



PROGRESS REPORT 2010 TOWARDS SUSTAINABLE MINING



WELCOME TO THE 2010 *TOWARDS SUSTAINABLE MINING PROGRESS REPORT.* WE HOPE YOU ENJOY THE NEW, MORE READABLE FORMAT. AS ALWAYS, YOU CAN FIND MORE DETAIL AT **WWW.MINING.CA**.

"It is clear that MAC's* efforts to work with the industry in advancing its sustainability performance and accountability are paying off in significant best practice." FIVE WINDS INTERNATIONAL AND STRANDBERG CONSULTING

"TSM^{**} provides a practical and tangible system of continuous improvement of social and environmental management." CANADIAN BUSINESS FOR SOCIAL RESPONSIBILITY

*MINING ASSOCIATION OF CANADA (MAC) **TOWARDS SUSTAINABLE MINING (TSM)

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President and Chair of the TSM Governance Team Message

TSM made great strides in 2009. One TSM protocol was updated, and two new protocols and a new policy framework were approved. These are the first additions we have made to the TSM reporting system since the initiative was announced in 2005.

The MAC Board of Directors approved a new policy framework and a new TSM protocol on safety and health. This protocol was developed in record time thanks to MAC members' expertise and commitment to the issues of employee, contractor and community health and safety. The new protocol fills a visible hole in the set of TSM performance indicators.

The existing external outreach protocol was reviewed and redrafted to better incorporate issues related to Aboriginal community outreach from the mining and Aboriginal peoples policy framework adopted by the MAC Board in 2008.

Finally, the Board approved a new TSM protocol on biodiversity conservation management, just in time to celebrate the International Year of Biodiversity in 2010. MAC members will begin implementing their plans for these new protocols, and public reporting and external verification of their results will be phased in beginning in 2012.

In 2009 MAC also began looking at TSM results over time. The analysis is still underway, and we will report the results to our stakeholders shortly.

We also took time to develop a communications and outreach plan for our TSM work. Now that we have "walked the walk," it is time to communicate more broadly. You will notice that this year's *TSM Progress Report* is much shorter than in the past. MAC is trying to make the report more reader-friendly, use less paper and pay more attention to our Web presence. This year's report is one step in that direction. But all of our results, facility by facility, company by company, are still available on our website and in printed formats on demand.

In 2010 we will continue our efforts on mine closure and will begin scoping a policy on water and mining. As always, we will work in partnership with all stakeholders as we continue on our path towards sustainable mining.

GORDON R. PEELING

PRESIDENT AND CEO, THE MINING ASSOCIATION OF CANADA

DOUG HORSWILL

SENIOR VICE PRESIDENT, TECK RESOURCES LIMITED, CHAIR OF THE TSM GOVERNANCE TEAM

TOWARDS SUSTAINABLE MINING

- IS ABOUT IMPROVING PERFORMANCE
- **IS MANDATORY FOR MAC MEMBERS**
- INCORPORATES EXTERNAL
 VERIFICATION OF RESULTS
- INVOLVES A MULTI-STAKEHOLDER COMMUNITY OF INTEREST PANEL

A JOURNEY TOWARDS SUSTAINABILITY

What Is Towards Sustainable Mining?

Towards Sustainable Mining is an initiative developed by The Mining Association of Canada to improve the industry's performance by aligning its actions with the priorities and values of Canadians. TSM provides a way of finding common ground with communities of interest in order to build a better mining industry, today and in the future.

TSM was developed to help mining companies evaluate the quality, comprehensiveness and robustness of their management systems under four performance elements, with appropriate indicators, scoring and external verification systems. MAC's Community of Interest Advisory Panel provides guidance and oversight to the entire process.

How Does TSM Work?

Participation in TSM is a condition of membership in MAC. It requires members to subscribe to a set of guiding principles that are backed by specific performance indicators against which member companies must report annually. These reported results are externally verified every three years.

TSM is spearheaded by the TSM Governance Team, a committee led by MAC's Board of Directors. Within each member company, TSM is supported by internal representatives called initiative leaders. Also, as part of the TSM initiative, MAC created the Community of Interest (COI) Advisory Panel. This multistakeholder group's mandates are to help MAC members and communities of interest improve the industry's performance, to foster dialogue between the industry and its communities of interest, and to help shape TSM goals.

THE TSM ARCHITECTURE



TSM Performance Indicators

TAILINGS MANAGEMENT	ENERGY USE AND GREENHOUSE GAS (GHG) EMISSIONS MANAGEMENT	EXTERNAL OUTREACH*
Tailings management policy and statement of commitments	Energy use and GHG emissions management systems	Community of interest (COI) identification
Tailings management system	Energy use and GHG emissions reporting sytems	Effective COI communications and dialogue
Senior accountability and responsibility	Energy intensity performance	COI response mechanism
Annual senior management review	GHG emissions intensity performance	Reporting
Operation, maintenance and surveillance (OMS) manual		

* External Outreach will be	replaced by Aborig	inal and Communit	y Outreach.

CRISIS MANAGEMENT PLANNING	BIODIVERSITY CONSERVATION MANAGEMENT*	SAFETY AND HEALTH*
Crisis management preparedness	Corporate biodiversity conservation policy acountability and communications	Policy, commitment and accountability
Review	Facility-level biodiversity conservation planning and implementation	Planning, implementation and operation
Training	Biodiversity conservation reporting	Training, behaviour and culture
Adherence to good practices		Monitoring and reporting
		Performance

* New indicator (not yet in use)

MAC'S GOAL IS FOR EACH FACILITY TO REACH LEVEL 3 (GOOD PERFORMANCE) FOR EACH INDICATOR.

TSM Performance Rating System

PERFORMANCE RATING

LEVEL | CRITERIA

1	No systems in place; activities tend to be reactive; procedures may exist but they are not integrated into policies and management systems.
2	Procedures exist but are not fully consistent or documented; systems/processes planned and being developed.
3	Systems/processes are developed and implemented.
4	Integration into management decisions and business functions.
5	Excellence and leadership.

MAC IS THE FIRST MINING ASSOCIATION IN THE WORLD TO HAVE EXTERNAL VERIFICATION OF ITS MEMBERS' PERFORMANCE.

TSM External Verification System

The TSM verification system consists of three components:

- Verification of company self-assessments by an external verifier every three years
- Letter of assurance from a CEO or authorized officer confirming the verified results
- Annual post-verification review of two or three member companies' performance by the COI Advisory Panel

MAC MEMBERS ARE READY TO MANAGE ANY CRISIS.

TSM 2009 Results



Approximately 70% of companies and facilities reported that thier crisis management plans are prepared, reviewed and tested through training.

MAC MEMBERS ARE ENGAGED WITH THEIR COMMUNITIES OF INTEREST.

Between 62 and 72 percent of facilities are now at Level 3 or better for each of the external outreach indicators. This performance represents a visible improvement over last years' results. More than 70 percent of MAC member facilities have a formal documented system in place for identifying communities of interest at the local and site level. They also have processes to receive and understand concerns or complaints from their communities of interest and to respond effectively.

EXTERNAL OUTREACH ASSESSMENT



NUMBER OF VERIFIED FACILITY-LEVEL ASSESSMENTS: 18

CLOSE TO 70% OF MAC MEMBERS HAVE ASSIGNED ACCOUNTABILITY FOR TAILINGS MANAGEMENT TO AN EXECUTIVE OEFICER.

Performance on tailings management has remained relatively constant since 2007. Two areas show a trend towards improvement.

There was a large increase in the percentage of facilities reaching Level 3 for Indicator 3 (assigned accountability and responsibility for tailings management). This shows that accountability for what is typically a mining facility's most significant environmental and safety risk rests with the highest management levels.

There was also steady progress on Indicator 5 (OMS manual). This means that facilities have developed and implemented a tailings OMS manual in conformance with global standards.

TAILINGS MANAGEMENT REPORTING ASSESSMENT



NUMBER OF VERIFIED FACILITY-LEVEL ASSESSMENTS: 18

MAC MEMBERS ARE WORKING TO IMPROVE THEIR ENERGY USE AND REDUCE THEIR GREENHOUSE GAS EMISSIONS.

While performance on energy use and GHG emissions management remains the weakest area on an aggregate basis, the number of facilities achieving Level 3 or better has increased since 2007 for five of the six indicators. Indicator 3, energy intensity performance targets, is the exception.

