding to new priorities and issues, while maintaining a strong commitment to people and workplace renewal.

NRCAN'S MANAGEMENT REPORT CARD



For the second consecutive year, NRCan has received a series of As and Bs on its management report card, which is part of the [Management Accountability Framework](#). The Treasury Board Secretariat assesses departments on their management practices, and NRCan is doing very well, with all areas of management assessed as 'acceptable' or 'strong.'

Our Financial Resources

Our operating budget for fiscal year 2011-12 is \$4,073.8 million. This includes \$1,613.9 million in planned spending for the Atlantic Offshore Accords' statutory payments¹.

| Planned Spending (\$M) | 2011-12 | 2012-13 | 2013-14 |
|--|----------------|----------------|----------------|
| Program Spending | 2,459.9 | 1,427.2 | 1,169.2 |
| Statutory Programs - Atlantic Offshore | 1,613.9 | 1,474.7 | 1,233.2 |
| Total | 4,073.8 | 2,901.9 | 2,402.4 |

Note: Only numbers for 2011-12 reflect announcements made in Budget 2011.

NRCan has played an instrumental role in delivering on Canada's Economic Action Plan, which has been key in recouping economic output and jobs lost during the recession. While a number of NRCan programs had their funding and authorities sunset at the end of the 2010-11 fiscal year (including programs related to clean energy, energy efficiency, the clean air agenda and forestry sector innovation and market diversification), Budget 2011 provides funding for renewal of these programs, as well as investments for new initiatives.

The Budget also indicated that a core focus of the Government will be returning to fiscal balance; part of this will be achieved through Strategic and Operational Review. The Strategic and Operating Review will examine program spending across government with the objective of achieving at least \$4 billion in ongoing annual savings by 2014-15. The review will be conducted over the 2011-12 fiscal year and will place particular emphasis on generating savings from operating expenses, while also examining the relevance and effectiveness of programs.

¹ The Accords provide that the benefits of revenues from offshore should flow to provinces as if the resources were on land, and direct that these revenues be collected by the Receiver General for Canada, with a like amount to be paid to the provinces (Newfoundland and Labrador and Nova Scotia).

BUDGET 2011: NRCAN MEASURES



- Regulatory Actions to Drive Energy Efficiency (\$86M/2 years).
- Research, development and deployment for clean energy and energy efficiency (\$97M/2 years).
- ecoEnergy Home Retrofits (\$400M/1 year).
- International Climate Change (\$8.8M/2 years).
- Helping Canadians Adapt to a Changing Climate (\$12M/2 years).
- Forest Innovation and Market Diversification (\$60M/1 year).

OUR PRIORITIES

Business Priorities: Delivering on the Next Phase of Canada's Economic Action Plan

The Government of Canada recently presented its priorities in the [Speech from the throne](#) and the [Federal Budget](#), including the next phase of Canada's Economic Action Plan. Building on the success of the stimulus plan, the focus is on four themes: Supporting Job Creation; Supporting Families and Communities; Investing in Innovation, Education and Training; and Preserving Canada's Fiscal Advantage.

NRCan contributes to achieving the Government's priorities in its role as the primary federal partner with provinces, territories, industry and others in supporting the responsible development and use of Canada's natural resources and the competitiveness of the energy, mining and forest sectors. Through its science and technology, policies and programs, the Department strives to ensure that economic prosperity is being achieved in ways that meet Canadians' expectations for sustainable growth, a healthy environment and social responsibility. The Department is targeting its efforts in four major areas.

As outlined in NRCan's Report on Plans and Priorities, our business priorities this year are:

- Improving the performance of the regulatory system for major project reviews which will help ensure that Canada is the best country in which to invest;
- Enabling competitive resource sectors, with a focus on innovation and sustainable transformation in the forest sector, and green mining to enhance market opportunities and create the jobs and economy of tomorrow;
- Advancing clean energy in Canada through science & technology advancements, innovation, and program investments;
- Managing nuclear issues to contribute to Canada's energy and environmental needs, while reducing costs and risks to taxpayers; and
- Advancing sustainable resource development in the North to help Canada realize the vast potential of the region's people and resources.

Corporate Priorities and Directions

To guide our efforts going forward, the Departmental Executive Committee established four medium-term corporate priorities and directions: Asserting our Policy Leadership; Mobilizing our Science; Transforming our Business; and Growing our Human Capital. As well, we have revised our governance structure to better address challenges and to strengthen collective leadership and engagement. These corporate priorities form the basis of our management agenda for this plan. Refer to Annex 2, *Our Governance Structure*, for the new structure.

Asserting our Policy Leadership

NRCan has a role to play in providing federal policy leadership to help shape Canada's resource future. To fulfill this role, we will focus on enhancing the contribution of science to policy advice and decision making, mobilize partnerships, and create, manage, share and communicate information proactively to a more diverse and informed public.

- √ Achievements to date include: a strengthened Policy and Science Integration Committee and a new set of horizontal task teams (on shale gas, tailings management, climate change impacts and adaptation, and the North).

Mobilizing our Science

Advances in S&T are raising new challenges for Canada's natural resources sectors and are opening up opportunities for Canada to innovate as it builds a sustainable resource future. NRCan's S&T Strategy will continue to guide the department in serving the public interest through the generation of reliable, credible knowledge that advances science and fosters innovation, informs public decision making and delivers tangible benefits to Canadians. Our focus will be on ensuring the relevance, impact and world-class quality of our science, while being strategic in how we allocate our R&D efforts to maximize our contribution.

- √ Achievements to date include: the creation of the S&T Board and the relocation of the CANMET MTL laboratory to the *McMaster Innovation Park* in Hamilton, ON.

Transforming our Business

Our objective is to modernize the business of government, with a focus on ensuring the effectiveness and efficiency of our business and management processes. In particular, we will target our efforts on optimizing our IT management model, reviewing the corporate funding model, enhancing knowledge management and exploring clustering opportunities with other departments and agencies.

- √ Achievements to date include: the creation of the Business Transformation Committee, the implementation of Felix/SAP and solid integrated business planning process.

Growing our Human Capital

We must respond to our challenges by maximizing our human capital, recruiting strategically, drawing from Canada's diversity, developing our competencies and our leadership, and ensuring the transfer of knowledge from our established and retiring personnel to the next generation. Maximizing the contribution and career development of our people, from their first to their last day of service, will be key.

- √ Achievements to date include: the development and implementation of Key NRCan competencies and online tools, the Executive Talent Management Program, and a [Collective Staffing Approach](#).

Managing Risks

We have a series of instruments to help manage risks. Our objective is to ensure the ongoing assessment and management of risks at all levels within the organization. The [Integrated Risk Management Policy Framework](#) sets the parameters for this and guides the integration of risk management activities with management practices, such as priority setting, business planning, resource allocation, and performance reporting.

We identify in our [Corporate Risk Profile](#) the key operational, strategic, and external risks to the department, as well as their related impact and likelihood assessments and mitigation strategies. The Corporate Risk Profile currently identifies and addresses 17 key corporate risks. Risks are also identified and assessed in our [Emergency Management Plans](#).

Furthermore, we share some costs - and therefore some risks - with the natural resource sectors and other stakeholders. This is particularly relevant in research and development (R&D) projects, where the risks and costs can sometimes be high. For instance, NRCan collaborates with FPInnovation to advance the commercialization of new and innovative value-added forest products.

OUR BUSINESS STRATEGY

To respond to the increasingly complex environment in which we operate, we will have to manage an expanding universe of knowledge and advise on more multifaceted global and domestic issues, including on science and policy, in a world conditioned by both fiscal pressures and generational renewal of our workforce.

This section articulates NRCan's activities in support of our vision to improve the quality of life of Canadians by

creating a sustainable resource advantage. Our work is aligned to three strategic outcomes (see Annex 1 for the full Program Activity Architecture for the department):

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

DID YOU KNOW



The first Federal Sustainable Development Strategy (FSDS) was tabled in Parliament in 2010, as required by the Federal Sustainable Development Act (FSDA). The FSDS establishes a framework for sustainable development planning and reporting with three key elements:

- An integrated, whole-of-government picture of actions to achieve environmental sustainability.
- A link between sustainable development planning and reporting and the Government's core expenditure planning and reporting system.
- Effective measurement, monitoring and reporting in order to track and report on progress to Canadians.

The FSDA requires departments to establish departmental sustainable development strategies that comply with and contribute to the FSDS. Further, the FSDS requires that departments elaborate on how their existing program activities contribute to the goals and targets of the FSDS through their annual Report on Plans and Priorities and Departmental Performance Reports, which are tabled in Parliament. The FSDS goals and targets are grouped under four themes:



Theme I: Addressing Climate Change and Air Quality



Theme II: Water Quality and Availability



Theme III: Protecting Nature



Theme IV: Reducing the Environmental Footprint -Beginning with Government

In the section below, NRCan program activities that contribute to the FSDS themes are flagged with the associated FSDS icon(s), shown above.

Strategic Outcome 1: Economic Competitiveness

Natural resource sectors are internationally competitive, economically productive and contribute to the social well-being of Canadians.

The success and performance of this strategic outcome will be measured by the following indicator:

- Canada's share of resource-based world trade (rank position).

Its achievement will be supported by the program activity:
1.1 Economic opportunities for natural resources.

Program Activity 1.1: Economic Opportunities for Natural Resources

What this Program Activity Is About

This program activity aims to enable competitive national and international markets, stable economic opportunities and investment in natural resources. It is designed to promote sustainability, innovation, investment and the competitiveness of Canada's natural resources and related product industries through the provision of know-how and tools, along with trade promotion and market acceptance at home and abroad.

Work is also undertaken to improve the social well-being of Canadians by focusing on communities that have a substantial reliance on resource-based industries. The focus is to improve overall knowledge, capacity and opportunities for these communities through the provision of value-added products and services.



Programming in this area contributes to the Air Quality and Climate Change and Protecting Nature Themes of the FSDS.

Moving Forward

NRCan works to ensure the sustainability of the forest sector and to enable forest-based communities to capitalize on emerging economic opportunities. Nationally, the Forest Communities Program (FCP) supports regional and national partnerships that invest in community-based business development, educational initiatives and innovative forest science, knowledge, tools and best practices in sustainable forest development and

DID YOU KNOW



Located on the Nitassinan (ancestral territory) of the Montagnais people of Lac-Saint-Jean, and approximately 200 kilometres from Québec City, [Lac-Saint-Jean Model Forest](#) (LSJMF) is a partnership between regional municipalities. LSJMF's objectives for sustaining its forest-based communities include the development of non-timber forest products like mushrooms and blueberries, multidisciplinary training for forestry sector workers, biodiversity preservation, and developing tourism/heritage resources.

integrated landscape management. Internationally, the FCP supports the International Model Forest Network with respect to Canada's stewardship role in sustainable forest management. NRCan is presently developing new approaches and policy programming options for FCP since Phase I of the program expires on March 31, 2012. NRCan recently received funding for the implementation of the Aboriginal Forestry Initiative, which focuses on identifying emerging and lasting regional-scale, forest-based economic development opportunities in Aboriginal communities across the country.

Our work with the forestry sector is also focused on enhancing its competitiveness. In order to be competitive, the sector will need to include a broader mix of products including transformative, high-value products. The Investments in Forest Industry Transformation program works with eligible forest companies to implement new technologies and processes such as bioenergy, biomaterials, biochemicals and next-generation building products. These technologies make better use of forest fibre and by-products to create a more diversified, higher value product mix.

To support the sector's overall transformation, we provide national leadership to develop partnerships and strengthen institutional arrangements among governments, forest research and development performers such as FPInnovations, universities, and funders, such as the Natural Sciences and Engineering Research Council. By bringing together these organizations we ensure the integration, alignment and coordination of their work to contribute to the competitiveness of the natural resource sectors. At the same time, we, as performers of R&D assure that our own work is aligned to priorities and balances for risks and rewards.

In support of the energy and minerals and metals sectors, we are providing a solid geoscience knowledge foundation and are encouraging research and investment in new, renewable energy resources. The Geo-mapping for Energy and Minerals (GEM) program provides governments, communities and industry with fundamental geoscience required to make strategic land-use and investment decisions. We are also targeting Canada's North, which represents an untapped resource for mineral and energy supply and requires the use of modern techniques to acquire geophysical and geochemical data to attract industry exploration investments. This work is carried out in collaboration with territorial governments and First Nations.

Furthermore, the economic development of communities is supported by the Targeted Geoscience Initiative 4 (TGI-4), which identifies potential new areas of mineral resources and uncovers deep or hidden mineral deposits in targeted mining communities across Canada. This program supports economic development of established mining communities through improved geoscience knowledge on the entire mineral system. This includes exploration models that can be used by companies to help secure

drilling operations. We are also developing the Base-Metal Strategy Action Plan, which will enhance the identification and development of new base metal resources in existing mining camps throughout Canada and remote areas in the North.

Through the Green Mining Initiative (GMI) NRCan continues to work with multi-stakeholders (industry, provincial and territorial governments, NGOs) to accelerate research, development and deployment of green mining technologies and practices. The objective is to improve the mining sector's environmental performance, productivity, competitiveness and reduce environmental risks. To advance the GMI four pillars have been developed and aligned to meet industry's priorities and technology opportunities; specifically: footprint reduction; waste management; mine closure and rehabilitation; and ecosystem management.

DID YOU KNOW



CANMET Mining and Minerals Sciences Laboratories have developed an enhanced leaching process that is used to extract gold and silver. It uses up to 4 times less cyanide and extracts more silver than similar mineral extraction processes.

DID YOU KNOW



Adequate geological knowledge exists for only about one third of Nunavut. GEM will fill critical information gaps in the knowledge base needed to increase exploration investment in the North, while engaging and involving Northern communities and respecting the land.

Finally, the newly relocated CANMET Materials Technology Laboratory (MTL) at the McMaster Innovation Park in Hamilton, Ontario, will ensure the alignment and relevance of our work on new or improved materials and processes. By working closely with industry and academia, we can better target our research and ensure its commercialization, thereby supporting the sector in addressing productivity issues in a sustainable way.

NRCan also works to provide expert advice to inform the federal government's position on an array of energy-related issues, including:

- petroleum regulations and policy;
- clean energy;
- carbon capture and storage; and
- the maintenance of an adequate, reliable and environmentally sustainable supply of electricity at competitive prices.

We are also responsible for delivering on the government's core responsibilities, such as overseeing Canada's nuclear energy regulatory framework and developing and advancing policy relating to all aspects of uranium production and use.

We are supporting Atomic Energy of Canada Limited's (AECL) efforts toward the renewal of its research and development capacity, infrastructure and development of the advanced CANDU reactor. We will also continue to implement the restructuring of AECL and finalize the divestiture of its commercial reactor division. Doing so reduces taxpayers' exposure to commercial risks and costs and positions Canada's nuclear industry to take maximum advantage of domestic and international opportunities. We also support the Canadian Nuclear Safety Commission in its efforts to improve the effectiveness and efficiency of the regulatory approval process.

How We Are Working to Achieve This

Our People

Our workforce in this program activity comprises mostly policy analysts and scientists specializing in areas such as forestry, mines, minerals and materials that support our regulatory and S&T activities. These employees are highly knowledgeable, skilled and have the ability to work in a matrix management system allowing for some flexibility in program management.

Within the next three years, it is anticipated that departures and new capacity requirements will create gaps in science (e.g. entomology-phytosanitary, bio-economics, genetics, silviculture, somatic embryogenesis), technical (e.g. project management) and analytical (e.g. policy)

competency areas. Targeted promotion and recruitment strategies will be implemented to address both short and long term requirements. For example, we will build on existing practices of social media promotion and events targeted at specific groups where Employment Equity gaps persist, including women in science and persons with disabilities. In addition, NRCan will explore opportunities in existing programs, such as the Research Affiliate Program and the Visiting Fellows Program. The department is taking a collective approach to staffing to ensure an ongoing capacity to meet emerging needs. Collective staffing processes allow for the creation of pools for entry level in areas of economics and social sciences services (EC), physical sciences and administrative services (AS) positions, as well as for S&T positions with significant vacancies (e.g., physical engineering as well as engineering and land survey - ENG and EG).

In addition to the gaps identified above, it is anticipated that there will be a steady turnover of employees given the competitiveness of the job market. These factors will have a potential impact on corporate knowledge, level of expertise and effective delivery of expected departmental results. An effective succession planning strategy and timely staffing will help address the potential loss of highly knowledgeable and experienced employees and ensure that the right skills and expertise are acquired.

