

The regreening of Sudbury and the *2009 Biodiversity Action Plan for Greater Sudbury*



Vale Inco, one of the largest mining companies in the world, is a wholly owned subsidiary of the Brazilian mining company Vale. It is Vale's nickel division, headquartered in Toronto, Ontario. It produces nickel, copper, cobalt, platinum, palladium, rhodium, ruthenium, iridium, gold, and silver. Vale Inco operates in 40 countries and employs over 11,000 people worldwide (close to 7,000 employees in Canada). Sales in 2008 reached almost \$8 billion US. In Canada, Vale Inco operates two wholly integrated mining milling smelting and refining complexes, an electrocobalt refinery and precious metals processing facility and a mine and mill concentrator facility. Vale Inco has recently begun construction on an additional nickel processing facility and operate two research and technology facilities where 90% of worldwide research is carried out.

Vale Inco's perspective on biodiversity

The exploration, extraction and transformation of mineral resources can have ecological impacts that arise from opening up remote areas, facilities construction, operation and waste management and disposal. In addition to this footprint on the ground, biodiversity can also be impacted through atmospheric emissions and aqueous discharges.

Vale Inco has taken biodiversity into account at its Canadian operations for several decades through the planning, construction, operation and decommissioning of all projects and facilities. Its approach to environmental issues, as well as to health and safety, is based on the fundamental principle that it accepts responsibility and acts responsibly.

Most importantly, wherever Vale Inco operates, or plans to operate, it consults with local communities. The company has a long history of working with governments, organizations, local communities and Aboriginal groups.

Vale Inco is a signatory to the Mining Association of Canada's *Towards Sustainable Mining Initiative*, adheres to the International Standards Organization (ISO) 14001: 2004 Environmental Management System standard, follows the Mining Association of Canada's Environmental Management Framework and has adopted an integrated management system for safety, health and environmental issues (Vale Inco SHE Management System).

Vale Inco endorses the principle of sustainable development and regards environmental quality among its highest corporate priorities. The SHE Management System helps ensure that effective systems are in place to manage environmental issues and concerns associated with corporate operations. It verifies compliance with laws and regulations, conformance with corporate guidelines, operational policies, procedures and good management practices. An Audit Program provides a tool for advancing management systems and establishing priorities for ongoing improvement.

Vale Inco requires that SHE Policy be implemented worldwide by each Vale Inco employee. It is recognized that sustainable development includes commitments to health, safety and the environment through a balanced approach to economic, technical and social issues. Some commitments made by Vale Inco in the SHE Policy include:

- to assess, plan, construct, operate and decommission all projects and facilities in compliance with all applicable legislation;
- in the absence of legislation, to apply cost-effective best management practices to advance environmental protection;
- to maintain active and ongoing monitoring programs;
- to involve employees at all levels in programs directed towards the minimization of adverse effects on the environment;
- to employ appropriate environmental management systems;
- to foster research directed at expanding scientific knowledge;
- to engage with stakeholders in addressing applicable environmental concerns stemming from Vale Inco's operations;
- to review regularly company performance with respect to the environment.

Several biodiversity conservation initiatives that Vale Inco is currently involved with in Canada include:

- Partnership with the World Wildlife Fund;
- Funding research programs at Canadian universities and colleges;
- Partnership with the Sea Duck Joint Venture of the North American Waterfowl Management Plan to conduct scoter research in Labrador.

Increasingly, consumers are pursuing the path of environmental sustainability and are examining the practices and policies of their suppliers. Vale Inco accepts responsibility for the products it produces and has developed a strong product stewardship program. This program

provides customers with detailed information regarding products and the associated environmental risks related to these products.

Vale Inco is currently drafting Biodiversity Guidelines which will outline conservation actions in all countries where Vale Inco operates. The Guidelines will help to ensure that sound practices in mining and biodiversity protection are implemented at all stages in the life-cycle of its operations.