ENERGY USE AND GREENHOUSE GAS (GHG) EMISSIONS MANAGEMENT ASSESSMENT



NUMBER OF VERIFIED FACILITY-LEVEL ASSESSMENTS: 19



2009 TSM Award Winners

TSM awards are presented to facilities that score Level 3 or higher in each indicator for each performance element and that have had their TSM scores externally verified.

TAILINGS MANAGEMENT

HudBay Minerals Hudson Bay Mining and Smelting Shell Canada Energy Shell Muskeg River

ENERGY USE AND GHG EMISSIONS MANAGEMENT Iron Ore Company of Canada Labrador City Sept-Îles Teck Resources Trail Smelter

EXTERNAL OUTREACH

HudBay Minerals Hudson Bay Mining and Smelting Iron Ore Company of Canada Labrador City Sept-Îles Shell Canada Energy Shell Muskeg River Suncor Energy Oil Sands Facility Teck Resources Highland Valley Copper Trail Smelter Vale Inco Manitoba Operations



CRISIS MANAGEMENT PLANNING

HudBay Minerals Corporate Hudson Bay Mining and Smelting Iron Ore Company of Canada Sept-Îles **Teck Resources** Corporate **Duck Pond Operations** Teck Coal-Fording River Operations Trail Smelter Vale Inco Corporate Manitoba Operations Ontario Operations-Port Colborne Refinery Ontario Operations-Sudbury VINL Labrador Operations

MAC MEMBERS CELEBRATE SUCCESS.



Partnerships for Sustainability

The Mining Association of Canada has several important partnerships that support the work we do to improve the industry's performance.

Our scientific partners (MITHE-SN and MEND) focus on metals in the environment and their relationship to human health, and on acidic drainage and possible solutions to this ongoing challenge. MAC has spent years addressing the mining industry's legacy of orphaned and abandoned mines through the National Orphaned/ Abandoned Mines Initiative (NOAMI). We have also worked to reduce mining effluents and have supported environmental effects monitoring in aquatic systems. For years MAC has collaborated with other industry associations, as well as environmental and conservation groups, on environmental issues such as migratory bird conservation, implementation of the *Species at Risk Act*, the *Canadian Environmental Assessment Act* and the *Canadian Environmental Protection Act*.

We have also joined forces with social and development NGOs to ensure that mining provides positive social benefits both in Canada and abroad. Our other community partnerships with NGOs and Aboriginal peoples are key to maintaining our social licence to operate.

MAC MEMBERS WORK IN PARTNERSHIPS TO SOLVE ENVIRONMENTAL AND SOCIAL ISSUES FACING THE MINING INDUSTRY.

TSM COMMUNITY OF INTEREST ADVISORY PANEL MEMBERS

The TSM Community of Interest Advisory Panel provides MAC with input and perspective from outside the industry.

GORDON BALL SYNCRUDE CANADA LTD.

DAN BENOIT MÉTIS NATIONAL COUNCIL

MARINA BIASUTTI-BROWN NUNATSIAVUT DEPARTMENT OF LANDS AND NATURAL RESOURCES

RICHARD BRIGGS MINING COUNCIL, CANADIAN AUTO WORKERS

BARRIE FORD MAKIVIK CORPORATION

CRAIG FORD INMET MINING CORPORATION

GINGER GIBSON INDIVIDUAL MEMBER

JIM GOWANS DE BEERS CANADA INC.

LARRY HABER KIMBERLEY COMMUNITY DEVELOPMENT SOCIETY DOUG HORSWILL TECK RESOURCES LIMITED

BRENDA KELLEY BATHURST SUSTAINABLE DEVELOPMENT

STEPHEN KIBSEY CAISSE DE DÉPÔT ET PLACEMENT DU QUÉBEC

SOHA KNEEN INUIT TAPIRIIT KANATAMI

DAVID MACKENZIE UNITED STEELWORKERS OF CANADA

CHRISTY MARINIG TIMMINS ECONOMIC DEVELOPMENT CORPORATION

ALAN PENN CREE REGIONAL AUTHORITY

GORDON PEELING THE MINING ASSOCIATION OF CANADA

EIRA THOMAS STORNOWAY DIAMOND CORPORATION

ALAN YOUNG CANADIAN BOREAL INITIATIVE



Statement from the Community of Interest Advisory Panel

Tracking the TSM indicators One of the core functions of the Community of Interest (COI) Advisory Panel is to give MAC feedback regarding implementation of the Towards Sustainable Mining performance indicators and their reception and use by MAC member companies. This function is a major focus of the panel meetings, and it was supported in 2010 by reports on the results of the verification scheme, a form of audit instituted in 2008.

Reports from companies that have been subject to verification, and from the verifiers themselves on occasion, provide the panel membership with concrete, reasonably focused illustrations of the practical challenges companies face as they develop their own performance assessments. The panel appreciates this opportunity and thanks the companies that have participated in these discussions. It is appropriate to recall here that adherence to the TSM indicators is a condition of MAC membership, so this matter is treated seriously.

Current TSM indicators focus on crisis management planning, external outreach, tailings management, and energy use and greenhouse gas emissions management. It is relevant to emphasize that the TSM initiative relies on the principle of voluntary self-assessments (subject to the verification policy now implemented by MAC). The resulting graphs and diagrams in MAC reports reflect this practice and should be read as qualitative rather than quantitative assessments.

The panel sees a general trend towards increasing comfort with the indicators on the part of member companies. This trend is reflected in higher and relatively stable overall scores. On the other hand, it needs to be taken into account that some companies take a more self-critical approach, which may be reflected in lower rather than higher scores, or simply in a plateau. Overall, the nature of both the indicators and the scoring system makes it difficult for the panel to interpret the scores; supplementary information on individual companies' experience remains an important aspect of the panel's perspective on the TSM indicators.

The panel is aware of this challenge. It will therefore remain important to be able to draw on supporting documentation from companies that explains, in practical and accessible language, the challenges that come from the various issues that arise in applying the TSM indicators.

The panel is also aware, in general terms, of the considerable diversity in the Canadian minerals sector. This is evidently a factor in the development of community outreach indicators as well as the initiatives to include energy management in the TSM indicators. The panel will need to understand the nature of these issues.

Moving towards additional indicators

MAC is seeking ways to develop performance standards or objectives concerning relationships with Aboriginal communities, health and safety issues, biodiversity-related objectives and mine closure. The panel has participated in discussions on these subjects and wishes to remain engaged as MAC pursues these initiatives. The panel, however, notes the complexity of the issues involved. In all four areas, the subject matter tends to be specific to the geographical location of the individual project, the social and cultural context, the ecological setting of the mine operations and the nature of the mining and milling operations themselves. Nevertheless, the panel believes that MAC should continue to work on these areas. The panel is ready to provide constructive support and advice, drawing on the experience of its members and, where necessary, seeking expertise from outside the panel.

Panel members have also shown a strong interest in exploring the international implications and possible applications of TSM. This interest has been sparked by presentations made to the panel and by the strong global presence of Canadian mining firms.

For a full version of this statement, including panel comments on mining issues that go beyond TSM, please see the MAC website (**www.mining.ca**).

For more information on MAC partnerships, company releases to the environment and specific TSM results for each company, please visit:

WWW.MINING.CA











Why Mining Matters

It's hard to imagine life without metals and minerals. What if there was no steel, concrete or glass for buildings? No planes, trains, cars or bikes? No iPods, computers, video games or cellphones? Mining is responsible for many of the things we see, touch and use every day.

Benefits for Canadians

Mining has been an important part of Canada's economy since before our nation was born. From the Aboriginal and European explorers who mapped the location of minerals in the 1600s, to the geologists who discovered diamonds here in the 1990s, Canada has become one of the top mining countries in the world. Today over 350,000 Canadians work in mining—that's about 1 out of every 100 people. There are more than 800 mines and smelters [facilities that produce metals from ores] spread across the country.

Corporate Social Responsibility

Canadians expect the mining industry to operate in a way that respects our environment and our society. By its very nature, mining disturbs land, air and water systems to some degree. The challenge for mining companies is to find, extract and process metals and minerals while disrupting these systems as little as possible.

Federal and provincial laws spell out how an environmentally acceptable mine may start up and operate. But mining companies want their operations to do more than just follow the letter of the law. They want the public to support their operations; they want to earn what's called a "social licence" to operate. For that reason, mining companies work closely with communities to show that their operations are socially responsible. The act of making sure that a company's operations match up with society's social, environmental and financial expectations is called "corporate social responsibility."

The Government of Canada defines corporate social responsibility as the act of building social, environmental and economic concerns into a company's values and operations in a transparent and accountable manner.