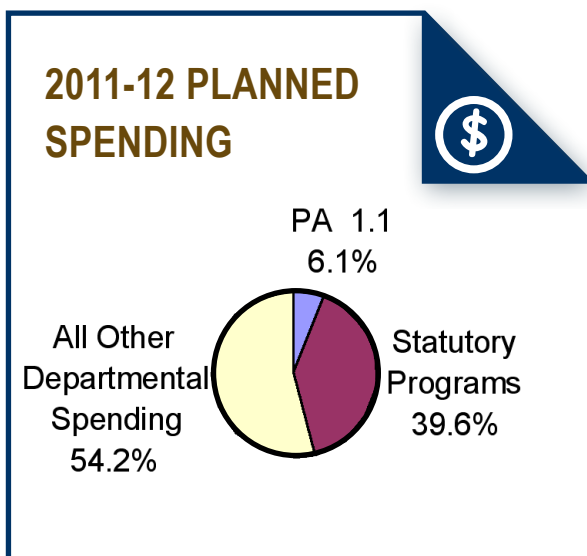
Our Physical Assets

Office space in the National Capital Region comprises the majority of physical assets which support this program activity by supporting its policy and economic analysts.

Additionally, to enhance our capacity to undertake S&T activities in support of our business objectives, we commissioned state-of-the art facilities at the CANMET Materials Technology Lab in Hamilton. These facilities strengthen our partnerships with industry and academia and permit the disposal of obsolete facilities.

Finances

Our planned spending for this program activity in 2011-12 is \$249.9M².



How we are Measuring Success

The success of this PA is measured through the following indicators:

- Capital investments and exploration investments in the resource sectors.
- Diversity of Canada's wood product exports.
- Performance of programs in achieving expected results within plans, timelines and budgets.

Managing Risks

A number of risks have been identified in delivering this program activity. These range from the impact of economic recovery and market demand on natural resources development to the challenges associated with establishing a unified approach to sector transformation.

While Canada's forest sector is under pressure to rapidly adapt to changing global markets in a broad range of areas (e.g., products, technology, environmental standards), it has been hampered by an innovation system that is fragmented and designed for a different forest sector

reality. To address these issues, NRCan has taken the leadership role to bring together various partners from governments and industry to create FPIInnovations. Thanks to these new partnerships, FPIInnovations is becoming the primary vehicle to bring transformation to the sector. However, the future viability of FPIInnovations is still vulnerable due to economic shocks to the forest sector. To help manage this risk, NRCan is working to expand and integrate new networks (e.g., Natural Sciences and Engineering Research Council of Canada) involving FPIInnovations to add diversity and depth.

The pressure to adapt to changing global markets is accompanied by a risk that strategies and programs developed and implemented by NRCan to support forest sector competitiveness and transformation may not respond to the range and pace of change required, hence compromising the long-term competitiveness of the sector. To manage this risk, NRCan will implement a broad suite of programs in collaboration with sector partners to focus on key industry priorities (e.g., promoting markets domestically and internationally, and developing new technologies and end-uses for wood fibre), as announced in Budget 2011. The department will also communicate the benefits of collaborative development of strategic objectives and priorities, ensure that FPIInnovations plays a key role in setting the strategic priorities for the sector, and engage sector partners in the development and assessment of programs.

Canada's energy sector represents both an opportunity and a challenge. The linkages between energy, the economy and the environment are complex, and the role that energy policy plays is of fundamental importance. Risks to the successful achievement of long-term energy policy direction include a lack of coordination and/or collaboration between NRCan and provinces, territories and/or partners, and the impact of energy-related shortages, shocks and/or environmental accidents on public confidence. NRCan will manage these risks through a comprehensive suite of programs that will help Canadians and Canadian industries reduce both their GHG emissions and energy demands (e.g. ecoENERGY for Biofuels Program, Clean Energy Fund, ecoENERGY Retrofit Homes Program, Pulp and Paper Green Transformation Program, etc.). NRCan will also work with other federal departments to advance Canada's interests at major international climate change discussions and

² Statutory programs refer to the Atlantic Offshore Accords statutory payments

negotiating forums. Furthermore, the Department has in place contingency and emergency management plans to be able to respond quickly to energy-related incidents.

The GMI responds to increasing environmental challenges and concerns, which are impairing the ability of mining companies to gain a social licence to operate. In many instances, reputational mining issues are impeding mineral resource development and increasing the complexity and cost of environmental assessments and approval processes. This is leading to project delays, cost increases

and investment diversions that threaten Canada's mining competitive advantage.

Deliverables for 2011-12

Programs and initiatives in support of program activity 1.1 *Economic Opportunity for Natural Resources* are structured around eight sub activities. These are listed below with key deliverables for 2011-12.

Deliverables for 2011-2012



1.1.1



Minerals and Metals Markets, Innovation and Investment




LEAD SECTOR: Minerals and Metals Sector (MMS)

- Conduct specialized research work with partners and stakeholders to improve mine productivity through reduced energy costs, more efficient processes and improved health and safety.
- Deliver tools, such as exploration modeling in order to optimize effectiveness in exploring for a certain deposit type. This includes the geological, geochemical and geophysical characteristics of the desired mineral and its surrounding environment.
- Engage in 10 Ground Control, safe mining or innovative projects. The scope of these projects includes: (1) reducing the risks related to mining at a great depth to access mineral deposits and improving the productivity of Canadian mining operations; and (2) developing innovative technologies on the effect of heat stress on mine workers.
- Complete reports on an *Overview of Trends in Canadian Mineral Exploration and Comparative International Tax Study for Base Metals*.
- Develop a base-metal strategy action plan to identify and develop new base-metal resources in existing mining camps, remote areas and in the North.
- Undertake a review of the Aboriginal toolkit to determine its effectiveness and initiate work to better understand opportunities for Aboriginal people in mining.
- Complete the CANMET-MTL building compliance to Leadership in Energy and Environmental Design (LEED) platinum requirements.
- Develop with the Department of Foreign Affairs and International Trade and the Canadian International Development Agency a forward agenda for implementing the Government of Canada's Corporate Social Responsibility strategy for the Canadian extractive sector operating abroad.

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| <p>1.1.2</p> <p>Forest Product Market Access and Development</p>  <p>LEAD SECTOR: Canadian Forest Service (CFS)</p> | <ul style="list-style-type: none"> • Provide 10 science-based information products to forest sector stakeholders (e.g. Canadian wood product producers and related industry associations), through Leadership for Environmental Advantage in Forestry Initiative (LEAF) that address key environmental reputation and market acceptance issues. • As per Budget 2011, support the forestry sector in diversifying and expanding its markets and end uses through the Canada Wood Export Program and the North American Wood First Program. • Provide contributions to grow a broader portfolio of forest product markets, both at home and abroad. |
| <p>1.1.3</p> <p>Forest Product Innovation</p>  <p>LEAD SECTOR: CFS</p> | <ul style="list-style-type: none"> • Demonstrate the application of advanced forest inventory tools in two forest management units of several thousand hectares in size to produce more accurate inventories and provide more information on wood quality value. This added information will enable higher value utilization of forest resources. • Improve FPInnovations' work on genomics to ensure that knowledge generated will lead to the production of new bioproducts and bioprocesses that will improve the potential for tree breeding, pest protection and the diversification of Canada's forest sector. • Through the Investments in the Forest Industry Transformation program, develop contribution agreements with eligible forest product companies that will lead to the implementation of new and advanced technologies (e.g. bioenergy, biomaterials, biochemicals and next generation building products) that direct forest fibre and by-products into a more diversified, higher-value product mix. • Deliver new funding, provided through Budget 2011, for FPInnovations - Canada's integrated forest products research institute - to develop the knowledge and technologies to transform the forest sector using new products (i.e., forest biofuels, biocomposites, and nano-products) and new end-uses for wood fibre. |

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| 1.1.4 Institutional Alignment of Forest Research and Development for Effectiveness LEAD SECTOR: CFS | <ul style="list-style-type: none"> Working with Statistics Canada, conduct an analysis of the capacity of the forest sector innovation system to address sector priorities through research and development. Streamline Canadian Council of Forest Ministers governance and structure to enable greater coordination amongst partners and establish new national work priorities. In partnership with FPIInnovations, Natural Sciences and Engineering Research Council of Canada (NSERC) and Forest Products Association of Canada, ensure that the collection of NSERC Forestry R&D Networks are effective contributors to the forest sector innovation system. Develop a performance assessment framework to assess the impact of the department's forest science knowledge on the forest sector innovation system. |
| 1.1.5 Forest-based Community Partnerships  LEAD SECTOR: CFS | <ul style="list-style-type: none"> Develop and implement the new Aboriginal Forestry Initiative. Develop and disseminate more than 50 knowledge products, tools and strategies associated with the Forest Communities Program. Develop and implement a new FCP policy and programming option for post March 2012. |
| 1.1.6 Energy and Mineral Exploration  LEAD SECTOR: Earth Sciences Sector (ESS) | <ul style="list-style-type: none"> Undertake community-level consultations and information sessions to better target GEM priorities to local community needs for economic development, combined with territorial and provincial regional development priorities and industry development priorities for exploration investments. Conduct high resolution geophysical and geochemical surveys and geological mapping to fill knowledge gaps in the North. As part of TGI-4, sign eight collaborative arrangements with provincial, territorial, academia and industrial partners. Deliver tools, such as exploration modeling in order to optimize effectiveness in exploring for a certain deposit type. This includes the geological, geochemical and geophysical characteristics of the desired mineral and its surrounding environment. Publish a study on geological parameters impact assessment for carbon storage. Contribute to the design and implementation of CO2 geological storage projects (through the International Energy Agency Weyburn-Midale CO2 Monitoring Storage Project). Provide the Canadian component of the North American Carbon Storage Atlas. Publish an evaluation of geothermal energy potential. |

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| <p>1.1.7</p> <p>Domestic and International Energy Policy</p>  <p>LEAD SECTOR: Energy Sector (ES)</p> | <ul style="list-style-type: none"> • Continue to address AECL funding pressures through the divestiture of the AECL Commercial Reactor Division and the re-structuring of AECL National Laboratories to limit the risks for taxpayers. • Reach an agreement with a purchaser for the divestiture of AECL's commercial reactor division. • Provide advice, recommendations and analysis on international energy issues, most notably with the U.S. through the Canada-U.S. Energy Consultative Mechanism, the Clean Energy Dialogue and the North American Energy Working Group. • Position Canada's energy interests at key international events and international climate change negotiations, such as the United Nations Framework Convention on Climate Change and APEC Energy working group meeting. • In partnership with the Atlantic Canada Opportunities Agency, provide funding for studies that promote the understanding of clean energy development opportunities for the Atlantic Region, under the Atlantic Energy Gateway. |
| <p>1.1.8</p> <p>Statutory Program – Atlantic Offshore</p> <p>LEAD SECTOR: ES</p> | <ul style="list-style-type: none"> • Manage, on an ongoing basis, the statutory requirements related to offshore petroleum in Nova Scotia and Newfoundland and Labrador. |

Strategic Outcome 2: Environmental Responsibility

Canada is a world leader on environmental responsibility in the development and use of natural resources.

The success and performance of this strategic outcome will be measured by the following indicators:

- Canada's total annual energy savings due to efficiency.
- Contribution to the advancement of innovative and environmentally responsible practices in the resource sector, measured by uptake of knowledge, technologies and demonstration projects.

Its achievement will be supported by two program activities: 2.1 Clean Energy and 2.2 Ecosystem Risk Management.

Program Activity 2.1: Clean Energy

What this Program Activity Is About

The objective of this program activity is to increase energy efficiency and the production of low-emission energy, and reduce the environmental impacts associated with energy production and use. We develop and deliver energy science and technology, policies, programs, legislation and regulations to mitigate greenhouse gas emissions and reduce other environmental impacts associated with energy production and use.



Programming in this area contributes to the Air Quality and Climate Change Theme of the FSDS.

Moving Forward

In targeting efforts to achieve Canada's goal of becoming a global energy leader, the government has recognized the key role clean energy can play in the shift to a lower carbon economy, simultaneously providing economic and environmental benefits to Canadians. Our work and programs aim achieve this by encouraging energy efficiency, increasing the availability of renewable energy

and supporting the development and use of cleaner fossil fuels and alternative fuels. To this end, we conduct research and provide scientific expertise on clean energy technology while providing leadership and acting as a catalyst for accelerated clean energy innovation in Canada. Our efforts also contribute to improving energy efficiency in every sector of the economy, including homes, commercial buildings, vehicles and industry, and increasing the production of low-impact renewable energy. This is achieved through a number of programs and initiatives that aim to reduce GHG emissions from the natural resources sectors.

DID YOU KNOW



Large-scale refrigeration (such as that used for ice rinks and supermarket freezers) requires an enormous amount of refrigerant and energy. Along with the energy used to keep these building warm and comfortable, this produces a large amount of greenhouse gas emissions.

To address this, researchers at CANMET Energy have developed CoolSolution®, a system that drastically reduces refrigerant losses and uses waste heat from the refrigeration system to warm the building, thereby dramatically reducing the environmental impacts of commercial-scale cooling systems.

CoolSolution® practices and technologies are now in use in more than 100 arenas in Canada, where they are reducing energy consumption by as much as 60 percent. They were also featured at all skating, hockey and curling venues at the 2010 Olympic and Paralympic Winter Games in Vancouver.

For example, Budget 2011 included \$400M for a one year extension of the ecoENERGY Retrofit – Homes program, which will provide residential property owners with direct incentives to encourage investment in energy efficiency retrofits to save money and reduce emissions. The Budget also provided funds for continuing ecoENERGY Efficiency efforts, which will build upon some sunsetting programming and introduce some new activities. Funding was also identified for the new ecoENERGY for Alternative Fuels program, which is expected to increase awareness of and use of alternative fuels by establishing support hubs to deliver outreach and education to natural gas end users and stakeholders and developing codes and standards for natural gas vehicle infrastructure.

Programming in clean energy S&T supports research, development and the demonstration of next-generation clean-energy technologies and systems, including increasing the clean energy supply and renewable energy from sources such as wind, solar, ocean and biomass. This is funded in part by the ecoENERGY Technology Initiative and the Clean Energy Fund. In addition, we are working to increase efficiency and reduce pollution from conventional energy sources by undertaking research on cleaner fossil fuels, oil sands development, and carbon capture and storage.

The ecoENERGY for Renewable Power program also diversifies Canada's energy mix by providing production incentives to producers of renewable electricity. Programming has been instrumental in increasing the supply of renewable electricity, such as wind, biomass, low-impact hydro, geothermal, solar, photovoltaic and ocean energy to the electrical grid. Similarly, the ecoENERGY for Biofuels program supports the production of renewable alternatives to gasoline and diesel, and encourages the development of a competitive renewable fuels industry in Canada by directly providing incentives to new and existing producers.

Through the Vehicle Structural Materials Program and the Materials for Nuclear and Conventional Energy Program we are conducting research with universities and industry on advanced materials, technologies and processes that improve energy efficiency and enable clean energy systems. This research will benefit the nuclear reactor and the automotive sectors. For the automotive industry it will lead to vehicles that are stronger and lighter, thereby reducing fossil fuel consumption and contributing to the

reduction of GHG emissions. For the nuclear reactor sector it will lead to next-generation nuclear reactors that can produce clean electricity.

DID YOU KNOW



By 2018, there will be at least 500,000 highway-capable plug-in hybrid electric-drive and hybrid-electric vehicles on Canadian roads. All these vehicles will have more Canadian content in parts and manufacture than vehicles on the road in Canada in 2008.

(Source: Canadian Electric Technology Roadmap)

We are working to enhance the environmental and commercial sustainability of the pulp and paper industry through the Pulp and Paper Green Transformation Program. Through this program, we support investments in Canadian pulp and paper mills that will improve the environmental performance of the industry and lay the groundwork for a more competitive and sustainable future. The Pulp and Paper Green Transformation Program will conclude at the end of 2011-12. By the end of the program, contribution agreements with 25 participating pulp and paper firms will have been established. Program credits will total \$950 million.

DID YOU KNOW



In early 2010, the Celgar Pulp Mill in British Columbia completed the first phase of its Green Energy project as part of the Pulp and Paper Green Transformation Program. This has allowed it to use the excess steam produced by its industrial processes to generate large amounts of renewable electricity for exports to the BC grid. Other environmental benefits from the project include a reduction in sulfur dioxide emissions, increased energy efficiency and reduced community odour and noise.

How we are Working to Achieve This

Our People

We have a knowledgeable and highly skilled workforce devoted to this program activity and are able to plan and coordinate national and international Research Development and Demonstration (RD&D) activities. However, given our aging S&T workforce, there is a need for scientists and engineers to advance our R&D work. In addition, our priorities and programs are continuously evolving. For example, an increased emphasis on energy technology policy and on complex RD&D programs that require proper financial management has created a new need for economists and experienced financial employees.

Within the next few years, challenges will be experienced as a result of the sunsetting of several clean energy programs and the proposed implementation of new ones. This creates new pressures on the existing workforce, such as training to acquire new skills, capacity gaps in program management and additional time required for hiring and training new employees. Tight timeframes for program delivery also create workload challenges, particularly during the early stages of the staffing process. As programs wind down, it is expected that staff will begin looking for new opportunities, creating skill shortages at the final stages of project review.

NRCan has reduced its reliance on short-term employment by identifying opportunities for program employees to contribute to the success of the organization beyond the duration of sunsetting programs. In order to accomplish this, the department has adopted a collective approach to offer a more stable, indeterminate employment to a talented pool of term (temporary) employees. Managers hire candidates with transferable skills, thus allowing the assignment of personnel to other business priorities.