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Rationale

The City of Greater Sudbury has been a mining community since the late 1800s. The area is rich in nickel and copper deposits, both of which have uncommonly high sulfur content. Over the years, local ore smelting released high levels of sulfur and other minerals into the atmosphere where it combined with water vapour to form sulfuric acid, causing what is commonly known as acid rain. During the first half of the 20th century, Sudbury's landscape was devastated both by acid rain and by logging to provide fuel for early smelting operations. By the late 1960s, 84,000 hectares of land were either barren or semi-barren. Regreening the barren landscape and developing a more positive image for Sudbury has become one of the most critical challenges for the City of Greater Sudbury.

Description

In the late 1970s, the Regreening of Sudbury Program began as a partnership effort among Vale Inco, the City of Sudbury and other partners. Over the past 30 years, 3,300 hectares of land have been re-greened by applying lime, fertilizer and seeds. Over 9 million trees and shrubs have been planted. Vale Inco raised more than 3,000,000 seedlings at its own greenhouses. As a result, thousands of hectares of land affected by air emissions have been transformed into parkland, bird sanctuaries and wildlife habitat with stands of trees now established in key areas throughout Greater Sudbury. In addition, there have been numerous reports produced to help understand not only the extent of the environmental damage, but also the potential for restoration.

The Sudbury Soils Study, one of the most comprehensive studies of its kind ever completed in Canada, analyzed thousands of soil, air, water, vegetable, livestock and fish samples for the presence of specific "chemicals of concern" associated with mining operations. This study was overseen by a partnership that included Vale Inco, Xstrata Ni, the Ontario Ministry of the Environment, the Sudbury & District Health Unit, the City of Greater Sudbury and Health Canada's First Nations & Inuit

Health Branch. The data collected as part of these studies were used to help assess current and potential risks to humans and the environment and to monitor improvements.

In 2009, the *Sudbury Soils Study Ecological Risk Assessment* found that terrestrial plant communities in the Greater Sudbury area have been and continue to be impacted by mining operations, but are also impacted by other factors such as soil erosion, low nutrient levels, lack of soil organic matter and/or low pH. The study also states that it is unlikely that smelter emissions are exerting a significant direct toxic effect on wildlife populations in the Greater Sudbury area. However, historic impacts of smelter emissions on plant communities may currently be affecting habitat quality, and therefore may be having a continued influence on birds and mammals in the area.

Vale Inco, along with the City of Greater Sudbury and Xstrata Ni, responded to the results of the Ecological Risk Assessment with the development of the Ecological Risk Management Framework Report. The primary objective of this report is the development of a Biodiversity Action Plan.

Building on past regreening efforts and achievements, Vale Inco will work together with the City of Greater Sudbury and other partners to further improve biodiversity recovery. The long-term commitment begins with preparation of the *2009 Biodiversity Action Plan for Greater Sudbury* that defines the vision and priority goals for biodiversity recovery. The inclusive initiative will be based on the following guiding principles, including ecological, sociological and educational considerations:

- Build on past accomplishments.
- Ensure that the needs and aspirations of the Greater Sudbury community are considered.
- Develop and promote educational opportunities.
- Create stable soil conditions.
- Restore plant and animal species, communities and habitats to effective ecosystems.
- Develop resilience within ecosystems.
- Include monitoring and reporting processes.
- Ensure that the *Biodiversity Action Plan* remains a "living document."
- Ensure Greater Sudbury remains a world leader in land reclamation and biodiversity recovery.

The *Biodiversity Action Plan* will be developed as a cooperative and collaborative effort under the leadership of the City of Greater Sudbury's Environmental Planning Initiatives Section. Members of the community, university researchers, biodiversity stakeholder groups and funding partners will have the opportunity to participate and contribute through a series of public "Have Your Say Workshops",

surveys and stakeholder involvement sessions. Community input will help in defining environmental values and priorities that will be translated into a clear direction and actions within the Biodiversity Action Plan and the Annual Operations and Research Plans that will follow. These plans will be implemented through Annual Operations Plans that will include:

- setting of objectives and targets;
- community involvement and public education resources;
- funding sources;
- human resource needs;
- project synergies and linkages;
- plans for monitoring, reporting and review.