Towards Sustainable Mining (TSM) During the 1990s, the Canadian mining industry decided that it should have a more formal system for making sure its operations meet communities' changing priorities. From 1998 to 2002, the Mining Association of Canada (MAC) did research and met with community leaders across the country to find out what Canadian communities expect from mining operations, socially and environmentally.

Out of that research and those meetings came the Towards Sustainable Mining (TSM) initiative.

TSM: How It Works

In 1987 the Brundtland Commission, a group created by the United Nations out of concern for the world's environmental problems, defined the term sustainable development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

First of all, TSM gives Canadian mining companies a set of guiding principles to follow. These principles include a commitment to sustainable development.



Then, to show that they're living up to their commitments, companies measure themselves against a series of community expectations, called "performance elements" (see the table below). These measurements show companies whether they have strong enough management systems in place to deal with their social and environmental performance.

A management system is a written plan that explains how a company will respond to a specific problem or issue, such as reducing energy use.

For each TSM performance element, companies receive a score. The scores range from meeting community expectations (Levels 1, 2 and 3) to exceeding them (Levels 4 and 5). Every year, each company's individual scores are published in the *Towards Sustainable Mining Progress Report* (you can get a copy at www.mining.ca).

What Canadians expect from the mining industry is bound to change over time. To make sure that the TSM performance elements keep pace with public expectations, a group of leaders from the industry and from communities has been set up to manage TSM. The Community of Interest Advisory Panel, as it's called, meets twice a year to review company performances and check that the performance elements still reflect what's important to communities. (For a list of Advisory Panel members, please visit www.mining.ca.)

Beyond TSM

Besides TSM, Canadian mining companies follow many other voluntary standards and frameworks as part of their corporate social responsibility. The table below lists some of the popular ones.

- **Extractive Industries Transparency Initiative**
- Global Reporting Initiative
- ICMM (International Council on Mining and Metals)
 Sustainable Development Framework
- IFC (International Finance Corporation) Performance Standards on Social and Environmental Sustainability
- ISO (International Organization for Standardization)
 Standard 26000
- OECD (Organisation for Economic Co-operation and Development) Guidelines for Multinational Enterprises
- PDAC (Prospectors and Developers Association of Canada) e3 Plus
- United Nations Global Compact
- Voluntary Principles on Security and Human Rights

TSM performance element	Measures a company's management systems for:
Tailings Management	Dealing with tailings, the materials left over after valuable minerals and metals have been separated from ore
Energy Use and Greenhouse Gas Emissions Management	Using less energy and releasing less greenhouse gas
Aboriginal and Community Outreach	Maintaining dialogue with the communities near the company's operations
Crisis Management Planning	Being prepared, throughout the company, for emergencies
Biodiversity Conservation Management	Conserving wildlife
Safety and Health	Protecting the safety and health of the company's workers, contractors and visitors







The panel currently has 20 members, including six ex officio industry representatives whose interests cover gold, diamonds, zinc and copper production, and hydrocarbon production from oil sands. The remaining members are drawn from a range of backgrounds, including community organizations that deal with active and past mining operations, the labour movement, the financial sector, national Aboriginal organizations (First Nations, Inuit and Metis) as well as individuals who work with Aboriginal communities involved in mining and related environmental activities.

Tracking the TSM Indicators

One of the core functions of the COI Advisory Panel is to give MAC feedback regarding implementation of the Towards Sustainable Mining performance indicators and their reception and use by MAC member companies. This function is a major focus of the panel meetings, and it was supported in 2010 by reports on the results of the verification scheme, a form of audit instituted in 2008.

Reports from companies that have been subject to verification, and from the verifiers themselves on occasion, provide the panel membership with concrete, reasonably focused illustrations of the practical challenges companies face as they develop their own performance assessments. The panel appreciates this opportunity and thanks the companies that have participated in these discussions. It is appropriate to recall here that adherence to the TSM indicators is a condition of MAC membership, so this matter is treated seriously.

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energy use and greenhouse gas emissions management. It is relevant to emphasize that the TSM initiative relies on the principle of voluntary self-assessments (subject to the verification policy now implemented by MAC). The resulting graphs and diagrams in MAC reports reflect this practice and should be read as qualitative rather than quantitative assessments.

The panel sees a general trend towards increasing comfort with the indicators on the part of member companies. This trend is reflected in higher and relatively stable overall scores. On the other hand, it needs to be taken into account that some companies take a more self-critical approach, which may be reflected in lower rather than higher scores, or simply in a plateau. Overall, the nature of both the indicators and the scoring system makes it difficult for the panel to interpret the scores; supplementary information on individual companies' experience remains an important aspect of the panel's perspective on the TSM indicators.

The panel is aware of this challenge. It will therefore remain important to be able to draw on supporting documentation from companies that explains, in practical and accessible language, the challenges that come from the various issues that arise in applying the TSM indicators. The issues identified below under "Beyond TSM" are also relevant to this broader objective.

The panel is also aware, in general terms, of the considerable diversity in the Canadian minerals sector. This is evidently a factor in the development of community outreach indicators as well as the initiatives to include energy management in the TSM indicators. The panel will need to understand the nature of these issues.

Moving Towards Additional Indicators

MAC is seeking ways to develop performance standards or objectives concerning relationships with Aboriginal communities, health and safety issues, biodiversityrelated objectives and mine closure. The panel has participated in discussions on these subjects and wishes to remain engaged as MAC pursues these initiatives.





The panel, however, notes the complexity of the issues involved. In all four areas, the subject matter tends to be specific to the geographical location of the individual project, the social and cultural context, the ecological setting of the mine operations and the nature of the mining and milling operations themselves. Nevertheless, the panel believes that MAC should continue to work on these areas. The panel is ready to provide constructive support and advice, drawing on the experience of its members and, where necessary, seeking expertise from outside the panel.

Panel members have also shown a strong interest in exploring the international implications and possible applications of TSM. This interest has been sparked by presentations made to the panel and by the strong global presence of Canadian mining firms.

Beyond TSM:

Other Issues the Panel May Pursue In its relationship with MAC, the COI Advisory Panel has a role to play that goes beyond the TSM indicators. It is appropriate to comment briefly on a number of topics that members believe could usefully be explored outside the current TSM framework.

The first point involves the complex and evolving regulatory regimes to which mining in Canada is subject, including environmental and social impact assessment. Both the mining industry and the communities it works with, including Aboriginal communities, are affected in a variety of ways by the regulatory environment surrounding mining in Canada. This broad topic has already emerged on the agenda of panel meetings, and a growing number of issues merit the panel's attention, ranging from monitoring the environmental effects of mine effluent, to reporting to government authorities on the residues from mining operations, to the scope and purpose of environmental and social impact assessment. To this list can be added the concept of impact benefit agreements, which is playing a significant role in shaping company relationships with Aboriginal communities.

In varying ways, all of these external factors have a bearing on the context for developing and interpreting TSM indicators. The external policy and regulatory setting, in other words, is a significant factor in the implementation of TSM and needs to be taken into consideration.

A number of new and planned mining operations will need to deal with the subject of consultation with Aboriginal communities, a surprisingly complex legal matter whose meaning varies among jurisdictions. MAC and the COI Advisory Panel may be able to provide a service to the industry by clarifying the legal requirements to consult, and by helping with their practical definition in different jurisdictions.

In the area of planning for mine closure, beyond the environmental issues involved lies a range of social and economic issues, as the communities that developed during mining operations struggle to maintain their viability once mining has ceased. At the same time, many mines in remote northern locations will rely on "fly-in, fly-out" arrangements, which have their own social consequences for the parent communities that serve as labour sources for these mines. These social and demographic issues are relevant to Aboriginal and non-Aboriginal communities alike. They are relevant as well to gender-related issues, another topic that has not yet been tackled by the panel.

These are examples of subjects that the COI Advisory Panel may be able to address in coming years.

In conclusion, the panel wishes to encourage MAC and its member companies to pursue the TSM initiative at Canadian operations and to actively promote the TSM approach in activities beyond Canada's boundaries. In saying this, we also keep in mind what we have said in this note about the importance of an adaptive approach, one that is open to new ideas and themes, and that encourages transparency and accessibility.







Members of the Mining Association of Canada (MAC) continue to reduce the substances that their operations release to the air and water, and to improve their environmental performance through the use of new technologies, better controls and more sophisticated monitoring techniques.

The following graphs show members' releases to air and water in 2008 against the base year for eight substances. While release levels may vary from year to year, influenced by factors such as changing production levels, the trend is still towards meaningful reduction in the releases of these substances.