Other factors having an impact on workforce capacity and program delivery include high departure and retirement rates, as well as loss of employees due to the relocation of the CANMET Materials Technology Laboratory from Ottawa to Hamilton, Ontario) In the S&T areas (i.e., engineering and scientific specialty), the level of expertise varies widely, making it difficult to draw from common pools. The current team of employees relocated to Hamilton has the expertise and experience in many

transportation and nuclear related projects. Senior scientists and technologists can bridge the gap while recruiting and training younger employees for the future. A strategic renewal exercise is being undertaken in CANMET MTL to identify priorities and inform future hiring for areas of specialization and technology focus and ensure a strong team for the future.

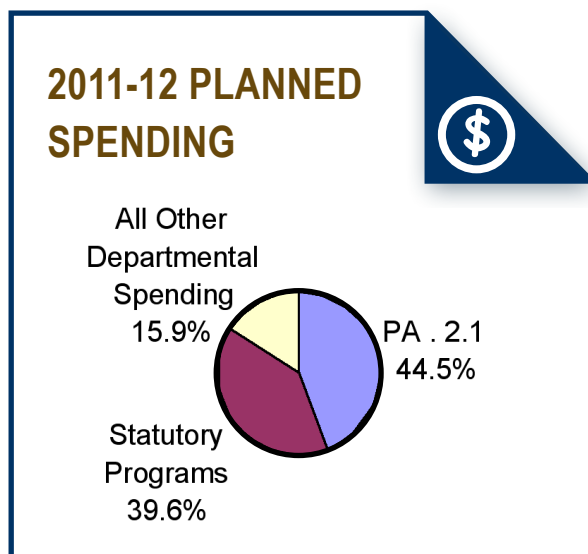
Moving forward, our flexible workforce will allow us to mitigate risks on an ongoing basis by transferring skills from one area to another. By using collective staffing and focusing on the Key NRCan Competencies, hiring is faster than in the past. Mentoring of newly-hired scientists and engineers to replace those who have indicated their intention to retire in the next few years contributes to knowledge transfer and ensures corporate memory is not lost. Furthermore, we are leveraging initiatives such as the On-campus Recruitment Program, targeted recruitment, co-operative student placements, student bridging and post-doctoral fellowships to help fill gaps. Lastly, integrated planning, succession planning and proactive people management will be critical for ensuring business continuity and proper knowledge transfer to achieve the results we want.

Our Physical Assets

The CanmetENERGY laboratories, located in Varennes, Quebec; Ottawa, Ontario; and Devon, Alberta, are home to 450 scientists, engineers and technicians, who conduct leading-edge research on clean energy, technology development and demonstration. They also provide scientific support to policy development and the broader suite of clean energy programming.

Finances

Planned spending for this program activity in 2011-12 is \$1,812.6M.



Managing Risks

The development and delivery of NRCan's clean energy initiatives will require the effective management of several risks. For example, the impact of external economic and political factors could greatly reduce (or, conversely, greatly increase) Canadians' uptake of energy efficiency measures and could also impact the ability of key industry players to act as effective partners, investors and/or energy consumers.

Work to complete the Non-reactor-based Isotope Supply Contribution Program and new knowledge on the commercial viability of innovative isotope production technologies will require the effective management of several risks.

Finally, the development of innovative materials for clean air solutions, energy efficiencies and pipeline sustainability will require the successful management of several risks, including those associated with the ongoing need for trained and highly skilled personnel and delays inherent in the movement/relocation of personnel and equipment.




How we are Measuring Success



The success and performance of this program activity will be measured using the following indicators:

- Clean energy production and greenhouse gas (GHG) reductions attributable to NRCan programming.
- NRCan's contribution to the advancement of clean energy knowledge, and the uptake of innovative clean energy solutions.
- Performance of programs in achieving expected results within plans, timelines and budgets.

Deliverables for 2011-12

Programs and initiatives in support of program activity 2.1 *Clean Energy* are structured around five sub-activities. These are listed below with key deliverables for 2011-12.

| Deliverables for 2011-2012 | |
|---|--|
| 2.1.1 Materials for Energy  LEAD SECTOR: MMS | <ul style="list-style-type: none"> • Develop a prototype engine with new high temperature resistant aluminum alloy. • Launch a new university-industry-federal lab collaborative project to design, fabricate, assemble and test a magnesium intensive demonstration structure. • Develop a short list of candidate GEN IV alloys for a wide range of materials assessment and testing. • Ensure pipeline sustainability and efficiencies by drafting guidelines and clauses for inclusion in the Canadian Standards Association and other standards on test methodologies and procedures for the assessment of high-strength steel pipelines. |
| 2.1.2 Renewable Energy Deployment  LEAD SECTOR: ES | <ul style="list-style-type: none"> • Manage over 100 contribution agreements under the ecoEnergy for Renewable Power program. • Follow up on Environmental Assessments completed on approved ecoEnergy for Renewable power projects to ensure compliance. • Perform technical site visits for approved ecoEnergy for Renewable Power projects. |
| 2.1.3 Clean Energy Science and Technology  LEAD SECTORS: ES & Innovation Energy and Technology Sector (IETS) | <ul style="list-style-type: none"> • Continue to encourage clean energy innovation: establish and maintain partnerships with external public and private stakeholders through contracts and contribution agreements to cost-share clean energy technology projects including oil and gas, transportation, bioenergy, energy efficiency, clean electricity and renewable energy. • Launch the new program in clean energy S&T announced in Budget 2011 and continue to advance innovation in cleaner oil and gas, transportation, bioenergy, energy efficiency, clean electricity and renewable energy technologies. • Undertake competitive processes to select the most promising clean energy technology projects including the review and approval of proposals. • Establish and maintain partnerships with external public and private stakeholders through contracts and contribution agreements to cost-share clean-energy technology projects. • Review and assess progress and results for current and new projects related to clean energy S&T. • Complete the non-reactor-based Isotope Supply Contribution program and report on the technical and commercial viability of the isotope production technologies. |

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| <p>2.1.4</p> <p>Energy Efficiency and Alternative Transportation Fuels</p>  <p>LEAD SECTOR: ES</p> | <ul style="list-style-type: none"> • Amendments 11 and 12 to Energy Efficiency Regulations ready for publication, amendment 13 ready for pre-publication. • Publication of the 2011 National Energy Code for Buildings by the National Research Council Canada. • Include energy efficiency for housing in the National Building Code in 2012. • Introduce Most Efficient ENERGY STAR for energy using products. • Introduce the Next Generation of the EnerGuide Rating System. • SMARTWAY network in place in 2012. • Develop new fuel efficient driving instructional material for both light-duty vehicle drivers and medium- and heavy-duty vehicle professional drivers. • Support the early implementation of Canada's first national energy management systems standard for industrial and commercial organizations. • Launch new Dollars to \$ense Energy Management Information Systems and Building Recommissioning training workshops to support improved energy management practices. • Through funding provided in Budget 2011, provide up to 250,000 – 280,000 direct homeowner grants for energy efficiency home retrofits as well as support provinces, utilities, industry in the delivery of a complementary set of energy efficiency programs and energy-related building code improvements. • Monitor up to 38 legal agreements with existing or new producers representing 2 billion litres of domestic production of renewable alternatives to gasoline and 500 million litres of domestic production of renewable alternatives to diesel. • Develop codes and standards for natural gas vehicles and infrastructure. • Establish 2 support hubs to deliver outreach and education to natural gas end-users and other key stakeholders. |
| <p>2.1.5</p> <p>Pulp and Paper Green Transformation</p>  <p>LEAD SECTOR: CFS</p> | <ul style="list-style-type: none"> • Provide financial contributions to eligible pulp and paper mills to support capital investments that will result in the generation of environmental benefits for Canadians, including 4, 230,000 GJ/year reduction in quantity of energy consumed and a 2, 100,00 MWH/year increase in quantity of renewable energy produced. |

Program Activity 2.2: Ecosystem Risk Management

What this Program Activity Is About

The objective of this program activity is to ensure that Canada understands and mitigates risks to natural resource ecosystems and human health. We promote alternative technologies and practices in green technologies and mining; enhance our understanding of forest dynamics; develop appropriate approaches for the long-term management of radioactive waste; and provide sound scientific advice to support sustainable resource management initiatives (for example on groundwater and Canada's forests). The focus is on balancing environmental and social concerns against economic prosperity.



Programming in this area contributes to the Air Quality and Climate Change, Water Quality and Availability and Protecting Nature Themes of the FSDS.

Moving Forward

We support the government's responsibility to ensure that Canada understands and mitigates the risks to natural resource ecosystems and human health. Specifically, we provide knowledge and expertise of the impacts on the environment and ecosystems on resource development (both renewable and non-renewable) in order to develop projects in a sustainable and environmentally responsible manner and create federally protected areas.

DID YOU KNOW

NRCan's Centre for Topographic Information in Sherbrooke was a key player in the development of a portal to provide information on the water resources of the Saint-François River watershed. The portal presents various geo-referenced layers needed for integrated watershed-based water management in an interactive mapping environment.



Through the Mineral and Energy Resource Assessments, we inform decision-making on the establishment of national parks and other protected areas. We also contribute to the environmental assessments for natural resources projects, as required under the Canadian Environmental Assessment Act, for all federally triggered or regulated projects/reviews through the delivery of science and technology and the provision of analysis and expertise to government departments, regulatory bodies and industry. This also includes the provision of science, the development of guidelines and the identification of best practices to address the environmental impacts of metals mining, northern pipelines and the oil sands.

We also work with our partners on the assessment and mapping of key aquifers (underground water) to ensure that the management of Canada's groundwater is based on science and done in an environmentally sound fashion. We provide scientific information that informs the sustainable management of groundwater resources and the responsible development of Canada's lands.

Additionally, we are conducting research to better understand the impact of energy and mineral development on the Northern environment. The objective is to develop methods and approaches to assess the potential impacts of the development of oil, gas and mineral resources on the Arctic environment. Ongoing activities include the impact of pipeline construction on the stability of permafrost.

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 to develop forest management practices and policies, to meet international reporting obligations, to form Canada's negotiating positions on international environmental issues related to forests and to promote a science-based understanding of Canada's forest practices.

On the nuclear management front, we are working to mitigate risks to the environment and human health through the Radioactive Waste Management programs. These include the Nuclear Legacy Liabilities Program, a long-term strategy (70 years out) to deal with legacy decommissioning and radioactive waste liabilities at AECL

sites, including the implementation of long-term solutions for the management of associated wastes (through the Nuclear Waste Management Organization), as well as ongoing efforts for the clean-up of historic wastes in the Port Hope (Ontario) area and elsewhere in Canada.

DID YOU KNOW

The [Port Hope Area Initiative \(PHAI\)](#) is a community-based program for the development and implementation of a safe, local, long-term management solution for the historic low-level radioactive waste in the municipalities of Port Hope and Clarington (Port Granby). Now moving into Phase 2, this long-term project will focus its efforts on the construction of long-term waste management facilities and environmental cleanup of historic low-level radioactive waste.

Finally, through the Green Mining Initiative, a multi-stakeholder partnership, we develop, identify and promote the use of green technology in mining, with the objective of enabling a competitive and greener resource sector. Research and outreach activities aim to reduce ecosystem risks from mining and encourage and improve sustainable best practices. Moving forward the Green Mining Initiative will focus on the following areas of research: footprint reduction, mine waste management, mine closure and rehabilitation, and ecosystem risk management.

DID YOU KNOW

Unique in Canada, NRCan's CANMET Mining and Mineral Sciences Laboratories Experimental Mine in Val-d'Or, Quebec, tests equipment and systems that are in development under conditions similar to those typically found in industry to ensure that these products and processes are reliable and safe before they are brought to market.

How we are Working to Achieve This

Our People

Our workforce in this program activity is highly skilled and mostly made up of ecosystem and earth sciences scientists and technical experts, such as physical engineers (ENG) and those involved in physical sciences (PC). Approximately 200 experts and technical staff have a broad range of science competencies in areas, such as remote sensing, soil science, entomology, Geographic Information System (GIS) and information technologies, ecology, ecosystem classification, mapping, modeling, mathematical and geospatial analysis, statistics and biometrics, taxonomy and carbon science. They also have policy competencies in area such as economics, policy development and knowledge exchange in national and international policies, forest management planning and coordination.

The current workforce is adequate to deliver on the objectives of the program activity. However, within the next 3-5 years, critical gaps are anticipated in research science, including associated analytical and technical support, due to departures and new capacity requirements. Given employee specialization, it will be a challenge to do proper succession planning and staff positions with the appropriate expertise and in a timely manner.

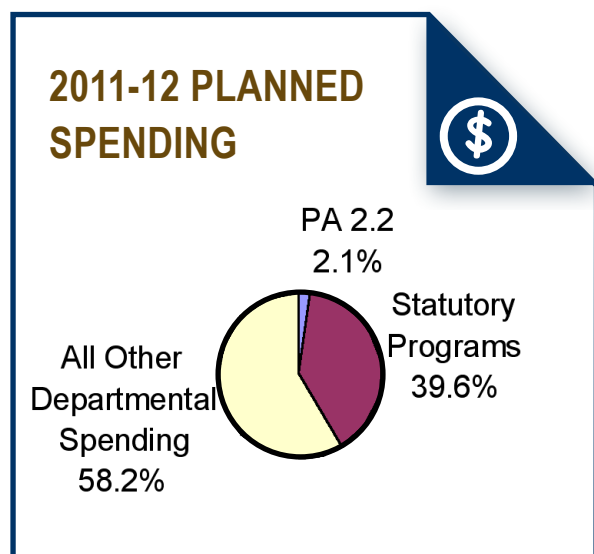
The unpredictable nature of our programs (e.g. delivering expertise on environmental assessments upon request), coupled with an aging workforce, can make it difficult to align appropriate resources to achieve program deliverables within short timeframes. Already stretched employees are also experiencing additional pressures due to the increasing number of mining development projects. This means NRCan will be particularly vulnerable should there be an acceleration of projects in key regions of Canada (e.g., North). To mitigate this risk, management is actively monitoring its priority-setting, addressing training and development requirements (e.g. cross training where feasible) and using a matrix management structure in certain areas.

Our Physical Assets

To support our R&D activities in mining technologies, processing and related environmental issues, we operate mining and minerals science laboratories in Ottawa and Sudbury, Ontario, as well as a pilot demonstration mine in Val D'Or, Quebec.

Finances

Planned spending for this program activity in 2011-12 is \$87.0M. This decrease of 58% from 2010-11 is due to reductions for the Nuclear Legacy Liabilities program. Funding for this program was received through Supplementary Estimates (A), which are not reflected in the numbers above.



How we are Measuring Success

The success and performance of this program activity will be measured by the following indicators:

- NRCan's contribution to federal environmental assessments, mineral and energy resource assessments for proposed protected areas on federal lands and waters, and related reporting processes.

- NRCan's contribution to the advancement of ecosystem knowledge and innovative ecosystem risk management solutions.
- Performance of programs in achieving expected results within plans, timelines and budgets.

Managing Risks

NRCan's ability to develop forest ecosystems science is challenged by a rapidly changing environment that requires effective linkages between science and policy, particularly given the length of time needed to develop sound and relevant scientific knowledge to inform policy.

The development and dissemination of sound geoscience knowledge is crucial to the ability of government and industry to develop, monitor and maintain resources responsibly. The successful delivery of NRCan initiatives under this program activity, including work associated with environmental assessments, mineral and energy resource assessments, and groundwater information, can be impacted by a number of risks. Critical path and stakeholder engagement issues have been identified as key among these.

With reference to NRCan's Green Mining Initiative, the development of associated technologies, projects, and publications could be impeded by regulatory delays, funding shortfalls and a reduced capacity of industry and other governments to participate in various advisory committees.

Finally, the effective management of radioactive waste can be impacted by ongoing political and environmental concerns.