Participants of the community outreach program will be presented key questions to facilitate dialogue under the following headings:

- environmental values;
- environmental vision;
- engagement and communication;
- monitoring and measurement;
- public education.

To determine success of the various components of the program requires the development and implementation of comprehensive monitoring and measuring protocols. The plan will also include completion criteria that specifically identify an acceptable end point.

Vale Inco has issued a letter outlining its commitment to support Greater Sudbury on this initiative and has agreed to provide ongoing financial and technical support for biodiversity intervention activities, monitoring and research.

Communication and education

The Regreening Program and the 2009 Biodiversity Action Plan for Greater Sudbury have been community-based from the beginning. Public education has been a key strength associated with past land reclamation efforts conducted by the City of Greater Sudbury. Education will include working through the school systems as well as opportunities created for broader learning by the community. Community events such as guided field trips, public talks and hosting an annual biodiversity forum will be explored. A key priority has been to ensure that the general public has been encouraged to participate in and is to be kept well-informed of meetings and workshops and all resultant reports through stakeholder sessions and community consultations.

Community response

When all community input was collected and reviewed, the following top priorities were highlighted:

- Regreening;
- Wildlife habitat creation;
- Education of the public;
- A healthier environment for the next generation;
- Community involvement and participation;
- Science-based decision-making;
- Funding from the companies.

Stakeholders and roles

City of Greater Sudbury – Development of the Biodiversity Action Plan with the technical and financial help of both Vale Inco and Xstrata Ni.

Laurentian University – Provide technical and scientific expertise in the development and execution of the Biodiversity Action Plan.

► Late 1970's – Cambrian Heights, City of Greater Sudbury



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Xstrata Nickel – Along with Vale Inco, fund the initiative and participate in community consultations, technical and scientific discussion.

Ministry of the Environment – Review and support the content of the Biodiversity Action Plan.

Outcomes

Benefits

Economic

Since 1978, the City's Regreening Program has cost upwards of \$24 million plus funding Vale Inco has spent on its own programs. As a result of supporting this project, Vale Inco funds are leveraging additional funding which helps cut the long term costs of habitat restoration programs both on the ground and in needed research. By integrating reclamation strategies at the earliest stages of project development Vale Inco has found that it not only makes for a better project outcome, it is also a cost effective way to minimize negative impacts to biodiversity and the well-being of the community.

Biodiversity

The City of Greater Sudbury's biodiversity has greatly improved because of the regreening program and improved mining practices. Early studies found that the biggest impact of mining activities was on plant communities and by restoring these communities other forms of biodiversity, such as birds, mammals, insects and reptiles, will move into and take advantage of these restored ecosystems.

Lessons learned

When developing and implementing a program that is dependent on public input and buy in, a forum and information must be provided in a manner that creates trust and understanding.

- The scope of the project is must be clearly defined at the outset of the study.
- A public meeting format that is efficient and allows for individuals to ask questions in a pressure-free environment is critical.
- All communications and information provided to the public must be provided in a manner that is understandable to the general public but not belittle the audience.
- The public's input must be documented and proof provided that this input was incorporated into the study.
- All stakeholders, while maintaining their individual mandates, must base their input on the same comprehensive and accurate project information.

Impact on company

The *Biodiversity Action Plan for Greater Sudbury* will be a living document, evolving with the community, and with the landscape. The Plan sets the stage for further improving Greater Sudbury's landscape in a way that builds understanding, knowledge and stewardship in the community. These results complement Vale Inco's Sustainability Policies and help to encourage other Vale operations to implement similar initiatives.

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