MAC members continue to be involved in community risk assessment—multi-stakeholder processes designed both to determine how releases from past operations affect human health and the environment—and to develop mitigation strategies. At the same time, MAC is a major sponsor of the Metals in the Human Environment Strategic Network (MITHE-SN), which examines the connection between metals in the environment and the potential for adverse effects on humans.

For more information on members' releases of these substances, *Metal Mining Effluent Regulations*, environmental effects monitoring, and to view our "Greenhouse Gas Progress Report," please visit our website at: www.mining.ca.

Reductions Achieved to 2008

Arsenic	69%	Lead	74%
Cadmium	85%	Mercury	91%
Copper	68%	Nickel	84%
Hydrogen Sulphide*	-75%	Zinc	88%

* There has been a change in the way H₂S emissions are calculated, resulting in a notable increase in the reported value of these substances now that speciated data has become available. **Cutting Sulphur Dioxide Releases** MAC members are committed to reducing releases of sulphur dioxide (SO₂). Sulphur dioxide is a precursor of acid rain. High SO₂ levels also contribute to breathing problems and increase difficulty for people with respiratory and cardiovascular diseases.

Reductions in SO₂ typically come about gradually, on a year-to-year basis, through better process controls. This year MAC members are reporting a 28.6 percent decrease in the release of SO₂ over the last 10 years, and an 8.6 percent decrease between 2007 and 2008. More detailed release data can also be found at www.mining.ca.

Sulphur Dioxide Releases 1988–2008 from MAC Members









CADMIUM

Releases to air and water (combined total)



HYDROGEN SULPHIDE Releases to air

(no releases to water)



MERCURY

Releases to air and wate (combined total)



ZINC Releases to air and water (combined total)









Since the inception of the Towards Sustainable Mining initiative in 2004, representatives from Canada's First Nations, Inuit and Metis communities have participated in the TSM Community of Interest Advisory Panel. The Mining Association of Canada (MAC) and its members have benefited from their advice and knowledge.

In March 2009, after a year of dialogue, MAC signed a Memorandum of Understanding with the Assembly of First Nations (AFN). In the lead-up to the signing, MAC worked closely with the AFN to define four pillars of commitment—partnership, investment, procurement and employment—areas in which MAC members have demonstrated an ability to contribute to the advancement of Aboriginal communities. Since then the AFN, under new National Chief Shawn Atleo, has expressed willingness to move forward on an action plan in accordance with the MOU commitments.

During 2009 MAC was involved with Aboriginal organizations in other areas.

Canadian Aboriginal Minerals Association (CAMA)

MAC participated in the 17th annual CAMA conference in November 2009, the theme of which was "Commodities, Communities and Certainty." Along with diamond company representatives, MAC took part in a panel presentation on skills training and development, with a focus on the Aboriginal mining workforce in the NWT.

Aboriginal-Industry Mining Forum

MAC's work to create an Aboriginal-Industry Mining Forum in the NWT culminated in 2009 with the launch of the body. The forum, which has financial support from Indian and Northern Affairs Canada, MAC members and Prospectors and Developers Association of Canada (PDAC), met twice during the year: on January 15 in Yellowknife and on June 10 in Dettah. The NWT and Nunavut Chamber of Mines and PDAC also participated.

At the meetings Aboriginal leaders acknowledged industry's contributions and their willingness to meet industry halfway, but emphasized that their communities want more meaningful input into decisions on how mining proceeds locally. They highlighted the importance of training and employment opportunities for youth, as well as community opportunities to engage in business development.

The NWT and Nunavut Chamber of Mines offered to take the lead in developing similar initiatives. It was also agreed that the federal government has a role to play in the forum, particularly through the new Canadian Northern Economic Development Agency (CanNor), launched in 2009 to promote economic development in the three territories.





The Mining Association of Canada's (MAC) work on biodiversity has been ongoing for well over a decade. MAC has participated in the North American Bird Conservation Initiative and the North American Waterfowl Management Plan. Working with nature conservation groups, MAC has helped develop solutions for proposed national park boundaries and for studying the impacts of mining on protected areas.

MAC was involved in the very early days of the federal *Species at Risk Act* and cooperated with environmental groups and other industry associations to provide the federal government with concrete solutions on this issue.

In 2009 MAC continued its role in the multi-stakeholder advisory committee helping with implementation of the *Species at Risk Act*. Industry associations chose MAC to represent them on a working group that is advising Environment Canada on the development of a recovery strategy for boreal caribou. The group, which met for the first time in September 2009, represents industry associations and environmental NGOs. Its purpose is to provide a link with industrial facilities and civil society groups as Environment Canada proceeds with cross-country consultations on the recovery strategy.

MAC also worked with industry associations and environmental groups to develop joint recommendations for the federal standing committee conducting the five-year review of the *Species at Risk Act*. In addition, MAC continued to participate in the North American Bird Conservation Initiative in 2009 and took part in consultations on the development of new regulations for the *Migratory Birds Convention Act*. Finally, in 2009 MAC's biodiversity task force completed the new biodiversity performance indicators for the TSM initiative. The indicators were field tested in the summer of 2009, followed by a lessons-learned workshop in the fall. The revised protocol was reviewed by the MAC Science Committee, the TSM initiative leaders and the TSM Governance Team, and was approved by the MAC Board of Directors in November 2009.





For a number of years, the Mining Association of Canada (MAC) has been working with others to find solutions to the legacy of orphaned and abandoned mines in Canada, including the associated liabilities, human health concerns and clean-up costs. MAC participates in the National Orphaned/ Abandoned Mines Initiative (NOAMI), launched in 2002 at the request of mines ministers. NOAMI is jointly funded by MAC, **Prospectors and Developers Association** of Canada (PDAC) and several federal. provincial and territorial government departments. It is administered by a small secretariat at CANMET, part of Natural **Resources Canada.**

NOAMI's work is guided by an advisory committee representing industry, government, and Aboriginal and environmental groups. The advisory committee has produced reports on barriers to collaboration, funding models, a system of classifying abandoned sites, a pamphlet on community participation in site rehabilitation, an action framework to guide future remediation and a website.

NOAMI's 2002–2008 Performance Report NOAMI produced a performance report documenting the initiative's activities and achievements in its first six years of operation, from 2002 to 2008. The report, available in both official languages, focuses on the current state of orphaned and abandoned mines in Canada, NOAMI's achievements and those of jurisdictions active in NOAMI, future challenges and opportunities in Canada, and NOAMI's future.

The report highlighted progress in the following areas:

- development of a web-based working model of a national inventory of orphaned and abandoned mines in co-operation with the jurisdictions
- information for regulatory improvement including a Toolkit of Funding Options for potential use by jurisdictions for abandoned mine rehabilitation, and a jurisdictional review that identifies existing legislation and policies relevant to orphaned/ abandoned mines
- multi-stakeholder information sharing via four workshops, NOAMI Newsletters and the website
 a series of legal-based publications of funding
- approaches and barriers to collaboration that evaluate funding and legislative policies
- capacity-building for communities through a pamphlet on the guiding principles of community involvement, and a description of community case studies underpinned by lessons learned

Proceedings of Risk Assessment Workshop In November 2008 NOAMI hosted a multi-stakeholder workshop (reported on last year) to explore different perspectives on risk assessment. About 100 people attended from Aboriginal groups, NGOs, academia, the mining industry, consulting firms and federal, provincial and territorial governments. Workshop proceedings and presentations are now available on CD-ROM and as a report on the NOAMI website.

Community Capacity-Building Toolkit

NOAMI has developed a capacity-building toolkit to help communities participate in decision making related to orphaned and abandoned mines. The toolkit gives communities a better understanding of the socio-economic and environmental issues, community engagement and government processes associated with this topic. The next phase of the project involves evaluating the toolkit's resource material to determine how to develop a guidebook for local communities.



National Inventory

One of NOAMI's early tasks was to gather information for a national inventory of active, closed and orphaned/abandoned mines. The inventory, based on compatible inventories in each province and territory, will cover all inactive mineral sites. It will include a system for categorization and priority ranking, as well as agreed-upon definitions and terminology for orphaned and abandoned sites. The inventory is to be a web-based portal to existing inventories, with an easy-to-use map interface.

NOAMI is committed to completing the inventory within a year. Once finished, the site will need jurisdictional approval before going live.