Deliverables for 2011-12

Programs and initiatives in support of program activity 2.2 *Ecosystem Risk Management* are structured around four sub-activities. These are listed below with key deliverables for 2011-12.

| Deliverables for 2011-2012 | |
|---|---|
| <p>2.2.1</p> <p>Green Mining Initiative</p>  <p>LEAD SECTOR: MMS</p> | <ul style="list-style-type: none"> • Produce 15 R&D publications on environmental technologies. • Complete 10 projects with industry and government stakeholders on green mining. • Provide comments in a timely manner for environmental assessments reviews and deliver, as requested, Mineral and Energy Resource Assessments. • Develop, optimize and validate a leaching scheme to extract key elements from radioactive wastes to dispose of these while meeting Canada's environmental needs safely. |
| <p>2.2.2</p> <p>Forest Ecosystem Science and Application</p>  <p>LEAD SECTOR: CFS</p> | <ul style="list-style-type: none"> • Develop estimates for forest-related carbon stock change and greenhouse gas (GHG) emissions and removals for 1990-2010 for Canada's annual GHG inventory reporting. • Develop a special journal issue on the theme of "science review of Canada's boreal forest" for ascertaining the health of boreal ecosystems and the effects of resource development on these ecosystems. • Provide national databases and maps of current disturbance regimes (based on average annual areas affected, impact severity as a percentage of forest cover, etc.) which will properly assess future vulnerabilities of forest ecosystems to the changes in both climate and disturbances in order to develop risk profiles and adaptation strategies. • Develop a network of new model forests in the Maghreb and Congo Basin regions and integrate these new members into the global International Model Forest Network community of practice. • Update and make accessible National Forest Information products, including databases and maps to governments, industry, non-governmental organizations and the public. • Comprehensively review the state of science regarding Canada's boreal zone and its ecosystems, with particular emphasis on ecosystem health and sustainability. |

| | |
|--|--|
| <p>2.2.3</p> <p>Environmental Geoscience</p>  <p>LEAD SECTOR: ESS</p> | <ul style="list-style-type: none"> • Respond to requests for expertise and advice on projects that require environmental assessment review under the federal <i>Canadian Environmental Assessment Act</i> process or under a territorial environmental assessment regime with federal input. • Publish 15 R&D publications related to the environmental assessment process for natural resources development and use. • Provide comments in a timely manner for environmental assessments reviews and deliver as requested Mineral and Energy Resource Assessments. • Update the Groundwater Information Network to ensure all information is available on-line for decision makers. • In collaboration with the provinces and territories, complete and produce the assessment and mapping of two new Canadian aquifers (underground water). • Initiate a research project to provide guidelines to stakeholder on assessing the environmental impacts of strategic mineral resources in the Arctic (project to be completed by 2014). • Develop a Northern Strategy, in collaboration with Indian and Northern Affairs Canada and Canadian Northern Economic Development Agency, related to minerals and metals development to identify the potential developments, highlight the potential barriers and propose a strategy to address the barriers for moving forward. |
| <p>2.2.4</p> <p>Radioactive Waste Management</p>  <p>LEAD SECTOR: ES</p> | <ul style="list-style-type: none"> • Meet the government-approved program milestones for the second phase of the Nuclear Legacy Liabilities Program, including the building and infrastructure decommissioning and radioactive waste cleanups at the Atomic Energy of Canada Limited sites. • Facilitate future implementation of the Port Hope Area Initiative by obtaining proper approvals and regulatory authorities. |

Strategic Outcome 3: Safety, Security and Stewardship

Natural resource knowledge, landmass knowledge and a management system strengthen the safety and security of Canadians and the stewardship of Canada's natural resources and lands.

The success and performance of this strategic outcome will be measured by the following indicator:

- Contribution to the safety and security of Canadians and the effectiveness of federal land stewardship and regulatory processes.

Its achievement is supported by two program activities:

3.1 Adapting to a changing climate and hazard risk management and 3.2. Natural resources landmass and knowledge systems.

Program Activity 3.1: Adapting to a Changing Climate and Hazard Risk Management

What this Program Activity Is About

The objective of this program activity is to ensure that Canada adapts to a changing climate and has the knowledge and tools to manage risks associated with natural hazards and hazards arising from human activities. We provide scientific knowledge and expertise to help governments, the private sector and communities to mitigate and adapt to the potential effects of a changing climate, reduce risks and support emergency response in the event of natural and man-made hazards. NRCan also ensures that regulations related to explosives and fireworks are evidence-based and enforced.



Programming in this area contributes to the Air Quality and Climate Change Theme of the FSDS.

Moving Forward

How Canada responds to the changing climate and manages risks from natural and human induced hazards has a significant impact on the safety and security of Canadians. By developing a greater understanding of

hazards, we facilitate government response in times of crisis and inform the development of long-term mitigation strategies, which benefit Canadians and Canada's resource sectors.

Through monitoring and the provision of hazard information and products we inform other levels of government, the private sector and professional organizations about planning for events such as earthquakes, volcanic eruptions, landslides, geomagnetic storms and tsunamis. In crisis or emergency situations, the department provides quick and clear information to Canadians and stakeholders, detailing situations, actions taken to protect their health and safety, and what Canadians themselves can do. Moreover, by disseminating information about nuclear incidents we also meet our obligation for ongoing nuclear test monitoring, as required under the Comprehensive Nuclear-Test-Ban Treaty.

DID YOU KNOW



NRCan's Nuclear Emergency Response Team is mapping radioactivity to improve nuclear emergency response. While the likelihood of a nuclear emergency is very small, it is critical that tools and strategies be available in the event of such an emergency. The Team has been coordinating emergency response exercises with provinces and providing a cartographic service to detect radiation following nuclear incidents. With specialized aerial surveys and ground gamma ray spectrometry, the Team is able to construct a highly accurate and detailed map of radiation and determine if radiation levels are abnormally high.

In addition to monitoring and providing information, we also work directly with provinces and other government departments to manage and mitigate forest disturbances, such as pests. This entails coordinating national and intergovernmental research strategies and providing scientific knowledge on native and naturalized pests (e.g., Eastern Spruce Budworm) and forest invasive alien insect pests (e.g., Emerald Ash Borer.) Furthermore, we jointly assess the risks and mitigations of the impacts of wildland fires and climate change on Canada's forest resources.

DID YOU KNOW

Over the past decade, the brown spruce longhorn beetle (BSLB) has been endangering the health of spruce trees in Nova Scotia. During this time, NRCan and its partners have been researching the effects of biodegradable Hercon® microflakes which contains a pheromone ("perfume") that interferes with insect communication. The pheromone, which has been discovered and synthesized at the NRCan Atlantic Forestry Centre, is an environmentally friendly tool for slowing the spread of BSLB. Results so far have been very promising and represent a significant breakthrough in efforts to slow the spread of the insect.

With respect to climate change, we perform research and provide accurate, objective scientific data to Canada's northern governments and communities to facilitate the understanding of the impacts of a changing climate and influence long-term planning. The dissemination of this information also demonstrates some of the impacts of climate change on Canada's sensitive Arctic regions. As

changes to Canada's northern climate will likely have a greater impact than those in Southern Canada, adaptation measures will need to be carefully designed to preserve Canada's sensitive Arctic and sub-Arctic environments. Our work on climate change impacts and adaptation is focused on providing the appropriate information to communities and enabling them to adapt and respond to climate change. The Regional Adaptation Collaboratives brings together governments, the private sector and academia to assess climate impacts and adaptation responses on key regional issues. And the Tools for Adaptation support the development, dissemination and training in decision-support tools for adaptation in communities and key practitioner groups.

Finally, we regulate, license and inspect the manufacture, storage, sale and possession of explosives and fireworks. Moreover, we work to update the explosives regulations to reflect modern industrial practices while protecting workers and the general public. Actions have been taken to address gaps in the regulatory framework, including implementing the Restricted Components Regulations and partnering with the industry to strengthen explosives security through the Explosives Security Partnership.

DID YOU KNOW

The Canadian Explosives Research Laboratory is the only Canadian government laboratory dealing with commercial explosives, and one of the few in the world. The Laboratory tests approximately 150 products each year before they are authorized for use in Canada.

How we are Working to Achieve This

Our People

Our workforce within this program activity is comprised primarily of scientists and technicians as well as of select policy development professionals who work across the country in areas such as explosives, climate change, fire behaviour and seismology. They are among the very few experts in the field in Canada and their experience and knowledge is invaluable. There is a strong sense of contribution and satisfaction and employees feel that they do meaningful work and that they are supported in their career development.

Within the next three years, it will be a challenge to attract high-calibre employees due to the high level of specialization of this workforce. For example, it will be difficult to fill positions in the field of explosives given that it is a specialized area with relatively little existing private-sector expertise. Science competency gaps are also anticipated in the areas of fire behaviour and climate change specialists, entomologists, physical scientists and forest pathologists (e.g., RES, EG, BI). These challenges also create opportunities to bring in new expertise in program areas such as Non-Destructive Testing and Emerging Materials for the Materials Technology Laboratory (MTL) strategic outlook in Hamilton, Ontario.

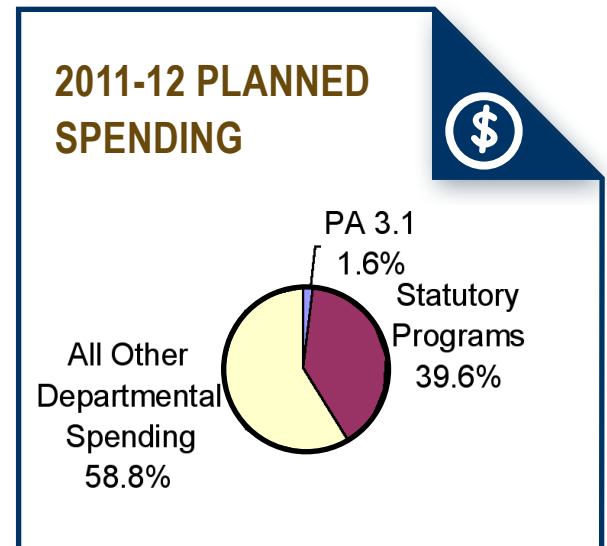
In moving forward, cross-training of staff, where possible, will be used to help manage future gaps and new teams will be created, specifically in the MTL, to deliver on programs.

Our Physical Assets

In order to enhance research on alien forest insects, we are partnering with the Ontario Ministry of Natural Resources and have opened a state-of-the-art Invasive Species Centre as part of the Great Lakes Forestry Centre in Sault Ste. Marie, Ontario. Research at the new centre will allow us to better assess risks, forecast impacts and propose mitigation and adaptation strategies as they relate to alien forest insects. Our staffing levels should remain the same, as employees of the Great Lakes Forestry Centre will use these more modern facilities.

Finances

Planned spending for this program activity in 2011-12 is \$63.6M.



How we are Measuring Success

The success and performance of this program activity will be measured by the following indicators:

- NRCan's contribution to the safe and secure use of explosives in Canada; certifying non-destructive testing personnel in Canada; and materials innovations for the security of individuals.
- NRCan's contribution to climate change adaptation and natural hazard risk management as measured by the uptake of adaptation knowledge and tools, and the timeliness and accessibility of natural hazard risk management knowledge and tools.
- Performance of programs in achieving expected results within plans, timelines and budgets.

Managing Risks

Threats to Canada's forests, including forest fires, insects and disease, may be heightened due to rapidly changing disturbance patterns. The pace at which scientific knowledge must advance to respond to such challenges is increasing and, as a result, this will require closer coordination within the forest science research community to develop timely and effective responses.

To ensure that Canadians are protected from all types of natural hazards – from earthquakes and tsunamis to geomagnetic storms and radiological/nuclear incidents – constant monitoring and effective information dissemination is required. Efforts to develop and disseminate accurate and timely hazard information may be impacted by several risks, including the increasing demand for rapid information using fast developing technology and need for continually improving systems, all within the context of a fiscally constrained environment.

As the effects of a changing climate accumulate, governments, communities and industry will be called upon to develop knowledge and initiatives capable of ensuring

successful adaptation. Such efforts could be impeded by changes in political and/or economic priorities, including those driven by citizen and stakeholder perceptions and expectations.


With reference to explosives safety, the modernization of Canada's explosives regulations is a priority. Given the specialized knowledge associated with this work, there is a risk that NRCan will be unable to attract and retain the necessary personnel. As well, in light of the Explosives Safety and Security Branch's reliance on cost recovery, there is a risk that unpredictable and fluctuating revenues may also slow progress.

Deliverables for 2011-12

Programs and initiatives in support of program activity

3.1 *Adapting to a Changing Climate and Hazard Risk Management* are structured around four sub-activities.

These are listed below with key deliverables for 2011-12.

| Deliverables for 2011-2012 | |
|---|--|
| 3.1.1 Mining, Infrastructure and Explosives Safety LEAD SECTOR: MMS | <ul style="list-style-type: none"> • Manage the process of Modernizing Explosives Regulations, including developing proposed regulatory improvements; effectively managing engagement with stakeholders; and moving towards implementation of the new Regulations. • Provide ongoing S&T advice, knowledge products, standards and process technologies to improve the safety and security of workers and the public, and increase capacity by Canadians managing risks. • Issue approximately 1000 Non-Destructive Testing certifications. • Complete 100% of NDT certification. |
| 3.1.2 Forest Disturbances Science and Application LEAD SECTOR: CFS | <ul style="list-style-type: none"> • Assess and disseminate information on the risks and impacts of wildland fire on Canada's forests and on the safety and security of Canadians. • Synthesize and deliver science and technology information on high priority forest pests to decision makers by enhancing the framework for pest risk analyses and contributing to risk analyses of Canada's forest pests. |
| 3.1.3 Climate Change Geoscience and Adaptation  LEAD SECTOR: ESS | <ul style="list-style-type: none"> • Provide support for workshops and presentations to Regional Adaptation Collaboratives focusing on 15 adaptation issues across regions, including areas of water management, community and land use planning. • Release adaptation tools, methodologies and standards. • Produce the geoscience information, such as papers, presentations and reports that stakeholders use to prepare and build into proactive adaptation plans. • Develop a nationally applicable climate change vulnerability and adaptation assessment framework of Canada's forests. |
| 3.1.4 Public Safety Geoscience LEAD SECTOR: ESS | <ul style="list-style-type: none"> • Monitor, maintain and disseminate earthquake information systems to provide near-real time alerting of earthquakes in Canada to the public. • Prepare Canadians for the impacts of natural hazard events. • Disseminate hazard information through Canadian Hazard Information in a timely manner. • Complete assessments for mitigation strategies. |

Program Activity 3.2: Natural Resource and Landmass Knowledge and Systems

What this Program Activity Is About

The objective of this program activity is to ensure that Government has the necessary natural resources and landmass knowledge and systems required to both govern the country and position Canada to play a leadership role during federal/provincial/territorial and international events. We provide knowledge and expertise on land, landmass and geographic data to Canadians and industry and support the improvement of the federal regulatory review.



Programming in this area contributes to the Air Quality and Climate Change and Protecting Nature Themes of the FSDS.

Moving Forward

We deliver on Canada's responsibility to provide Canadians and industry with access to and knowledge on geographic data, mapping data landmass and lands. Our location-based geographic data and knowledge provides a geographic reference foundation that underpins many economic and social applications. Through GeoConnections, we work with stakeholders to ensure the application of uniform standards in the development of knowledge and implementation of policies on geographic information.

We also manage key programs supporting space remote sensing, including satellite ground stations and systems for storing, processing and distributing information on an ongoing basis and providing longitude, latitude, height values for geographic coordinates across the country.

A better understanding of Canada's landmass in the North will present greater opportunities to sustainably develop and protect its natural resources. For example, we are conducting bathymetric and seismic surveys to compile accurate coordinates on the limits of Canada's continental shelf. This data will support Canada's claim to the United Nations for extending our sovereign rights on the Atlantic and Arctic continental margins under the *United Nations*

*Convention on the Law of the Sea (UNCLOS)*³. Ratification of UNCLOS requires Canada to make a claim before 2014 or forfeit rights to extend its offshore beyond 200 nautical miles.

DID YOU KNOW



NRCan has been using an autonomous underwater vehicle (AUV) to collect data to be used in support of Canada's UNCLOS submission. Named Yamoria, the AUV is a one-of-a-kind product: a remotely controlled research submarine built to withstand the extreme pressure and cold of the Arctic undersea environment. Canada was the first country to build an AUV for Arctic research.

Uncertainties around Aboriginal treaties and rights can negatively affect the investment climate and competitiveness of natural resources sectors. To address this issue, the Surveyor General is fulfilling Canada's obligations for demarcating the boundaries of land claim parcels. Amongst others, we maintain the Canada/US international boundary, and conduct boundary surveys of Aboriginal settlement lands, in accordance with Canada's obligations under the land claim legislation and treaties. We also provide boundary certainty on Canada Lands, for example in the North, Canada's offshore area and national parks.

We are working to improve the federal regulatory review system for major resource projects to support the responsible development of the energy and mines sectors in a way that provides a more certain investment climate for industry while ensuring strong environmental protection. The Major Project Management Office (MPMO) is mandated to improve the efficiency and effectiveness of the federal regulatory review process for individual resource projects and to drive ongoing

³ Under UNCLOS, coastal states can use scientific data to determine the outer limits of their continental shelf beyond the customary 200 nautical miles, which would give them the exclusive rights for the exploration of the resources found within their continental shelf. The treaty allows a country 10 years from ratification to submit the scientific proof establishing the outer limits of its continental shelf.

system-wide improvements to the regulatory system in Canada. By providing overarching management of the federal regulatory review process for over 70 major resource projects (e.g. environmental assessment, regulatory decision-making and Aboriginal consultation responsibilities) and by leading the development of options for system-wide improvements, the MPMO ensures that major resource projects reviews are timely, predictable, transparent and accountable with appropriate consideration of social and environmental effects, and consistent and meaningful Aboriginal consultation.

DID YOU KNOW

Beginning in April of 2011, the Polar Continental Shelf Program facility in Resolute will nearly double its capacity to accommodate scientists. The expansion also provides a new, stand-alone modern laboratory facility comprising three separated lab areas.

Finally, we manage the Polar Continental Shelf Program (PCSP) to deliver efficient and cost-effective logistical support to researchers in the Canadian Arctic, such as air/ground transportation, equipment, fuel and accommodations.

How we are Working to Achieve This

Our People

Our workforce in this program activity is mostly comprised of highly qualified scientists and technicians, such as land surveyors, logistics experts, geographic and satellite information technologists, who work across the country. In some areas, there is a labour market shortage for specializations, such as land surveyors and satellite information technologists, which puts pressure on our

ability to maintain capacity. For others, the conditions are challenging (both in terms of climate and irregularity of hours), such as the North, which have an impact on high staff turnover rates. In general, limited access to appropriate highly qualified individuals is caused by a labour market shortage, changing skills requirements for current and upcoming program requirements and an aging demographic.

To mitigate these challenges, management provides strong collective leadership and delivers innovative approaches to learning and development. They also provide meaningful work leaving employees with a strong sense of contribution. Overall, employees are offered flexible work environments with the necessary tools to do their job.

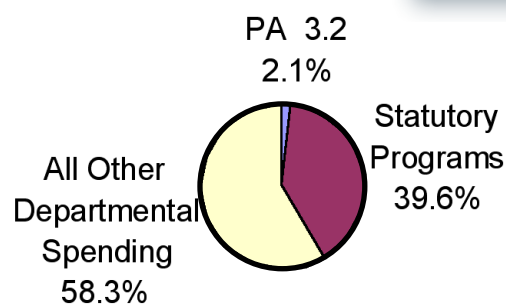
Our Physical Assets

The PCSP, through its base in Resolute, Nunavut, and through its field equipment inventory, continues to support the logistical demands of researchers in the North.

Finances

Planned spending for this program activity in 2011-12 is \$84.4M. This decrease of 18% from 2010-11 is due to reduced funding for the UNCLOS initiative.

2011-12 PLANNED SPENDING



How we are Measuring Success

The success of this program activity will be measured by the following indicators:

- NRCan's contribution to the development and security of Canada through advancements in geographic knowledge, boundary management, and surveys and supporting systems for secure land tenure of Canada Lands.
- Effective management of the federal regulatory process for major natural resource projects as measured by adherence to target timelines and service standards by all federal departments and agencies.
- Performance of programs in achieving expected results within plans, timelines and budgets.

Managing Risks


Major resource projects are a significant driver of economic growth, accounting for important job creation and economic development opportunities across Canada. Through the Major Projects Management Office Initiative, federal departments and agencies are working to manage the risks associated with the development of major resource project to ensure that the regulatory system facilitates the continued development of our energy and mining resources while maintaining strong environmental standards.

Evidence-based geographic knowledge is important for sovereignty and economic development. This is of particular importance in Canada's arctic, as accurate geographic knowledge supports decision making in key economic, environmental and social activities. Risks associated with this work include a potential shortage of highly qualified personnel, maintaining current service level and investing to service upgrades.

Finally, with reference to the PCSP, limited numbers of ice-breakers and harsh working environments may impede or halt work, resulting in delays in data collection of one to two years. This could limit the amount of scientific data collected and hamper Canada's ability to make its case for the international recognition of Canada's rights to its continental shelf at the United Nation by the 2013 deadline. A plan has been prepared detailing the requirements for ice breakers. The Canadian Coast Guard has the assets and has committed them to the program. In addition the program is using Autonomous Underwater Vehicles (submarines) to conduct seafloor surveys, which mitigates the impact of severe weather conditions.

Deliverables for 2011-12

Programs and initiatives in support of program activity 3.2 *Natural Resource and Landmass Knowledge and Systems* are structured around four sub-activities. These are listed below with key deliverables for 2011-12.

| Deliverables for 2011-2012 | |
|---|---|
| <p>3.2.1</p> <p>Essential Geographic Information and Support</p>  <p>LEAD SECTOR: ESS</p> | <ul style="list-style-type: none"> • Carry out maintenance plan objectives on the International Boundary. • Develop and maintain up-to-date location-based (geographic) information and topographic maps, including 500 new topographic maps at 1:50000 scale and revising other maps, as appropriate. • Provide governments, industry and Canadians with up-to-date and archived remote sensing imagery and up-to-date applications for geodetic reference points. • Provide a final set of coordinates for the outer limits of Canada's Atlantic and Arctic offshore continental shelf. • Develop and disseminate tools, methodologies and standards for geographic information for decision-makers. • Complete annual land claim survey obligations as defined in the legislation and agreements for the Yukon, North West Territories and Nunavut. • Finalize cooperation arrangements with the Department of National Defence in the Arctic to expand the PCSP facility in Resolute. • Provide cost-effective logistical support for PCSP-granted projects to major government science programs. |
| <p>3.2.2</p> <p>Major Projects Management Office</p> <p>LEAD SECTOR: MPMO</p> | <ul style="list-style-type: none"> • Lead the on-going development and implementation of a whole-of-government strategy to deliver a suite of policy, regulatory and legislative improvements to the federal regulatory system. • Ensure that environmental assessment, regulatory review and Aboriginal consultation processes for major resource projects are timely, integrated and well coordinated through the development of project agreements and adherence to agreed upon service standards. • Work collaboratively with partners to strengthen northern regulatory regimes and to improve the integration of federal and provincial review processes. |

OUR CORPORATE DIRECTIONS AND PRIORITIES

To strive for excellence in delivering on our priorities, we must ensure a commitment to excellence in management and support. As such, we focus on our capacity, responsiveness and resilience. Anchored on our four medium-term corporate directions, priorities are:

Asserting our Policy Leadership

Over the years, the government and NRCan have moved forward within a framework that has recognized appropriately provincial ownership and responsibility for the development of natural resources, the benefits of a competitive marketplace and the integrity of regulatory processes. While these considerations continue to be paramount, there is space and recognized need for federal policy leadership. To that effect, we will:

- Bolster our analytical capacity and bring to bear the full contribution of science to policy advice and decision-making;
- Help define the Canadian public interest and the federal role;
- Advise, create, manage, share and communicate information pro-actively to a more diverse and critical public;
- Mobilize partnerships; and,
- Develop a view that integrated knowledge and enhance our contribution to policy directions and outcomes for the short, medium and long terms.

Mobilizing our Science

As our policy environment changes, so must our science. As a science-based organization, NRCan can build on its expertise and networks to advance its S&T Strategy, with a view to:

- Develop corporate-wide strategies, processes and tools to identify our science priorities;
- Allocate our R&D efforts strategically and plan and establish our short, medium and long term goals;
- Build the best linkages with domestic and global partners in academia, industry and NGOs to maximize our value-added and validate our results; and,

- Promote our activities in science and technology and mobilize R&D and S&T excellence for Canada.

Transforming our Business

To modernize the business of government, we will:

- Leverage technology and web 2.0 with a clear focus on our business needs;
- Enhance service delivery in the NCR and the regions and promote access and transparency for our clients, partners and the public;
- Leverage opportunities for clustering with other departments and agencies;
- Establish clear accountabilities and control and measure our outcomes.

DID YOU KNOW

NRCan is implementing state-of-the-art, energy-efficient programs in all our major buildings and fleets through an initiative called *Low Carbon NRCan*.

Low Carbon NRCan will focus on buildings, which currently account for 96% of our energy use, as well as on IT and the workplace. It will allow us to reduce our carbon footprint, invest savings into programs and meet our sustainable development strategy goals.

Activities to achieve this include, energy use monitoring and reporting; energy projects, such as space consolidation, printer device reduction, server consolidation and desktop hibernation; retrofits for NCR buildings; and recommissioning and optimizing of some buildings.

Growing our Human Capital

To succeed, we must maximize our human capital. How we maximize the contribution and career development of our people, from their first to their last year of service, will be key. To that effect, we will:

- Recruit strategically, drawing from Canada's diversity;

- Develop our competencies and leadership; and,
- Ensure the transfer of knowledge from our established and retiring personnel to the next generation.

DID YOU KNOW

NRCan has put in place various initiatives to facilitate the use of both **official languages** in the workplace. These include our award-winning in-house Language School, the promotion of bilingual meetings and a series of French-language presentations on scientific initiatives.



Delivering on our Management Agenda Through our Internal Services



Activities in this area contribute to the Greening Government Operations Theme of the FSDS.

The ability of internal services to adjust and respond to evolving business priorities and requirements will allow us to deliver on our corporate directions and priorities effectively and efficiently. Internal services include public affairs, legal services, human resource management, governance and oversight services, the Chief Scientist function, information technology/information management, real property, and material and acquisition services.

Our workforce in this program activity is mostly made up of administrative and professional occupations. There are high levels of mobility across the public service and an insufficient supply. Demographic challenges and high

turnover rates are especially evident in occupational groups, such as the administrative services (AS/CR), communications (IS), financial management (FI), human resources (PE), computer systems (CS), purchasing and supply (PG) and the audit group (FI/CS/AS). NRCan is competing with all other government departments for a limited pool of employees with specific skill sets in areas of common competencies. Staffing is also required on an ongoing basis for the FI/PG/PE groups, given the requirement for policy training to advance in these respective fields.

To address recruitment and retention issues, several actions have been taken and include:

- Leveraging the use of various programs (i.e., Internship/Assignment Program, Internship Program for CS, FORD Program, PE, PG and IS Development Programs, Internal Audit and Recruitment Program and CA Student Training Program).
- Extensive use of collective staffing pools.
- Training from within as an alternative to recruiting, including in the areas of science and policy integration.
- Ensuring that all employees have active learning plans and performance agreements. (Progression gradients have been developed to facilitate employees' and managers' discussions about career advancement for main employment groups.)
- Providing flexible work arrangements.
- Succession planning to address retirement in senior management (EX).

The work of internal services in supporting the achievement of the department's priorities and outcomes as well as advancing our management agenda is extensive. Specific deliverables, organized by sub-activity, for 2011-12 include:

Deliverables for 2011-2012

4.1.1

Governance and Management Support

LEAD SECTORS: Public Affairs and Portfolio Management (PAPM) Sector, Science and Policy Integration (SPI) & Audit Branch

Management and Oversight:

- Implement a revised governance structure to ensure the integration and ongoing renewal of risks and human, asset and information resources through the planning, ongoing monitoring and reporting of activities.
- Strengthen the integrated business planning process. This involves aligning human, asset and information resources to deliver the business results of government.
- Enhance the evaluation function.
- Support implementation of the renewed Program Activity Architecture, Performance Measurement Framework and Corporate Risk Framework.
- Complete approximately 10 scheduled audits, as per the annual risk based audit plan and present them to the Audit Committee on a quarterly basis for approval.
- Create tools and guidance to simplify the Cabinet processes and more effectively support internal decision-making processes.
- Continue the implementation of the department's S&T Strategy.

Public Affairs:

- Strengthen issues management capacity within the department through oversight, coordination and collaboration with NRCan sectors.
- Implement an Internal and an External Communications Strategy and a Corporate Marketing Strategy.
- Finalize and implement the departmental Public Participation Policy and supporting guidelines.
- Modernize the Executive Documents Unit through the increased use of technology.
- Implement a re-engineered Access to Information process to ensure timely and continuous review of active requests and, if necessary, resolve delays to ensure commitments to meet processing times.
- Implement the Portfolio Management Framework (ongoing) and evaluation of Framework (June 2011).
- Build greater capacity in the portfolio agencies in areas such as issues management, parliamentary activities, Access to Information and Privacy and Treasury Board submissions (ongoing).

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| <p>4.1.2</p> <p>Resource Management Services</p> <p>LEAD SECTOR: Corporate Management Services Sector (CMSS)</p> | <p>Human Resource Management:</p> <ul style="list-style-type: none"> • Foster employee development by strengthening the Performance Management Program for Employees and updating the departmental Learning and Development Strategy. • Enable succession planning and management and expand talent management to levels below the executives. • Deliver targeted recruitment strategies and initiatives as well as implement the Collective Staffing Approach based on business needs. • Revitalize HR services and systems by focusing on automation and standardization of processes and tools (integrated Service Desk–HR option, ePAR, RES Career Progression Support System, HRaid and Common HR Business Processes). • Coordinate the 2010 NRCan Employee Survey Action Phase and participate in the 2011 Public Service Employee Survey. • Implement departmental Action Plans for Official Languages and Employment Equity. • Develop an organizational code (Values and Ethics) based on principles of the new federal Public Service Code of Conduct. <p>Financial Management:</p> <ul style="list-style-type: none"> • Implement Felix/SAP to support improved business processes for financial, material and project management. Leverage the new system to better track financial and non-financial performance through quarterly reviews. • Further enhance the project management function of Felix/SAP in support of improved project outcomes • Review the Internal Control Process. • Implement Quarterly Financial Reports. |
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| | <p>Information Management:</p> <ul style="list-style-type: none"> • Develop strategy and implement processes and tools to support the department-wide electronic document and records management function at NRCan. • In alignment with Management Accountability Framework and the NRCan Program Activity Architecture, implement the GC Recordkeeping Methodology to identify departmental information resources of business and enduring value, and identify and align simplified disposition tools. • Provide employee IM awareness and guidance, such as revised e-mail guidelines, an awareness blitz on transitory information resources and on-going development of the IM Awareness wiki site. • Advance NRCan IM policy implementation by supporting the extension of the departmental knowledge base where information and knowledge resources are easily findable, shareable and useful to all employees, and continue to deliver the NRCan IM Policy, collaborative tools and SharePoint training sessions. • Put in place departmental legacy records strategy plans to support the department's science and policy legacy, including elements related to archival and trusted digital repositories. • Develop a departmental open data strategy and plan to support the Government of Canada open data portal pilot initiative. • Deliver and present a new Library Funding Model to the Departmental Management Coordination Committee and the Business Transformation Committee. • Develop a Virtual Library Service Model to be piloted in Devon, Alberta. <p>Information Technology:</p> <ul style="list-style-type: none"> • Create, enhance and deliver quality IT services as part of an evolving service catalogue supported by ongoing performance measurement. • Continue implementation of the Server Consolidation Program. • Continue implementation of the eVault (i.e., storage archiving pilot project). • Enhance the department IT security posture through the IT security Action Plan. • Evolve the Enterprise Architecture Program to support program delivery and align with Government of Canada directives. • Implement the Web content management system (Drupal). • Manage ongoing investment review of IT in support of recommendation from the Aging IT Report. <p>Travel and Other Administrative Services:</p> <ul style="list-style-type: none"> • As per the 2011-2012 Service Innovation Plan, continue Business Process Review, including an integrated Shared Service Office (SSO) Service Desk, integrate SSO eTools into Felix/SAP, consolidate office space in the National Capital Region (as part of NRCan Low Carbon initiative) and implement the Departmental Security Plan. • Implement the Expense Management Tool Receipt Faxing function to reduce the processing time for travel reimbursements. |
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| <p>4.1.3</p> <p>Asset Management Services</p> <p>LEAD SECTOR: CMSS</p> | <p>Real Property:</p> <ul style="list-style-type: none"> • Implement the National Building Management Plan and create a listing of priority of Real Property Investments. • Implement <i>Low Carbon Initiative</i> to reduce energy costs and generate savings to annual operating costs. <p>Material:</p> <ul style="list-style-type: none"> • Implement the departmental e-waste plan (August 31, 2011). • Complete equipment capital inventory counts and update Asset Management policies and procedures in preparation for Felix/SAP implementation. <p>Acquisition:</p> <ul style="list-style-type: none"> • Establish a baseline for continuous improvement of supporting operational requirements, including: <ul style="list-style-type: none"> • Automated procurement initiatives (eProcurement, eCatalog, eOrder) to be upgraded, with the Felix/SAP implementation. • Establish and monitor key performance indicators (quarterly). • Promote the departmental Procurement Plan to encourage its take-up and implementation. |
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ANNEX 1 - PROGRAM ACTIVITY ARCHITECTURE

NRCan 2011-12 Program Activity Architecture

| Strategic Outcome | Program Activity | Sub Activity | 4.1 Internal Services |
|--|---|--|-----------------------|
| 1. Economic Competitiveness Natural resource sectors are internationally competitive, economically productive and contribute to the social well-being of Canadians | 1.1 Economic Opportunities for Natural Resources | 1.1.1 Minerals and Metals Markets, Innovation and Investment | |
| | | 1.1.2 Forest Product Market Access and Development | |
| | | 1.1.3 Forest Product Innovation | |
| | | 1.1.4 Institutional Alignment of Forest Research and Development for Effectiveness | |
| | | 1.1.5 Forest-based Community Partnerships | |
| | | 1.1.6 Energy and Mineral Exploration | |
| | | 1.1.7 Domestic and International Energy Policy | |
| | | 1.1.8 Statutory Program - Atlantic Offshore | |
| | 1.2 Natural Resource-based Communities | | |
| 2. Environmental Responsibility Canada is a world leader on environmental responsibility in the development and use of natural resources | 2.1 Clean Energy | 2.1.1 Materials for Energy | |
| | | 2.1.2 Renewable Energy Deployment | |
| | | 2.1.3 Clean Energy Science and Technology | |
| | | 2.1.4 Energy Efficiency and Alternative Transportation Fuels | |
| | | 2.1.5 Pulp and Paper Green Transformation | |
| | 2.2 Ecosystem Risk Management | 2.2.1 Green Mining Initiative | |
| | | 2.2.2 Forest Ecosystem Science and Application | |
| | | 2.2.3 Environmental Geoscience | |
| 3. Safety, Security, and Stewardship Natural resource knowledge, landmass knowledge and management systems strengthen the safety and security of Canadians and the stewardship of Canada's natural resources and lands | 3.1 Adapting to a Changing Climate and Hazard Risk Management | 2.2.4 Radioactive Waste Management | |
| | | 3.1.1 Mining, Infrastructure and Explosives Safety | |
| | | 3.1.2 Forest Disturbances Science and Application | |
| | | 3.1.3 Climate Change Geoscience and Adaptation | |
| | 3.2 Natural Resource and Landmass Knowledge and Systems | 3.1.4 Public Safety Geoscience | |
| | | 3.2.1 Essential Geographic Information and Support | |
| | | 3.2.2 Major Projects Management Office Initiative | |

ANNEX 2 - OUR GOVERNANCE STRUCTURE

Organizational Structure

NRCan is composed of five main business sectors, which are: the Canadian Forest Service, the Minerals and Metals Sector, the Energy Sector, the Innovation and Energy Technology Sector and the Earth Sciences Sector. These sectors work with the different stakeholders (e.g. other government departments, provincial and territorial governments, industry, academia, etc.) associated with the natural resources area.