Toolkit of Legislative Approaches

NOAMI continues to work on the toolkit of legislative approaches that will help Canadian jurisdictions develop policies and legislation for orphaned and abandoned mines. The toolkit will be based on the Report on the Legislative, Regulatory, and Policy Framework Respecting Collaboration, Liability, and Funding Measures in Relation to Orphaned/Abandoned, Contaminated, and Operating Mines in Canada (2007).

Prevention of New Orphaned/ Abandoned Mines

The NOAMI Advisory Committee has begun to examine the main components of mine closure and the transfer of mining lands back to government through issuance of a release such as an exit ticket. Many mining sites, after planned closure, will be left with engineered structures (e.g., tailings dams, waste dumps with covers, engineered stream channels) that will require long-term monitoring and maintenance, possibly in perpetuity. This responsibility represents a long-term liability. More clarity and certainty of process is needed regarding the responsibilities of the operator and of government regulatory agencies.

Communication and Links

During 2009 links between NOAMI and other initiatives were identified and strengthened. Here are some highlights:

- The newsletter NOAMI Nugget was redesigned and issued in October 2009. There will be at least two editions a year.
- The NOAMI secretariat is compiling a list of international initiatives that deal with orphaned and abandoned mines.
- NOAMI will develop links to various Government of Canada groups, such as the Social License Task Group (established by the Intergovernmental Working Group on Minerals and Metals), the Green Mining Initiative and the Canadian Mining Innovation Council.

For more information on NOAMI, visit www.abandoned-mines.org.







Metal Mining Effluent Regulations (MMER) The Metal Mining Effluent Regulations (MMER), promulgated under the federal Fisheries Act, came into force in 2002 and apply to about 100 metal mines in Canada. The regulations impose effluent discharge limits for cyanide, arsenic, copper, lead, zinc, nickel and radium-226. They also prohibit the discharge of effluent that is acutely lethal to fish (rainbow trout). The maximum monthly mean concentration of total suspended solids has been set at 15 mg/L, and the pH range at 6.0 to 9.5.

MAC's Position on the Deposition of Tailings in Natural Bodies of Water

Since well before the existing *MMER* were promulgated in 2002, the Mining Association of Canada (MAC) has taken the position that the judicious deposition of tailings in natural bodies of water is sometimes the best practice. Decades of scientific research by governments, the mining industry and academia suggest that on a site-specific basis, subaqueous disposal in lakes—if properly evaluated, implemented and compensated for—can be a safe, environmentally sound and permanent disposal option. In such cases, the main benefit of using water covers is to ensure that the tailings are constantly saturated and safely contained, which creates fewer contaminants and minimizes their migration to the environment.

This option is approached only with serious consideration of its environmental, economic and social implications and as part of an examination of all possible alternatives. MAC continues to work with its communities of interest—which include the federal, provincial and territorial governments; environmental groups; Aboriginal groups; and society at large—to develop a regulatory process that is clear, practical and transparent, while maintaining the highest environmental standards. Environmental Effects Monitoring (EEM) The MMER require metal mines to conduct environmental effects monitoring (EEM) to evaluate the effects of mine effluent on fish, fish habitat and the usability of fisheries resources.

The EEM program consists of two parts. Part 1 involves studies on effluent characterization, water quality monitoring and sublethal toxicity testing. Part 1 studies, which are used as supporting information to help interpret biological data, must be reported on annually by March 31. Part 2 focuses on biological monitoring, including fish surveys, benthic invertebrate community surveys (to assess impacts on fish habitat) and surveys of mercury tissue levels in fish (to assess impacts on the usability of fisheries resources). The first phase of the biological monitoring was completed in June 2006.

Environment Canada's national assessment of the results of phase one of EEM has also been completed. The assessment includes a preliminary study of biological data, namely the key response patterns and distribution of effects for effluentexposed fish and benthic invertebrates.

The initial findings for the 2nd National Assessment of metal mining EEM studies (conducted 2006–2009) were presented in late September 2009 at the 36th Aquatic Toxicity Workshop in Charlevoix, Quebec and again in December 2009. The key objectives of the 2nd Assessment were to: a) determine the types and magnitudes of effects of mine effluents on adult fish and benthic invertebrate communities; b) compare fish and invertebrate response patterns between the 1st and 2nd National Assessments; and c) evaluate Critical Effect Sizes (CES) for use in the Metal Mining EEM Program. The initial findings show the following:



 consistency of effects from Phase 1 to Phase 2 studies, although some shifts were also seen
 national average effect on fish:

- PHASE 1: decreased condition and relative liver size
- PHASE 2: decreased condition, liver size and growth rate

national average effect on invertebrates:

- changed community structure (Bray-Curtis, evenness)
- PHASE 1: decreased taxon richness and density
- PHASE 2: decreased taxon richness, increased density

 overall national average effects for metal mines inhibitory (cf. Pulp and Paper EEM)

- also evidence of possible stimulatory effects at some mines; effects can be heterogeneous among mines
- no EEM evidence of increases in fish tissue mercury levels over guideline levels

The final results are not publicly available as yet. Ongoing analyses will provide more detailed information on national trends, the types and magnitude of effects of mine effluents on adult fish and benthic invertebrate communities, and the comparison of fish and invertebrate response patterns between the 1st and 2nd National Assessments.

The purpose of an EEM study is essentially to determine effects, if any, on fish, fish habitat and fisheries resources. Once effects are confirmed in two studies and the extent and magnitude are known, mines are required to investigate the cause of the effects (IOC). There are currently five mines in the IOC phase and additional mines are expected to conduct IOC studies in the near future. MAC and Environment Canada co-sponsored a multi-stakeholder workshop held December 8–9, 2009 in Gatineau, to explore issues and challenges associated with the Investigation of Cause (IOC) phase of the Metal Mining EEM program. The workshop proceedings will help develop future guidance for conducting IOC studies for the Metal Mining EEM program.







Background on an Outstanding Partnership With its diverse industry, government and academic partners, MITHE-SN built on the research of its predecessor, MITE-RN (Metals in the Environment Research Network, 1999–2004).

In January 2005, NSERC (Natural Sciences and Engineering Research Council of Canada) awarded MITHE-SN \$5.4 million. The award included cash and in-kind contributions from a range of partners, including the Mining Association of Canada (MAC). MITHE-SN's research program covered three themes: aquatic ecosystems, soils and plants, and foods and ingested particles. These themes represented a cascade of effects along food webs, from the lowest life forms to the highest consumers. Under each theme, the research projects are driven by the same three objectives:

- distinguishing the magnitude and roles of natural background and human-related metal inputs in biotic exposure to metals
- estimating the bioavailable fraction of metals in the exposure media, thus better quantifying the true exposure concentration
- determining the factors that influence the bioavailability of metals in media so that predictive models can be developed to help create site-specific metals criteria

The 19 projects in year five of MITHE-SN involved collaboration between researchers from government and more than 20 Canadian universities.

AQUATIC ECOSYSTEMS THEME

Research under this theme focused on the health of freshwater ecosystems. The goal was to provide a sound scientific basis for protecting the environment from metal contamination, thus limiting unnecessary safety factors that may unduly restrict economic activity. The metals and metalloids measured were cadmium, cobalt, copper, lead, mercury, nickel, selenium, thallium and uranium.

SOILS AND PLANTS THEME

The goal of this theme was to provide regulators and environmental managers with data that will help them develop scientifically defensible soil quality guidelines for site-specific risk assessments. The metals and metalloids measured were arsenic, cadmium, cobalt, copper, manganese, nickel, selenium and zinc.

FOODS AND INGESTED PARTICLES THEME

This theme addressed human exposure to metals via dust, soil and food. The research focused on the potential for exposure through diet and inhalation of non-food particles such as soil, house dust and paint. The projects under this theme were linked to international efforts to estimate the biologically relevant fractions of ingested metals. Research in this area has contributed to risk assessments conducted in several Canadian communities. The metals and metalloids measured were arsenic, cadmium, cobalt, copper, iron, lead, manganese, mercury, nickel, thallium, vanadium and zinc.

Meeting in Guelph to Discuss Metals Research Gaps

On March 22, 2009, 25 scientists from academia, industry and government gathered at the Delta Hotel and Conference Centre in Guelph, Ontario to determine the foci of a new national metals strategic network application. There was encouragement from workshop participants to proceed with preparation of a preliminary application to NSERC for a five-year strategic network on metals research. Input from the workshop will help formulate the content for the preliminary application and the proceedings will be posted on the MITHE-SN website and the CNTC ftp site, when



available: http://www.cntc.ca/guest/upload.cfm and http://www.mithe-sn.org.