The Major Projects Management Office and the AECL Restructuring sectors have been created to address a particular need to review and enhance the Government's regulatory review process and to support AECL restructuring, respectively.

Other sectors, such as the Corporate Management Services Sector, the Public Affairs and Portfolio Management Sector and the Science and Policy Integration Sector, along with the Audit Branch, are devoted to the internal function of the department (e.g. HR, financial management, information management and technology, etc.).

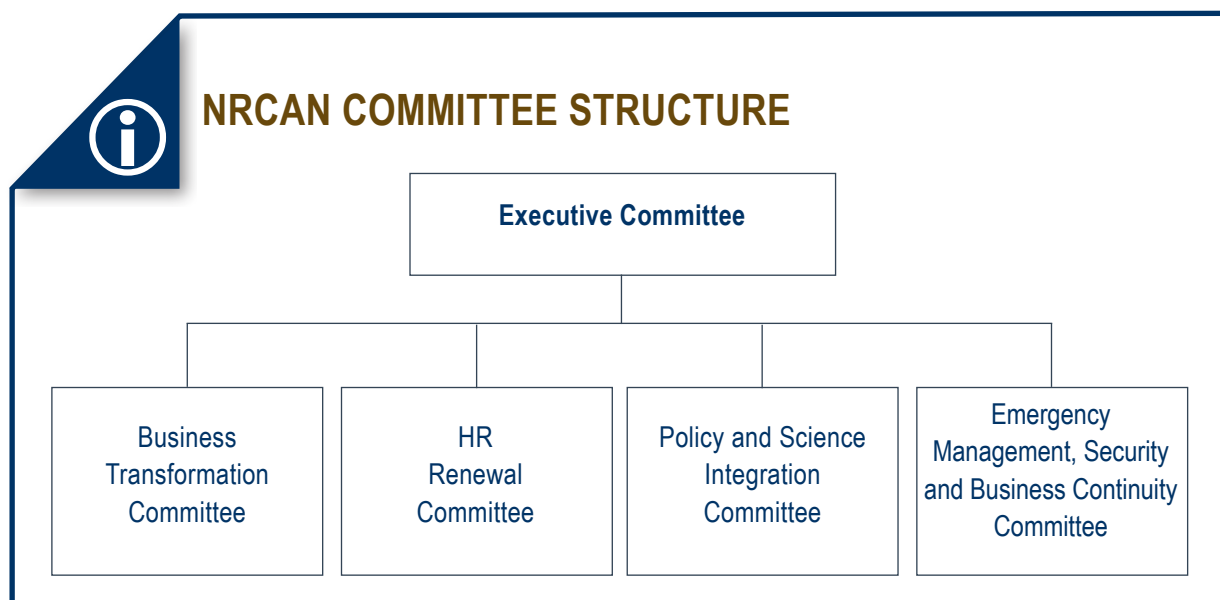
Committee Structure

NRCan's committee structure was recently revised to further strengthen collective leadership and engagement within the department, and improve information sharing and shared accountabilities.

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

The Executive Committee is supported by the following committees, which provide advice and make decisions on key areas:

- Business Transformation Committee.
- Policy and Science Integration Committee.
- Human Resources Renewal Committee.
- Emergency Management, Security and Business Continuity Committee.



Additionally, the Science and Technology Board provides senior corporate leadership for an integrated approach to the ongoing, strategic management of NRCan's S&T capacity. The Board includes members from within and outside the federal public service to ensure a diversity of perspectives.

The Executive Committee is further supported by an array of networks and communities of practice. These groups

foster innovation, engagement, collaboration and learning. Examples of these include the horizontal task teams on Shale Gas, Tailings Management, Integrated Continuity Energy Solutions, the North, and Climate Change and Adaptation (Phase 2); the Learning Organization Community of Practice; the Video Community of Practice; and the Managers' Community.

DID YOU KNOW

The Learning Organization Community of Practice (LOCoP) is a growing community within NRCan that helps foster leadership and change. LOCoP members are trained to enable their organizations (big and small) to be:

- creative and energized;
- collaborative by tapping into all resources and skills;
- evidence-based by involving leadership at all levels; and
- committed to an environment of engagement and a culture of collective leadership.



ANNEX 3 - OUR PEOPLE

“Excellence starts with a capable and motivated workforce aligned with the goals of the organization”

Wayne G. Wouters, Clerk of the Privy Council and Secretary to the Cabinet,
Eighteenth Annual Report to the Prime Minister on the Public Service of Canada (p. 12)



Our ability to successfully deliver on our strategic outcomes depends on having the right expertise at the right time in the right position. NRCan has the diverse and highly-skilled workforce necessary to deliver on its mandate, but like other organizations, its workforce is aging and it has to compete to recruit and retain talented and specialized employees. To address our needs, one of our key priorities as part of our management agenda is to maximize the contributions and growth of our human capital. This entails capitalizing on strategic recruitment from Canada's diverse population, developing our competencies and leadership, and transferring knowledge from our established personnel to the next generation.

Talent management will be instrumental in achieving our business objectives and enabling us to adapt to an evolving environment. It is essential that we maximize the

contribution and career development of our people, from their first to their last year of service. To that effect, we have put in place:

- An enabling infrastructure that supports business effectiveness by providing quality and timely advice and service while ensuring the department meets its statutory and policy requirements.
- A governance structure recognizing that people management is a shared responsibility and allowing us to contribute to Public Service Renewal priorities **by engaging employees in the excellence agenda and renewing the workforce and workplace.**
- A comprehensive *Talent Management Framework*, which reflects an integrated and holistic approach to human resources management that

NRCAN'S GOVERNANCE ON PEOPLE MANAGEMENT

Human Resources Renewal Committee (HRRC)

- Comprised of representatives from across sectors, the HRRC supports senior management in setting the department's strategic direction for people management.
- Priorities for 2011-2012: supporting integrated planning, fostering employee development, promoting strategic recruitment and staffing, enabling succession planning and management, fostering employee engagement

Champions

- Assigned to key people management files. They help raise awareness and foster engagement, action and cultural change.



is an effective end-to-end talent management system, from recruiting, through development and recognition to succession management. It is designed to facilitate investment in our current and future workforce by maximizing and rewarding our employees' contributions and developing our employees from their first to their last day at NRCan.

- A set of Key NRCan Competencies – organizational awareness, collaboration, flexibility and innovation – that facilitate the use of a common language and coherent approach to talent management within the department and that strengthen NRCan's culture of high performance.
- An integrated planning approach to align people management priorities with business needs. Looking forward, focus will be on providing management with data analysis to assist in making informed people management decisions.

This annex provides information on NRCan's workforce and key challenges and gaps that must be addressed to ensure that we have the capacity to meet our business needs. The associated strategies and programs have been organized in four areas of focus for effective people management:

1. Developing and managing our talent.
2. Sustaining capacity.
3. Fostering employee engagement.
4. Promoting a culture of Public Service Values.

NRCan's People Today

NRCan employees are highly educated and are located across seven regions, with 68.4% in the National Capital Region (NCR) (see Table 1). Canadian Forest Service (CFS) and Earth Sciences Sector (ESS) have the largest concentration of the workforce located outside the NCR. 62% of our employees work in our three largest sectors: CFS, the Corporate Management and Services Sector (CMSS) and ESS.

As of December 31, 2010, NRCan had 4526⁴ dedicated employees in its workforce, of which 56% are men and 44% are women, and 70% have English as their first official language (OL) and 30% French. The majority of employees are indeterminate, with 3.8% employed on a determinate basis. More than 75% of NRCan employees work in two categories: scientific and professional (42.5%) and administrative and foreign services (35.3%). In the first category, the dominant occupational groups are SERES, PC, EC and EN-ENG. Similarly, AS, CS, IS and CO groups dominate the administrative and foreign services category. For other occupational categories, the EG group is the largest for the technical category and the CR group for the administrative support category.

As of September 30, 2010, NRCan's workforce is representative of the four Employment Equity (EE) groups (i.e., women, Aboriginal Peoples, persons with disabilities and visible minorities) at the departmental level; however, gaps remain for some occupational categories and groups.

Table 1: NRCan Population by Sector and Region as of December 31, 2010

| OCC Category | Atlantic | NCR | Northern | Ontario (other than NCR) | Pacific | Quebec | Western | All Regions |
|----------------|----------|-------|----------|-----------------------------|---------|--------|---------|-------------|
| EX | 3 | 131 | | 3 | 2 | 5 | 7 | 151 |
| S&P | 108 | 1,203 | 16 | 98 | 133 | 215 | 148 | 1,922 |
| Ad & FS | 37 | 1,348 | 5 | 38 | 48 | 65 | 57 | 1,598 |
| Technical | 42 | 241 | 12 | 75 | 42 | 62 | 88 | 562 |
| Admin. Support | 9 | 149 | 2 | 12 | 12 | 25 | 17 | 226 |
| Operational | 9 | 22 | 6 | 11 | 6 | 5 | 14 | 67 |
| Indeterminate | 191 | 2,987 | 40 | 224 | 233 | 353 | 309 | 4,338 |
| Term | 11 | 107 | 1 | 13 | 10 | 24 | 22 | 188 |
| Total | 202 | 3,094 | 41 | 237 | 243 | 377 | 331 | 4,526 |

* Indeterminate includes eight seasonal employees. Term is more than three months.

⁴ Includes indeterminate employees and terms greater than three months.

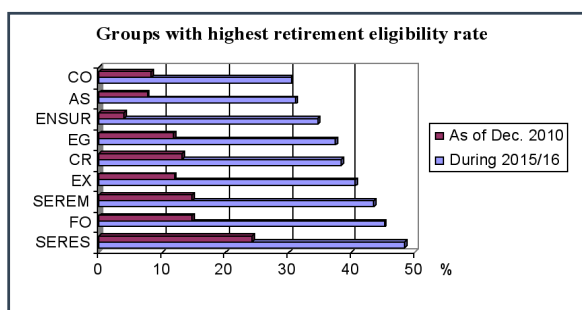
Table 2: NRCan's EE Representation by Occupational Category as of September 30, 2010*

| Occ Category | Total Population | Women | Aboriginal Peoples | Persons with Disabilities | Visible Minorities |
|---------------------------|------------------|-----------|--------------------|---------------------------|--------------------|
| Management | 150 | -4 | -2 | 3 | 4 |
| Scientific & Professional | 1,924 | 56 | 12 | -34 | -8 |
| Admin. & FS | 1,601 | 16 | 29 | 62 | 17 |
| Technical | 561 | 25 | 0 | -1 | 9 |
| Admin. Support | 225 | 4 | 6 | 16 | 9 |
| Operational | 72 | -4 | 0 | 1 | -2 |
| Totals | 4,533 | 94 | 45 | 47 | 29 |

* Numbers in the table represent the difference between NRCan's actual EE representation compared to workforce availability. The negative numbers in red indicate where there are gaps.

NRCan's workforce reflects Canada's aging population. Almost half (47%) of the total workforce falls within the 40-54 age group and 22% are over the age of 55. As of December 31, 2010, 10.3% of NRCan employees are eligible to retire, and up to 30% by 2015-16. Although on average about half of those who become eligible to retire actually do so the same year, some occupational groups show high retirement eligibility rates (see Chart 1).

Chart 1: Eligibility for Retirement over the Next Five Years – Occupational Groups



NRCan has a highly engaged and motivated workforce that has a high degree of job satisfaction. In November 2010, the department conducted the [NRCan Employee Survey](#) which provided a voice for all employees on key workforce and workplace-related topics such as employee engagement, collaboration and Public Service values. The results for questions related to employee

engagement, revealed that employees like their jobs, get a sense of satisfaction from their work, and are satisfied with the department (average scores of 80, 74 and 70 respectively). There were no significant changes in the departmental results between 2008 and 2010. There was, however, a slight improvement with respect to commitment to the organization. A majority of respondents expressed a preference for remaining with NRCan, even if a comparable job was available elsewhere in the federal public service.

What We Need to Move the Department Into the Future

Effective management of our dedicated and skilled workforce is essential for ensuring that NRCan has the capacity and resilience to fulfill its mandate in a complex and evolving environment. The work we do is mainly divided in three areas: science and technology, policy and corporate services. Given our diverse range of work and the changing Canadian labour force and market, NRCan is faced with various challenges. The following outlines the key challenges and gaps that we must address to sustain our capacity. Their associated strategies and actions are outlined in Section C.

Workforce Capacity

Within the next three years, attracting and retaining highly skilled employees in a timely manner will be a challenge

due to anticipated retirements and the high level of specialization in certain fields. Workforce analysis also indicates that we continue to face challenges in closing EE gaps for specific occupational groups. More specifically, since 2005, gaps continue to persist for the following groups:

- Women: SERES, SEREM and CS.
- Persons with disabilities: FI.
- Aboriginal Peoples: EX and SEREM.
- Visible minorities: ENSUR and PC.

To strengthen our S&T and policy capacity and address EE and OL gaps, targeted and coordinated recruitment initiatives will be essential.

High mobility within the public service in some occupational groups (e.g., AS/CR, EC, IS, FI, PE, CS and PG) along with demographic challenges and an insufficient supply of qualified employees could have an impact on program and service delivery and the need for continuous staffing.

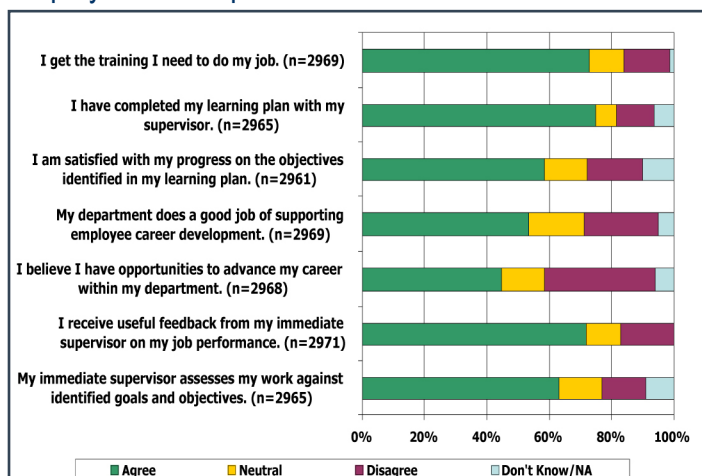
Based on information collected from NRCan sectors on staffing needs for 2010-11, 1,118 planned staffing activities were identified; of which 647 would be through advertised processes. Analysis indicated that the occupational groups and levels where there is high demand include: AS-1, 2, 3; PC-2; REM-2; RES-1/RES-2; EG, EN-ENG & EC. As a result, collective staffing opportunities for ASs, EGs, PCs and ECs were identified based on sector consultation. The analysis also highlighted that post-secondary recruitment and the student bridging mechanism are underutilized. NRCan hires roughly 800 students per year (387 FSWEP, 338 Co-op and 89 RAP students expected in 2010-11), but only two to three percent are brought into our workforce on a permanent basis. Post-secondary graduates are a potential pool of candidates who have been exposed to and have gained experience in the public service.

Anticipated workforce gaps in research science, including associated analytical and technical support, and forest science were also identified as a challenge due to departures and new capacity requirements. Competency gaps have been identified for occupational groups such

as RES, BI, EG, EC, FO and PC. In addition, technical and analytical competency gaps have been identified in the areas of policy and project management (e.g. EC, PM, CS, AS). As well, the nature of S&T work is also shifting toward highly collaborative, multi-stakeholder partnerships requiring skills in project management and a merging of S&T and policy skills.

As a knowledge-based organization, it is important for NRCan to continue improving and promoting effective performance management and learning. Given the positive correlation between employee development and retention, it is of great value to enable employees to develop their full potential and progress in their career. Based on employee feedback from the results of the 2010 NRCan Employee Survey, employee development and career progression are indicated as areas for improvement (see Chart 2).

Chart 2: 2010 NRCan Employee Survey Results on Employee Development

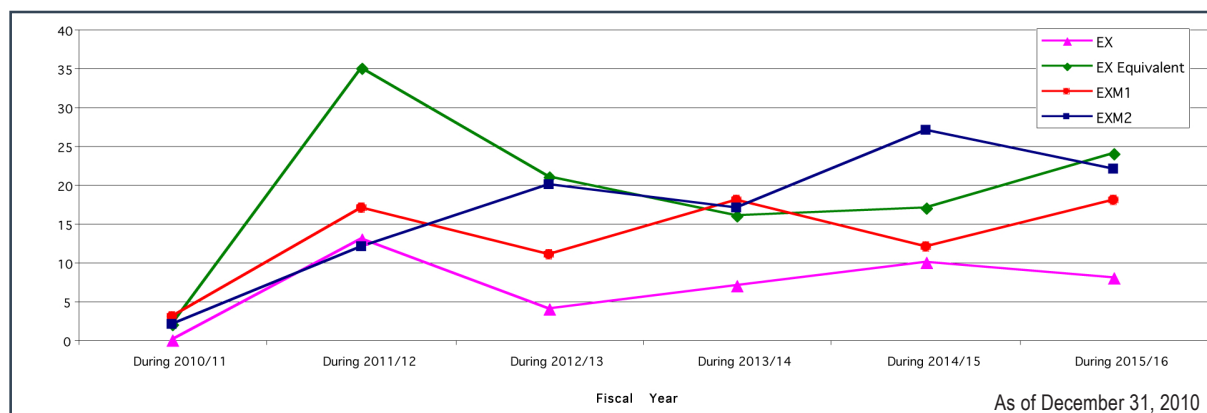


Furthermore, demands on the public service are growing, with higher expectations for accountability and efficiency. Increased responsibilities are being delegated to managers, creating a greater need for new management practices and skills. Analysis of sector information indicated that new managers require more training in the areas of people and financial management to effectively fulfill their responsibilities and deliver results.

Leadership Capacity

Although these demographic challenges are not unique to NRCan, they nevertheless require careful planning. With over 40 percent of executives eligible to retire over the

Chart 3: Retirement Eligibility over the Next Five Years – EX & EX Feeder Groups
(Includes indeterminate employees)



next five years and similar eligibility rates for feeder groups (i.e., 55% for EX Equivalents, 31% for EX minus 1s, and 27% for EX minus 2s), leadership development has been identified as a priority. We need to prepare future leaders to face the challenges of an evolving environment. Leadership development also provides employees at different levels with opportunities to take an active role in developing their potential and enriching their careers.

While NRCan currently has the diverse and highly-skilled workforce to deliver on its priorities, there are risks associated with increased retirement eligibility. Significant retirements could result in a loss of knowledge and expertise. Therefore, succession planning and management as well as knowledge transfer are increasingly important to help maintain capacity in program delivery. Within the next five years, the occupational groups that will have the highest retirement rates are: SERES, FO, SEREM, EX, EG, ENSUR, AS and CO.

Workplace Well-being

NRCan must effectively address key workplace issues in order to maintain the capacity of our talented and competent workforce. Renewing the workplace is a key element of NRCan's transformation initiative and sustaining success will be important to achieving our objectives. Creating a respectful work environment – founded on public service values, free of harassment and discrimination and respectful of linguistic duality – is fundamental to revitalizing our workplace.

Managers bring to life NRCan's corporate culture by exercising their leadership inside and outside the organization. As representatives of the Canadian Government, employees must demonstrate a strong sense of ethics and promote the values of the public sector. Also, as a complex organization with diverse stakeholders and broad interests, the department, like other complex organizations, encounters a range of ethical challenges and potential conflicts. Successfully navigating these challenges is essential if the department is to maintain the trust of its employees, partners and Canadians at large.

NRCan was one of 16 departments assessed by the Commissioner of Official Languages in his 2009-10 Annual Report. Realizing the vision of a bilingual public service continues to be a challenge. The NRCan Official Languages Report Card highlighted a lack of departmental awareness of its obligations and the absence of measures to meet legislative and policy requirements.

Finally, NRCan continues to address its EE gaps to reflect the Canadian cultural mosaic in the workplace. While measures are in place to address the quantitative gaps, further action is required to ensure a fair and diverse workplace where employees feel valued and have equal opportunity for career advancement.

NRCan's Strategies / Programs

To address the challenges and gaps identified above, actions will be taken to further support our commitment to excellence and investment in our people. Various

initiatives, linked to the HR Renewal Committee's work plan and other Champion files, will continue or will be developed and implemented across the department to meet these objectives.

1. *Developing and Managing our Talent*

Investment in our employees starts even before the very first day at work with the [Onboarding Program](#). The program is designed to guide managers and employees through the onboarding process and ensure the success of new recruits. The program will continue to evolve based on participants' comments.

As a knowledge-based organization, **learning and development** is not only key to further innovation but also to support employee career progression. In response to employees' feedback on the NRCan Employee Survey results, a departmental *Learning Strategy* is being developed to address elements such as required training

and equitable access to learning activities. This will also maximize our learning investments in times of fiscal uncertainty.

One factor in maximizing the contribution of employees is to clearly define work objectives and performance expectations. The proposed new **Performance Management Program for Employees** aims to simplify and increase the rigor of the current process. It clarifies the roles and responsibilities, links performance expectations to the cascading executive performance agreements and puts more emphasis on competency development.

Leadership development has also been identified as a priority given the high retirement eligibility rates for the EX and EX feeder group population. NRCan needs to prepare future leaders to face the challenges of an evolving environment. Leadership development also provides employees at different levels with opportunities to take an active role in developing their potential and enriching their careers.

Key Initiatives for 2011-2012 Developing and Managing Our Talent

Learning and development

- For NRCan's Learning Strategy, conduct research to identify best practices with an emphasis on e-learning to facilitate regional participation.
- Promote Learning Roadmaps to groups who could benefit from this tool. These roadmaps help managers and employees identify formal training and informal learning opportunities (e.g., coaching, mentoring, online learning). The objective is to facilitate competency development in the current position and as allow individuals to plan for their career development.

Performance management

- Finalize the performance management program and develop a new form to support the discussions and capture the performance expectations and identified learning.
- Provide information sessions and make online tools available. The [Key NRCan Competencies interactive web tool](#) is already accessible and provides a common frame for learning and performance.

Leadership development

- Expand the departmental *Executive Talent Management Program* to levels below the executives. Building on our success with the Visible Minority Talent Management Program (VMTMP), talent mapping* will be broadened to targeted non-executive groups. The approach will focus on ensuring that functional, PS Key Leadership and Key NRCan competencies are developed to strengthen the leadership culture needed to move forward.

*Talent mapping is a component of an employee development process. It situates individuals with respect to their learning and development needs.

2. Sustaining Capacity

Our people management strategies, programs and tools are designed to support managers in adapting to the evolving environment. The [Broad Banded Work Descriptions](#) is an inventory of pre-classified work descriptions that provides flexibility and effectiveness in classifying positions. Given that a large number of NRCan's programs are sunset funded, the department also takes a proactive, collective approach to developing and retaining current employees. Mechanisms such as the Departmental Priority Clearance System and the Workforce Adjustment Committee support employees with opportunities for continuous employment within the organization. Looking forward, we will continue to promote and use the tools and mechanisms that are in place.

Succession planning and management and knowledge transfer are increasingly important to help maintain capacity in program delivery. As people leave, there will be pressure for timely renewal of the workforce. Planning for recruitment, learning and development will facilitate the transition.

To address workforce gaps that cannot be met internally, NRCan hires close to 70 new recruits per year through coordinated and collaborative **recruitment** initiatives. Looking forward, priority will be given to following areas:

- Design and deliver targeted **recruitment** strategies that support business needs. Based on gaps in key functional areas outlined by NRCan sectors through the integrated planning exercise, the

Recruitment Task Team puts forward approaches including outreach to campuses and mid-career recruitment while continuing to promote a strategic use of existing mechanisms to bring in the needed and highly specialized talent. The approaches are also determined through alignment of departmental priorities, staffing plans and EE gap analysis.

- Continue to hire postsecondary **students**. While NRCan's average number of students bridged into the workforce remains low (roughly 20 per year) an emphasis will be placed on raising organizational awareness around student bridging (now an advertised process) and supporting hiring managers.
- Improve **process efficiency** by implementing initiatives that reduce delays in staffing. The risk-based approach to security clearance for example considerably reduced delays by enabling all potential employees to be appropriately screened prior to final employment offer and accessing NRCan facilities and IT systems.
- Take a **collective approach to staffing** to focus on strategic areas where a large number of hirings take place. Targeted recruitment efforts are required but common needs have been identified. Other than the yearly plan and calendar (see Figure 1), the approach includes a departmental policy, standardized process tools, project management support and a web-based pool management tool.

DID YOU KNOW

NRCan uses a variety of hiring mechanisms to build its capacity:

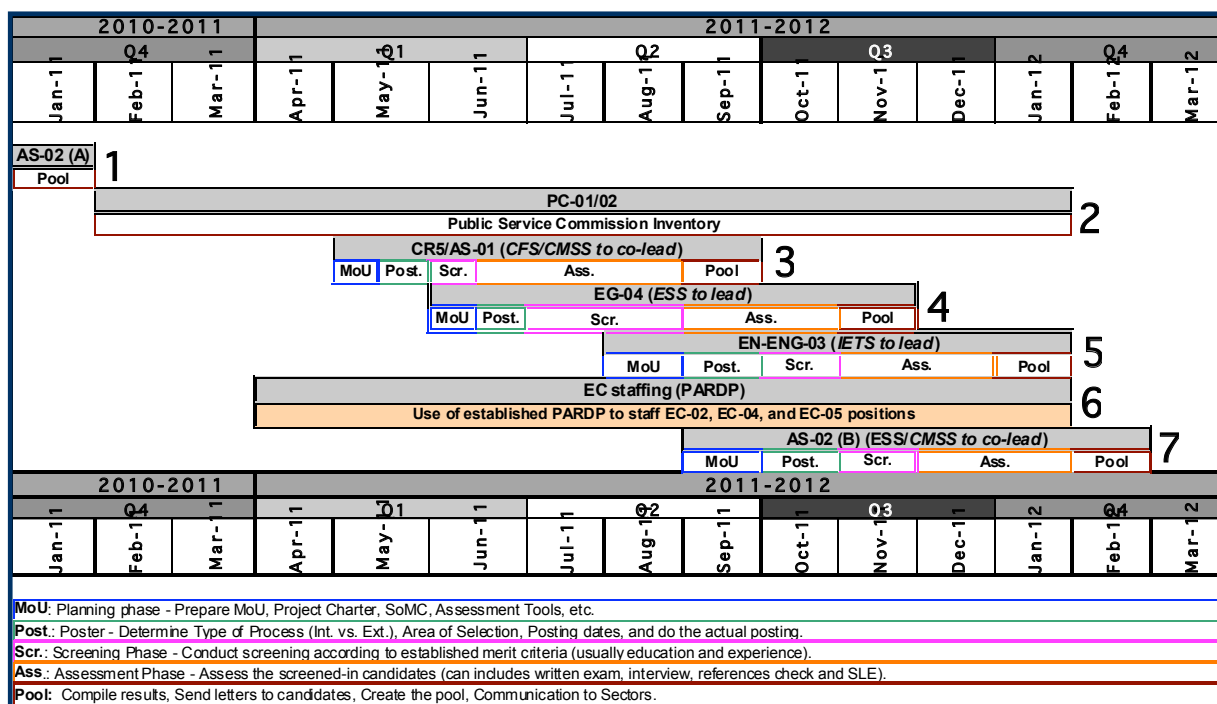
- The Public Service Commission's Career Stream Inventories will be promoted as effective mechanisms to bring in talent and address EE gaps.
- NRCan's Policy Analyst Recruitment and Development Program (PRDP) accounts for almost 24% of NRCan's EC population. The program recruits up to 15 Policy Analysts annually to support NRCan's policy capacity.
- NRCan is one of the highest users of Visiting Fellows Program with the hiring of over 60 fellows (promising scientists and engineers) a year.
- NRCan anticipates hiring up to five interns (entry-level and mid-career newcomers) per year through the Federal Internship for Newcomers Program let by Citizenship and Immigration Canada.



| Key Initiatives for 2011-2012 | |
|---|--|
| Sustaining capacity | |
| Succession planning and management | <ul style="list-style-type: none"> Adapt and implement the Succession Planning and Management Tool developed by the Office of the Chief Human Resources Officer (OCHRO) to ensure an integrated, systematic approach to identify, develop and retain talent for key positions and areas in line with current and projected business objectives. This will help with the identification of key positions below the executive level and map talent accordingly. Proactively manage anticipated vacancies in the executive cadre, the highest-risk group within the department. Collective staffing processes will offer career development opportunities to employees in feeder groups while ensuring the department has access to a diverse group of highly qualified individuals to draw from. Continue to make succession planning and management a commitment in EX performance agreements. |
| Strategic Recruitment and Staffing | |
| Targeted | <p>Based on existing indicators, efforts will target: women in RES, economists and policy analysts, entry-level scientists, students in geoscience, technicians in material related fields, building engineers, persons with disabilities and aboriginal students in forestry while enhancing our bilingual capacity.</p> <ul style="list-style-type: none"> At least 2 career fairs in institutions targeted based on business needs. Additional recruitment events could be organized based on specific needs (e.g., promotion of the PARDP, recruitment at scientific conferences). Job and student opportunities along with recruitment events will continue to be widely promoted through Social Media Networks (Facebook, Twitter and LinkedIn). |
| Students | <ul style="list-style-type: none"> Promote a more strategic use of student programs and bridging mechanisms. Based on previous years' student hiring trends, it is anticipated that NRCan will be hiring over 700 students per year from programs such as the <i>Federal Student Work Experience Program (FSWEP)</i>, the <i>Research Affiliate Program (RAP)</i>, and the <i>Post Secondary Co-op/Internship Program (Co-op)</i>. NRCan is also planning to hire up to five Interns per year through the <i>Progressive Internship Initiative (PII)</i>, an interdepartmental S&T initiative. |

| | |
|----------------------------|---|
| Process Efficiency | <p>Given that over 70% of staffing activities use simple administrative procedures (e.g., hiring casuals, students and deployments), technical solutions are being considered to automate and standardize processes and tools:</p> <ul style="list-style-type: none"> Further updates to the RES Career Progression Support System will be implemented before next year's promotion exercise. Electronic Personal Action Request (ePAR) will be launched in the Fall 2011. The on-line Statement of Merit Criteria (SoMC) builder tool is being revamped and should be available in the Fall 2011. |
| Collective Staffing | <p>Implement yearly Collective Staffing Calendars (<u>2011-12 Calendar</u>) and new NRCan Collective Staffing Policy and Guidelines. NRCan hiring managers will be required to appoint from the pools created following these departmental collective staffing processes unless otherwise stipulated in the Collective Staffing Policy. It is, therefore, anticipated that the number of unique processes for the identified classifications will be reduced by a minimum of 50% in the first year and that 75% of appointments to those identified classifications will be made from the departmental collective processes.</p> |

Figure 1: NRCan 2011-12 Collective Staffing Calendar



3. *Fostering Employee Engagement*

As part of NRCan's ongoing efforts to renew the workplace and enhance employee well-being, a proactive response to employee feedback captured through public service wide and department-specific surveys is a priority. In November 2010, the [NRCan Employee Survey](#) was launched.

This department-specific survey, with a participation rate of 61%, provided a voice for all employees on key workforce and workplace-related topics, such as employee engagement, collaboration and Public Service values.

Results revealed six areas that highlight strengths

and opportunities for improvements: participation, employee engagement, senior leadership and direction, workload and overtime, learning and development/ career opportunities, and harassment. Progress has been achieved since 2008, but scores with respect to learning and career opportunities remain unchanged. NRCan will continue to use various employee feedback mechanisms (i.e. Public Service and NRCan Employee Surveys, Employee Departure Program) to help gain a better understanding of the health of our organization, its strengths and opportunities for improvement.

DID YOU KNOW

Various actions have been put in place as a result of employee feedback, such as:

Harassment - Ongoing sessions and establishment of policies on values and ethics, harassment awareness, and violence in the workplace.

Workload and Overtime - Department-wide overtime and acting pay quarterly reminders and improvement of approaches to planning and resource allocation.