Networking Opportunities and Student Internship

A two-year funding award from NSERC's Strategic Network Enhancement Initiative (SNEI) of \$400,000, afforded students and researchers additional opportunities for networking on a national and international basis during 2008–2009.

Four student internships were supported during 2008 and five student internships during 2009. Input from the students about the benefits of the training received during their internships is included in the Winter 2008 and 2010 issues of the MITHE-SN newsletter at: http://www.mithe-sn.org/publications/index.cfm.

MITHE Sponsored Workshops and Outreach Activities

Dr. Ken Reimer, co-chair of the BioAccessibility Research Canada Working Group (BARC) and faculty member at the Royal Military College, with Professor Beverley Hale, MITHE Science Director and Associate Dean (Research and Innovation), Ontario Agricultural College, University of Guelph have led round-robin exercises with 14 research laboratories to formulate a path forward for measurement of the bioavailability and bioaccessibility of metals in soils, for consistent and defensible application at federal contaminated sites in Canada.

On Sept. 18–19/09 and on November 11–12/09, at the request of Health Canada, the Network Secretariat coordinated and facilitated two workshop planning meetings of the BARC working group in Toronto, Ontario. See the BARC website for workshop proceedings: www.bioavailabilityresearch.ca.

Searchable Bibliographic Publications Data Base

Under the tutelage of Dr. Peter Campbell, Université du Québec, INRS-ETE, this project was initiated at the suggestion of MITHE-SN Science Steering Committee member, Dr. Robert Dwyer, International Copper Association Ltd. All peerreviewed publications and theses that were published as a result of MITE-RN and MITHE-SN research have been entered into a bibliographic database. The database will be available for download from the MITHE-SN website. In addition, for those who do not use bibliographic software, a searchable PDF version of the database will also be available on the MITHE-SN website. The target date for availability of this project, from the MITHE-SN website, is mid-May 2010. For further information, please contact Peter Campbell (campbell@ete.inrs.ca).

Science Briefs, Newsletters, and Annual Reports The above documents may be viewed at: http://www.mithe-sn.org/publications/index.cfm.

MITHE-SN Risk Assessment Contributions MITHE-SN Risk Assessment contributions may be viewed at: http://www.mithe-sn.org/research/priorities.cfm

Contacts

Please note that the MITHE-SN Secretariat will sunset with the April 30, 2010 Network conclusion. However, both Drs. Hale and Ritter may be contacted at the email addresses below:

SCIENCE DIRECTOR:

Dr. Beverley Hale: bhale@uoguelph.ca NETWORK COORDINATOR: Dr. Len Ritter: lritter@uoguelph.ca







Since the Mine Environment Neutral Drainage (MEND) program began in 1989, it has contributed enormously to understanding acidic drainage and its prevention, and to increasing the transfer of information and technology. Still, acidic drainage remains the most serious environmental issue facing the mining industry, government and the public, with potential liability reaching hundreds of millions of dollars. The mining industry continues to bear annual costs associated with treating acidic drainage.

The MEND program, administered by a small secretariat at CANMET, is highly respected in Canada and abroad. Canada is the only country to address acidic drainage and metal leaching through a focused research program directed by a multistakeholder steering committee from industry, government and NGOs.

Over the past several years, MEND has made great progress in addressing the research priorities identified by the Canadian mining industry; by federal, provincial and territorial governments; and by civil society. Along with research projects, MEND conducts technology transfer activities such as workshops, conferences, presentations and newsletters. It also transfers information through its website, hosted by Natural Resources Canada.

MEND belongs to a global alliance for acidic drainage research that includes the International Network for Acid Prevention (INAP), the US Acid Drainage Technology Initiative, the Australian Centre for Minerals Extension and Research (ACMER), the Partnership for Acid Drainage Remediation in Europe (PADRE) and the South African Water Research Commission. The alliance may soon be joined by organizations representing China, Brazil and Indonesia. Supported by major mining multinationals, the global alliance allows for better sharing of information, pooling of resources and leveraging of funds. The synergies created by this organization further underscore the importance of the MEND program.

The 8th International Conference on Acid Rock Drainage (ICARD) was held in conjunction with the Securing the Future conference in Skellefteå, Sweden, from June 23 to 26, 2009. Over 300 delegates from 42 countries participated in the conference. The technical program included over 140 presentations and 70 posters, ranging from basic understanding of acid rock drainage to policies for sustainable mining. Canada was well represented, with many delegates and presentations from the MEND network.

The GARD Guide

For the past few years INAP, with support from the global research alliance mentioned above, has sponsored the development of a global guide to acid rock drainage. The *GARD Guide*, as it is known, was officially launched at the 8th ICARD. It describes proven techniques for the characterization, prediction, monitoring, treatment, prevention and management of acidic drainage produced by sulphide mineral oxidation, as well as addressing metal leaching.

The guide has a number of objectives. It will help industry practise continuous improvement in environmental protection; support government efforts to assess and regulate mining activities; and enable the public and other stakeholders to better understand acid prevention plans and practices.

The guide applies to all commodities, from base and precious metals to uranium and diamonds, and to all phases of mining, from exploration to



post-closure. It takes into account climatic, environmental and other geographic factors.

The GARD Guide (available at www.gardguide.com) is accessible to practitioners around the globe. It is now entering the rollout phase, which should result in upgrades and revisions.







Early in 2009 the National Round Table on the Environment and the Economy (NRTEE) launched a two-year research program to examine water use by the energy, mining, forestry and agriculture sectors. The program will also consider changes in water supply, availability and distribution stemming from climate change and rising demand.

A primary goal of the program is to catalyze the design and implementation of new policies and approaches through which water can be better managed to foster ecosystem health and the sustainability of the resource sectors. The Mining Association of Canada (MAC) participated in a workshop in late February 2009 to help shape the program and is represented on the program's Expert Advisory Committee.

During the latter part of 2009, NRTEE staff worked with individual sectors to ensure that they were well versed in the relevant issues, had access to the best information and could integrate environmental and economic considerations through a collaborative process.

A number of multi-stakeholder sectoral roundtables were held, each resulting in a sectoral issue paper. An issue definition report will be published in the first half of 2010, and recommendations to governments and the four sectors will come in November 2010.

The mining sector workshop was held in Ottawa on October 16, 2009. It was very successful thanks to excellent representation from the industry as well as MAC's TSM Community of Interest Advisory Panel. As summarized in the issue paper produced after the workshop, the focus was on identifying current and emerging issues related to freshwater use and availability within the sector, and on characterizing the state of water use data in the sector. The issue paper noted the following:

"Although participants were very interested in issues related to water footprint management and the intersection between water quality and quantity, they believe that these issues are being adequately addressed by other organizations working in the mining sector and there is no need for the NRTEE to work in these areas. Issues pertaining to water management technology are also thought to be adequately covered by other organizations."

On February 1, 2010, NRTEE and the Water Policy and Governance Group of the University of Waterloo co-hosted a workshop in Toronto on the changing role of the natural resource sectors in Canadian water governance. Over 30 representatives attended from the natural resource sectors, governments, NGOs and First Nations groups. The workshop explored the changing landscape of industry-government collaboration in Canadian water governance and the implications for the natural resource sectors. A summary report will be posted on the NRTEE website.

The NRTEE initiative is one of many taking place globally now. Water is a hugely important strategic issue, and the sustainability of water as a resource is being studied by industrial sectors, governments and NGOs in many countries. In MAC's view, the time is right to take a discerning look at how our industry uses water, how we practise stewardship and what related information is publicly available. To this end, besides participating in the NRTEE program, MAC is working with ICMM (International Council on Mining and Metals) on a water accounting, reporting and footprinting project related to mining. MAC is also in the early stages of developing some form of guidance under the TSM initiative. ArcelorMittal Mines Canada is a leading Canadian supplier of iron ore products to the international steel market, generating nearly 40 percent of total Canadian production. Active mostly in the mining and primary processing sector, the company owns and operates major facilities in Quebec. Its mining and concentrating facilities in Mont-Wright, near Fermont, Quebec, are linked by a 420-kilometre railway to the company's industrial complex in Port-Cartier, which includes a pellet plant, a private harbour, railroad shops and the company's headquarters.

As a member of the Mining Association of Canada, ArcelorMittal Mines Canada is committed to ongoing improvement through TSM. To this end, the company submitted its self-assessed results for external verification for the first time in 2008. As well, its entire environmental management system was certified ISO 14001 in 2004.

In 2008 ArcelorMittal identified worker health and safety as its main priority, leading to a 26 percent improvement in performance in this area in 2009. The company has committed to becoming OHSAS 18001–certified by June 2011.