Senior Leadership and Direction - "Reinforcing NRCan's vision and direction" was identified as one of the primary objectives of on-going NRCan Renewal efforts, and senior managers are taking a leadership role in connecting with employees online and in person.

Career Opportunities & Learning and Development - Enhancing access and advancing significant talent management initiatives, such as the Key NRCan Competencies, the In-House Language School and talent mapping.



Key Initiatives for 2011-2012

Fostering Employee Engagement

Manage the 2010 NRCan Employee Survey Action Phase

Collect, analyze and report on sector action plans and communicate departmental actions to employees.

Promote 2011 Public Service Employee Survey

Promote the Public Service Employee Survey within NRCan and analyze results.

4. Promoting a Culture of Public Service Values

NRCan is committed to taking all the necessary measures to meet its official languages obligations and to ensure the equal status of English and French in the workplace. A 3-year **Official Languages Action Plan** entitled: *Beyond Obligations: Revitalizing Official Languages at NRCan* has been approved by the Executive Committee. Priorities identified in the plan include:

- Fostering a departmental culture that willingly, instinctively and proactively fulfils its responsibilities under the *Official Languages Act*.
- Improving communications with and services to the public to ensure a sustained bilingual capacity responsive to the needs of Canadians (bilingual services in bilingual regions), which fosters a bilingual work environment and enables the development of policies and programs that integrate the Official Language Minority Communities (OLMCs) in the consultation process.

The department continues to effectively adapt to an increasingly diverse Canadian population. Significant progress has been made in the past five years and NRCan's workforce is now representative in all four of the employment equity groups. The soon to be released 3-year **Employment Equity Action Plan** will focus on:

- Improving the accountability and governance structure for EE at NRCan.

- Facilitating the recruitment, career development and retention of designated groups with a special emphasis on women in S&T.
- Creating an organizational culture that promotes, values and integrates employment equity and diversity to provide employees with a workplace where they feel valued and have equal opportunity for career advancement.

Strengthening our **Values and Ethics** foundation is essential if the department is to maintain the trust of its employees, partners and Canadians at large. NRCan employees and managers will receive the tools and information they need to contribute to a values-based culture. In June 2010, the department launched an enhanced Values and Ethics (V&E) Program. The new V&E program includes a more rigorous approach to managing conflicts of interest.

Measuring and Monitoring Results

To ensure progress is achieved in addressing our various challenges and gaps, our central agency reporting requirements Management Accountability Framework (MAF), Departmental Staffing Accountability Report (DSAR) along with reporting to the Clerk of the Privy Council on progress achieved against PS Renewal priorities provide benchmarks and indicators for effective people management.

Key Initiatives for 2011-2012

Promoting a Culture of Public Service Values

| | |
|---------------------------|---|
| Official Languages | Implement first year of Official Languages Action Plan 2011-2014. |
| Employment Equity | Finalize and implement first year of Employment Equity Action Plan 2011-2014. |
| Values and Ethics | Develop organizational Code of Values and Ethics in line with a new Public Sector Code currently being developed by the Treasury Board Secretariat. |

ANNEX 4 – REAL PROPERTY AND ENVIRONMENTAL MANAGEMENT

Mandate: Real Property and Environmental Management Division (RPEMD) supports NRCan business objectives, by operating as a prudent, environmentally conscious steward of real property.

Our ability to successfully deliver on our strategic outcomes depends on the availability of the **“right people, with the right infrastructure and technology at the right time in the right location.”**

Managing our Real Property requires overcoming several challenges, principally:

- Aging infrastructure and building systems challenge our real property in supporting evolving science programs and technologies.
- Insufficient life cycle funding makes it difficult to sustain our portfolio for the medium and long term.
- Managing many diverse pieces of environmental legislation across the country and various levels of governments.

NRCan program delivery relies on essential office and laboratory space for its people and its partners. This annex provides information on:

- NRCan’s current real property portfolio: number of buildings the department owns, number of offices we occupy or that are co-located with our partners.
- NRCan’s main operational gaps: the constant needs to secure funding to operate, maintain and

recapitalize the aging real property portfolio and to control our operating costs against inflation.

- Strategies or programs we have put in place and those we are exploring to address these challenges.

While these strategies and programs are designed to address NRCan priorities, attention and considerations will also be given to the requirements and guidelines set by central agencies, such as the Treasury Board policy on the management of real property and the Policy on Investment Planning – Assets and Acquired Services; and the Federal Sustainable Development Strategy, (with the goal of achieving 17% GHG reduction by 2020).

NRCan’s Real Property Status

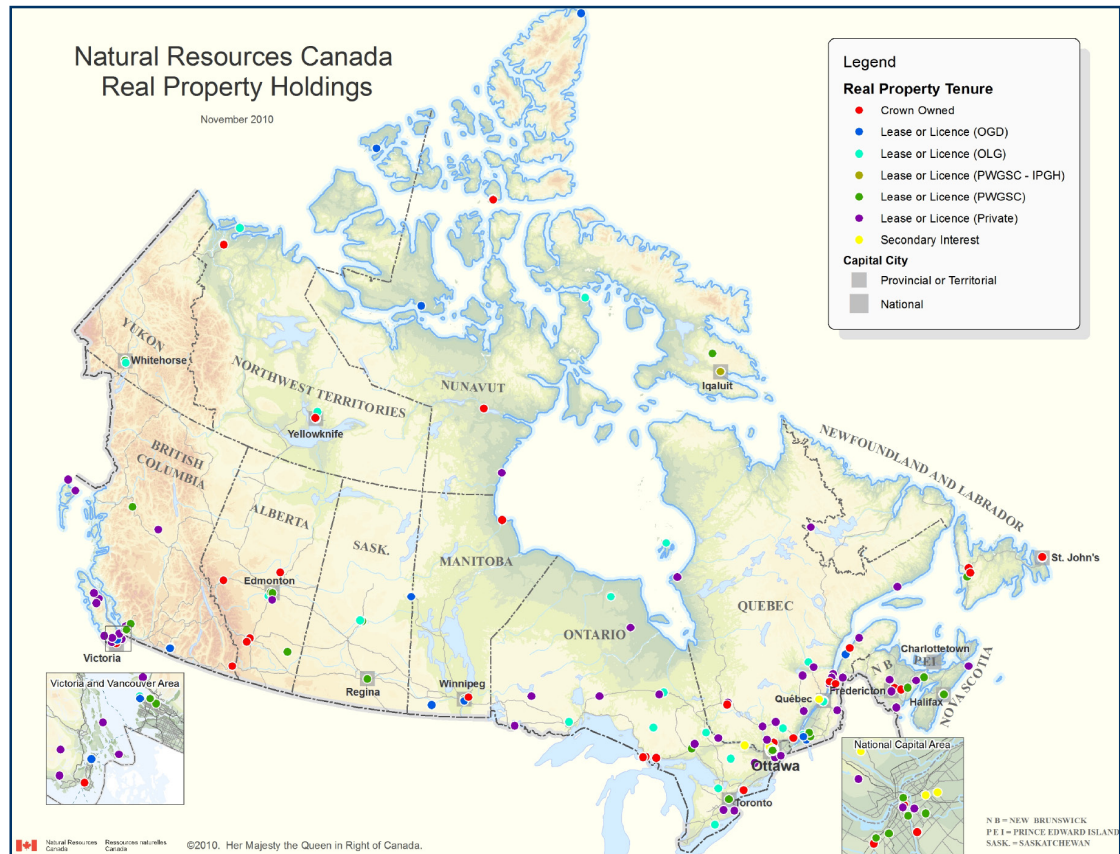
- NRCan owns 226 buildings across the country. The annual cost of operating and maintaining this inventory is \$35M.
- NRCan occupies 48 office facilities (including 580 and 588 Booth St.) in the Public Works and Government Services portfolio. This space represents 22% of the total NRCan real property portfolio, valued at \$17M/year.
- NRCan occupies 39 buildings owned or leased by other levels of government or third party partners (Devon Alberta, Hamilton Ontario, etc.).

OUR EXPERTISE, OUR SUCCESS

The \$48M Modernizing Federal Laboratory initiative was completed successfully in 2011 on time, on budget and within scope. It dealt with high priority deficiencies in seven major research facilities across the country as well as NRCan complexes in Ottawa ON and Resolute Nunavut.

The new CANMET laboratory in Hamilton Ontario, provides a fully funded, state-of-the-art research facility, in partnership with McMaster University and local industry, in a LEED Platinum environment.





What We Need to Move the Department Into the Future

NRCan needs to:

- Explore more partnership and innovative funding solutions (such as the new Materials Technology Laboratories facility in Hamilton, ON) to continue to modernize our facilities, dispose of old facilities and reduce the cost of ownership.
- Control building operating costs to manage inflationary pressures that are rising by approximately 10% annually.
- Establish a regular capital/repair investment budget necessary to maintain our buildings at their current condition, for the medium to long term.
- Continue the centralized management of real property through RPEMD to position the department to respond to centrally funded and managed initiatives; policy and legislative requirements; and departmental priorities.

- Further implementation and integrations of the Environmental management system into NRCan's daily operations.

NRCan's Strategies / Programs to Address These Gaps

Throughout the years, we have put in place:

- A **Real Property Management Framework** that sees real property as a departmental asset base, that supports departmental plans and priorities and recognizes RPEMD as the national owner/investor with the delegated authority for the development of real property strategies and executing all real property transactions.
- An annual **Building Management Plan** process that assesses the ongoing need and utility for assets, as well as the annual operating costs and necessary repair and capital investment, by building.

- A **Real Property Management Board** comprising Corporate Management and Science Sector DGs to assess the state of the portfolio, strategize on department-wide solutions and collectively recommend actions to senior management.
 - Two significant investment programs (Health and Safety \$9M and Accelerated Infrastructure Program \$48M) that have provided essential funding to address building deficiencies.
 - A two year \$15M remediation of the Booth Street and Tuktoyuktuk sites, which have removed the department's highest liabilities for contaminated sites.
 - A multi-year office Refresh program at 580 Booth, in partnership with Public Works and Government Services Canada, to provide a renewed work environment and save space.
- Moving forward, we will:*
- Complete a two year (\$48M) investment plan through the Economic Action Plan, to address our highest priority projects and improve our facility conditions.
 - Work with sectors to explore more P3 development models.
 - Dispose of surplus (to program) real property and make core buildings more energy efficient to control annual operating cost. In particular, dispose of surplus buildings on Booth St., following the relocation of MTL to Hamilton, ON. This will result in reducing NRCan's annual operating cost by approximately \$2M/year and reduce the risk to health and safety.
 - Continue to develop annual investment plans for our major facilities that assess and prioritize maintenance, repairs and capital projects. In particular, collaborate with sectors to conduct annual Building Management Plans for 90% of the owned inventory each year. This will assess the ongoing utility and need for the buildings and the costs of operating and managing them. It will also provide a prioritized investment plan for each asset and enable effective decision-making.
 - Continue to refresh office space according to government standards to improve work environments and save space.
 - Implement a multi-year energy retrofit program – the NRCan Low Carbon NRCan Initiative – to improve the efficiency of our buildings, lower operating costs and reduce our GHG emissions to over-achieve on our Federal Sustainability Development Strategy
 - Through the environmental audit program, work with sectors to ensure environmental compliance NRCan custodial facilities.
 - Maintain up-to-date and relevant environmental information and data for all NRCan operations and owned facilities in accordance with the Environmental Management System.

OUR EXPERTISE, OUR SUCCESS

The Real property Advisory Board provides the essential governance for real property strategies. The completion of the AIP has ensured that NRCan facilities are in “fair” condition, for the near term.

The MTL relocation project provides a model for NRCan future real property solutions.



ANNEX 5 – INFORMATION MANAGEMENT AND TECHNOLOGY AND PROJECT MANAGEMENT

Mandate: The delivery of efficient and effective Information Management and Technology (IMT) Services with the NRCan Project Management Office (NRCan-PMO) Services to support the mandate and programs delivered by NRCan. By using qualified resources, technology, methodology and disciplines IMB and SSO are able to deliver the required levels and performance of the various types of Information Management and Technology and NRCan-PMO services that are required by the department's programs. Information Management Branch (IMB) and the Shared Service Office (SSO) as the functional area responsible for these services ensure that the department is ready and able to adapt to changing business demands, NRCan and Government of Canada directions and industry best practices in the delivery of these important services.

We Ensure this Mandate Is Always Met by:

- Responding to changing demands for existing services or the introduction of new services within our fiscal environment.
- Delivering a secure and robust service delivery posture while still providing programs the ability to meet their outcomes.
- Ensuring effective governance and stewardship of departmental investment in IT are aligned with departmental priorities.
- Addressing increased IT security threats and providing effective mitigation.
- Managing the delivery of these services within a federated model.
- Managing information and knowledge in a digital world through the use of new and evolving tools and a culture that values information.
- Delivering library services based on a funding model developed in 2007-2008 and reduced by \$300,000 in 2009/10 to support the desired level of journal subscriptions, bibliographic databases and human resources.
- Working with the Government of Canada Assistant Deputy Minister Task Force on the Future of Federal Library Services to provide a comprehensive strategic direction for federal

OUR EXPERTISE, OUR SUCCESS

During 2010-11 we have:

- Consolidated 129 servers across the department.
- Introduced a Video Conferencing Service to help reduce travel expenses and encourage more collaboration.
- Enabled the Alternate Network Site as part of an enhanced Business Continuity capacity.
- Implemented a departmental Project Management Office.
- Implemented a Certification and Accreditation Program.
- Implemented the NRCan Policy on Information Management.
- NRCan Library has trained over 655 employees in 140 sessions on various bibliographic and collaborative tools.
- Journals and databases searched 122,752 times.
- GEOScan database searched 642,598 times by national and international clients.
- Provide weekly content for RADAR.



libraries, as well as with Library and Archives Canada on the methodology for record keeping and document disposition.

- Continuing to life-cycle the hardware and software to the level of available resources.
- Aligning our services and reporting to also support central agency requirements and the adoption of common or clustered services.

Within NRCan, Information Management and Technology, and NRCan-PMO services support the breadth of programs and administrative functions.

Typical services provided include:

- A robust, secure and professionally managed telecommunication network to 43 different sites.
- Governance and planning of current and future service requirements.
- Provision of IT security services to protect against cyber attacks.
- The provision of desktop platforms and knowledge worker applications.
- Information management and collaborative tools awareness, training and guidance.
- Records management services for paper records.
- Support of a suite of Web 2.0 collaborative tools.
- Delivery of various library services in person (14 locations) and virtually.
- Support of project managers to achieve better project outcomes.
- Application development and support services to provide business solutions.

The delivery of IMT and NRCan-PMO services while orientated to the support of NRCan programs and administrative requirements still must align and support Government of Canada directions and policies. In the past number of years, as part of the ongoing Treasury Board Secretary Policy renewal, new and enhanced policy instruments have come into force along with requirements

to use managed GC services. The new Policy on the Management of Information Technology and Information Management and its associated Directives and Standards, such as the Management of Information Technology Security Standard are requiring the department to review and as required adapt its services to be compliant with these policy instruments. This is also true with the new Policy on the Management of Projects, which will see NRCan reinforce its processes as to how it approves and monitors projects.

NRCan's Current Status

- Some consolidation of IT services previously delivered by sectors has taken place. New services have been introduced by the SSO-ITS on a fee for service basis so that line of business sectors can concentrate on their program activities rather than back-office functionality.
- In support of the NRCan IM Policy implementation, the department created dynamic Wiki pages with tips for managers and employees; produced an informational video; and held sixty awareness sessions. More than nine hundred received training, including regional participation via web conferencing, webcasts, etc.
- Approximately 1,200 NRCan employees are utilizing 70+ SharePoint sites.
- Knowledge Search has expanded functionality to include NRCan Discussion Forums, MPMO Internet, CFS Publications Database, Daily Compass, GCPedia, GConnex and GCForums.
- Work is in process on a partnership with Library and Archives Canada to build the Recordkeeping and Records Disposition tools for NRCan. This will accelerate our compliance with the Directive on Recordkeeping required by 2014. It will also provide the methodology and tools for application by the Government of Canada as a whole.
- The NRCan Library continues to be a leader in the transformation of its service delivery model to remain relevant to the new generation of NRCan employees.

NRCan's future directions:

- Further consolidation of common IT services and delivery of back-office services.
- Increased capacity to support remote communication and work.
- Adoption of Government of Canada common or clustered services.
- Better coordination of Line of Business specific IT services.
- Improved project outcomes through the use of standardized NRCan Project Management Framework and the implementation of departmental solution for project management information (using the PS module of the SAP implementation system recently implemented).
- More effective delivery of services within limited budget.
- Digital curation as part of the Recording Keeping Directive.

PRIORITIES MOVING FORWARD

- Complete and publish a service catalogue including key performance indicators.
- Investigate opportunities to cluster library services with other departments.
- Continue to provide fee for IT services to sectors so that they can concentrate on their program outcomes.
- Continue to evolve and deliver effective services to meet program demands.
- Continue to offer services through the NRCan-PMO to support improved project outcomes.