Although ArcelorMittal's pellet plant in Port-Cartier already uses about 30 percent less energy per tonne of production than its Brazilian competitors, the company is striving to further improve the plant's overall energy efficiency. The company is also working to ensure that its facilities meet future regulatory requirements for reducing GHG emissions, while at the same time reducing production costs.

Heavily involved in the community for over 50 years, ArcelorMittal is now formalizing its engagement framework and its relationships with communities of interest through a formal advisory committee that promotes constructive dialogue with stakeholders.

ArcelorMittal Mines Canada still firmly believes it must pursue its efforts to improve through TSM.

For more information, please visit ArcelorMittal Mines Canada's website at www.arcelormittal.com/minescanada.

HEAVILY INVOLVED IN THE COMMUNITY FOR OVER 50 YEARS, ARCELORMITTAL IS NOW FORMALIZING ITS ENGAGEMENT FRAMEWORK AND ITS RELATIONSHIPS WITH COMMUNITIES OF INTEREST.







ArcelorMittal Mines Canada

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	No	Yes	Yes
Mont-Wright	No	Yes	Yes
Port-Cartier	No	Yes	Yes

5 -



EXTERNAL OUTREACH

ASSESSMENT

5.

ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT



GHG EMISSIONS INTENSITY PERFORMANCE TARGET

TAILINGS MANAGEMENT REPORTING ASSESSMENT

5







BARRICK GOLD CORPORATION

As reported last year, Barrick Gold's Hemlo operation (Marathon, Ontario) underwent independent third-party verification of its TSM program and the facility's implementation progress in early 2008. The verification was a thorough review of the facility's program in all four TSM performance areas: tailings management, external outreach, crisis management planning, and energy use and GHG management.

As part of its continuous improvement program, during 2009 the Hemlo facility continued to use TSM to help fully ingrain the processes into the fabric of work for site employees and contractors. Efforts included additional community outreach and dialogue to fortify communications, coupled with enhancement of the site's programs for continued improvement. Hemlo's objective is to obtain a minimum ranking of Level 3 for each indicator. To date the facility has achieved a 95 percent success rate, with 74 of the 78 indicators ranked at Level 3. The four indicators that have not reached this threshold were ranked at Level 2.

The most difficult performance area for Hemlo continues to be energy use and GHG management. The Hemlo mine has operated for nearly a quarter of a century, during which time a wide distance has developed between the underground operations and the overall depth has increased. This has made it difficult to establish energy intensity targets, since more energy is needed to access the greater distances and depths. This situation, combined with unexpected changes in rock hardness, means that energy intensity targets are subject to change because of the geometry and nature of the mine and the rock itself. Although the challenge is daunting, Hemlo nevertheless hopes to continue improving its energy efficiency and performance targets.

For more information, please visit Barrick's website at www.barrick.com.

AS PART OF ITS CONTINUOUS IMPROVEMENT PROGRAM, DURING 2009 **THE HEMLO FACILITY CONTINUED TO USE TSM** TO HELP FULLY INGRAIN THE PROCESSES INTO THE FABRIC OF WORK FOR SITE EMPLOYEES AND CONTRACTORS.





Barrick Gold Corporation

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	Yes	Yes	Yes
Hemlo	Yes	Yes	Yes







BHP BILLITON CANADA INC.

The EKATI diamond mine, operated by BHP Billiton Canada Inc., is a joint venture between BHP Billiton (80 percent) and founding geologists Charles Fipke and Stewart Blusson (10 percent each). Located about 300 kilometres northeast of Yellowknife, the mine operates in an area of continuous permafrost.

The EKATI mine is working towards zero harm: to its own people, through consistent and risk-based work practices; to its host communities, through communication and inclusion of their opinions and concerns in mine plans; and to the environment, through innovative adaptive management and intensive monitoring of the mine's impact. BHP Billiton will consider EKATI successful when it achieves zero harm, when it is valued by its host communities and when it provides lasting social, environmental and economic benefits to society.

BHP Billiton uses TSM reporting as part of a suite of tools that drive continued improvement across the company's operations. There is extensive internal and external monitoring and auditing of all sustainable development practices at EKATI, and the TSM initiative draws many of these processes into a forum for wider reporting across Canada. The extra level of self-regulation adds value because processes are reviewed from a different reporting perspective than would be the case under other HSEC (health, safety, environment and community) and ISO audits.

Results from the current year of assessment and verification showed significant improvements in crisis management planning, including scheduled review, updating and testing of emergency response processes. EKATI also scored high in energy use and greenhouse gas emissions management, indicating that excellent management and reporting systems are in place. GHG emissions targets will be reviewed and verified in 2011.

BHP Billiton understands stakeholder issues and meets regularly with stakeholders to share information about EKATI's operations and to hear from them on decisions that may affect them. Management encourages outreach to

THERE IS EXTENSIVE INTERNAL AND EXTERNAL MONITORING AND AUDITING OF ALL SUSTAINABLE DEVELOPMENT PRACTICES AT EKATI.

the mine's communities of interest and stakeholders, including engagement in and dialogue on sustainable community partnerships. BHP Billiton will survey stakeholder engagement in fiscal year 2011 to capture data that will influence the company's strategic and sustainable investments in the future.

BHP Billiton's commitment to tailings management is outlined in EKATI's Waste Water and Processed Kimberlite Management Plan. By adhering to these requirements and regularly reviewing the operation of EKATI's Long Lake containment facility, BHP Billiton has been able to manage its tailings as planned.

In 2009 BHP Billiton proudly received two TSM performance awards for the EKATI diamond mine, which recognized achievement in external outreach as well as energy use and greenhouse gas emissions management.

Within BHP Billiton, the EKATI mine also earned the 2009 global HSEC Excellence Award in the Community category for 10 years of implementing the company's impact benefit agreements. In the Safety category the mine won the 2009 Highly Commended Award for the EKATI Safety Guarantee.

The above awards exemplify the commitment and continued effort undertaken within EKATI's operations and with its external stakeholders.

For more information, please visit the BHP Billiton Canada website at www.bhpbilliton.com.





BHP Billiton Canada Inc.

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	Yes	Yes	Yes
EKATI Diamond Mine	Yes	Yes	Yes







IAVIK DIAMOND MINES INC

The Diavik diamond mine, located 300 kilometres northeast of Yellowknife, is an unincorporated joint venture between Diavik Diamond Mines Inc. (60 percent) and Harry Winston Diamond Limited Partnership (40 percent), both headquartered in Yellowknife. Diavik Diamond Mines is a wholly owned subsidiary of Rio Tinto plc of London, England; Harry Winston Diamond Limited Partnership is controlled by Harry Winston Diamond Corporation of Toronto. Diavik is the mine operator.

The Diavik mine, which began production in 2003, is currently composed of three diamond-bearing kimberlite pipes that will be mined using open-pit and underground methods. A fourth pipe is being reviewed to determine its viability. Underground operations will steadily increase as the open pits are depleted, and by 2012 Diavik should be a fully underground mine. The underground operation will extend the life of the mine past 2020.

Diavik has planned to move from surface to underground mining since a pre-feasibility study in the late 1990s. For the past three years, development of the underground mine and construction of the related surface infrastructure have been ongoing. The underground mine began production in the first quarter of 2010 and officially opened on March 25, 2010.

With both underground and surface operations underway, Diavik will see GHG emissions and energy consumption rise. GHG and energy intensity will increase to an even greater extent, as production from the underground operation will be significantly lower than from the open-pit mines. Even after open-pit mining ceases, GHG emissions and energy consumption will remain higher than in the past because of the extra fuel requirements for heating, ventilation, water management, increased haulage and other activities related to the underground operation.

Diavik is considering two projects to offset these increases. One is the possible installation of wind turbines to reduce the consumption of diesel, currently the sole fuel source for power generation. The other is the potential expansion of a DIAVIK HAS PLANNED TO MOVE FROM SURFACE TO UNDERGROUND MINING SINCE A PRE-FEASIBILITY STUDY IN THE LATE 1990S. hydroelectric facility on the Taltson River in the Northwest Territories.

In the summer of 2009, Diavik safely and successfully completed a six-week production shutdown. As reported in Diavik's data submission to TSM, the shutdown reduced the mine's total energy consumption and GHG emissions.

Diavik continues to provide significant socio-economic benefits to the North. The company's commitment, formalized in its Socio-Economic Monitoring Agreement, is to maintain a workforce of 66 percent northern residents, with 40 percent being northern Aboriginal people. In 2009 the actual figures were 65 percent northern residents and 33 percent Aboriginal. Of Diavik's total business spending in 2009, 67 percent (\$288 million) went to northern businesses, with Aboriginal and non-Aboriginal businesses receiving roughly equal amounts. A portion of this spending was capital expenditure required for constructing the underground mine.

Diavik has an active apprenticeship sponsorship program. Since the mine began operation in 2003, 18 people have completed apprenticeship training in the trades. At year-end, another 18 apprentices (17 of them northern) were working towards their journeyman designations.

A unique program to Diavik is the Aboriginal Leadership Program, run in conjunction with SAIT Polytechnic. Since its inception in 2004, there have been 49 graduates of the program, which aims to increase the number of qualified Aboriginal people at the supervisory and management level.





In 2009 the Diavik Mine Rescue Team, made up of members of the mine's emergency response team, won the North's annual mine rescue competition and the North American western regional competition. The team competed in both the surface and underground mining categories. For more information about Diavik, including its Socio-Economic Monitoring Agreement, its sustainable development and environmental agreement reports, and the Diavik newsletter (*Dialogue*), please visit the company's website at www.diavik.ca.

Diavik Diamond Mines Inc.

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	No	No	No
Diavik Diamond Mine	No	No	No



ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT





TAILINGS MANAGEMENT REPORTING ASSESSMENT





HudBay Minerals is an exploration, mining and processing company. Its wholly owned subsidiary, Hudson Bay Mining and Smelting Co., Limited (HBMS), operates integrated facilities in Flin Flon and Snow Lake, Manitoba, as well as Zochem, located in Brampton, Ontario. HBMS operations report their TSM data in one integrated facility report.

The company's Level 4 scores for all five tailings indicators were reported in 2008 and confirmed in 2009. That means the internal assessment against the criteria contained in MAC's tailings management guides, confirmed by an external verifier, demonstrated continued improvement for this indicator.

HudBay fulfilled its commitment, described in the 2008 Towards Sustainable Mining Progress Report, to conduct a table-top crisis simulation exercise to test the corporate crisis management plan. This exercise completes the third requirement for the crisis management protocol.

Slight changes were reported in the scores for external outreach, but the overall result did not change.

Plans to conduct internal audits for the energy use and GHG emissions indicator were suspended when it was determined that the energy and GHG emission intensity targets were no longer appropriate for the changing nature of the business. Changes are occurring largely because of the ramp-down in copper smelting operations prior to the smelter's closure in mid-2010.

New metrics need to be developed to reflect these operational changes at HBMS operations. New baselines are not expected until 2011, by which time the company's modifications should be in place. In the interim it is not deemed appropriate to set facility-wide targets. However, the company will continue to manage energy and GHG emission improvements by using individual sub-area targets where possible.

It should be noted that among the company's changes is a large capital project to eliminate the use of fossil fuels (specifically heavy fuel oil) for primary steam generation. The changeover should occur soon after the copper smelter closes.

For more information on HudBay, including annual sustainability reports that contain details on environmental and social performance, please visit the company's website at www.hudbayminerals.com.

DESCRIBED IN THE 2008 TOWARDS SUSTAINABLE MINING PROGRESS REPORT, TO CONDUCT A TABLE-TOP CRISIS SIMULATION EXERCISE TO TEST THE CORPORATE CRISIS MANAGEMENT PLAN.

HUDBAY FULFILLED ITS COMMITMENT.

The Mining A Association of Canada du Canada



HudBay Minerals Inc.

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	Yes	Yes	Yes
Hudson Bay Mining and Smelting Co., Limited	Yes	Yes	Yes







IAMGOLD CORPORATION

IAMGOLD is a leading mid-tier Canadian gold mining company that produces about one million ounces annually from seven mines on three continents. IAMGOLD is concentrated in West Africa, the Guiana Shield of South America and Quebec, where it has a pipeline of development and exploration projects. In 2009 IAMGOLD acquired Orezone Resources, resulting in ownership of the Essakane project in Burkina Faso, which goes into production in 2010.

Since joining MAC in 2007, IAMGOLD has incorporated the TSM initiative into the operations and projects worldwide in which the company has operational control. This marks IAMGOLD's third year of formal reporting under TSM, and operations continue to adopt performance improvements that align with TSM.

The biggest challenge for IAMGOLD has been getting TSM up and running in just two years. Application of the program is still in the beginning stages. The company has seen increasing ownership of the TSM process at its sites, but it is still important to ensure that the initiative is fully integrated into the broader sustainability picture.

In 2008 IAMGOLD introduced its vision of "zero harm," challenging employees to achieve the highest level of performance in health, safety and sustainability. Early results have been exemplary: zero fatalities in 2008 and 2009, and a substantial reduction in the number of lost-time accidents and injuries requiring medical attention. There were no significant environmental incidents in 2009, but there was one community incident. The company's engagement programs play a crucial role in ensuring that community incidents do not escalate.

In 2009 IAMGOLD underwent external verification for its 2008 TSM results and presented its health, safety and sustainability performance to the TSM Community of Interest Advisory Panel. What the company learned from the verification process, and from several probing questions, will help it determine which areas

need improvement, especially as operations increasingly understand TSM and the indicators.

IN 2008 IAMGOLD INTRODUCED ITS VISION OF **"ZERO HARM."** The external outreach indicator saw good progress and improvement.

Energy use and GHG emissions management remains the weakest area and will be a focus for the future. The company's rising energy and GHG emissions result from a combination of increased production, longer hauling distances, incorporation of development projects and growing energy needs as underground mines move to deeper levels.

IAMGOLD has created an energy policy that will be implemented starting in 2010. Because the first step in controlling emissions is to understand the energy profile at various operations, in 2010 each site will assign management responsibility for energy and emissions control and will begin measuring key energy sources. IAMGOLD intends to become a leader in this area.

Another highlight of 2009 was the development of a more detailed and comprehensive self-assessment tool for tailings management, which will help the company evaluate and implement MAC's tailings management guides. The self-assessment requires an action plan to improve management and to allow for measuring improvements using TSM scoring. With this tool, sites found it much easier to assess their scoring, and as a result there were some decreases in the TSM results. IAMGOLD expects to see improvements in its TSM performance along with more documentation to simplify verification in future.

For more on IAMGOLD's sustainability and engagement programs and progress, including the 2009 *Health, Safety and Sustainability Report*, please visit the company's website at www.iamgold.com.





IAMGOLD Corporation

EXTERNAL OUTREACH

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	Yes	Yes	No
Doyon	No	No	No
Mouska	No	No	No
Mupane	No	Yes	Yes
Niobec	Yes	No	No
Rosebel Gold Mines N.V.	Yes	Yes	No

ASSESSMENT

ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT

GHG EMISSIONS INTENSITY PERFORMANCE TARGET

TAILINGS MANAGEMENT REPORTING ASSESSMENT







Inmet believes that responsible growth depends on establishing and maintaining a sound reputation that can be demonstrated wherever the company works. Inmet continues to use TSM as one of its risk management tools to improve performance in priority risk areas.

Inmet made progress in all TSM areas in 2009, though not as much as hoped. The company again scored well in all indicators for external outreach (community dialogue) and crisis management planning. Some of the tailings management scores and many of the energy use and GHG emissions scores remained below Level 3. Inmet will continue to work towards its energy and GHG reduction targets; however, tailings management is the priority for improvement.

The company held TSM workshops at all of its majority-owned operations and closed sites during the year. Three of Inmet's SECA (safety, environmental and community affairs) professionals and one general manager participated in a full-day TSM workshop offered by MAC. Inmet looks forward to using this training to improve its performance, especially in tailings management.

TAILINGS MANAGEMENT

Pyhäsalmi (Finland) and Inmet's closed properties have OMS manuals in place and review them annually. Inmet is working to improve performance in this indicator at its other sites.

In other highlights, Troilus (Quebec) revised its OMS manual in 2009 as planned. Çayeli (Turkey) and Las Cruces (Spain) are creating OMS manuals for their sites. Cobre Panamá (Panama) is using the TSM performance areas and indicators to develop its tailings and other management systems.

EXTERNAL OUTREACH

All of Inmet's majority-owned sites and closed properties have systems in place for identifying and communicating with communities of interest. The facilities began using the Socio-Economic Assessment

THE COMPANY AGAIN SCORED WELL IN ALL INDICATORS FOR

EXTERNAL OUTREACH (COMMUNITY DIALOGUE) AND CRISIS MANAGEMENT PLANNING. Toolbox (SEAT) framework to guide their community engagement and development efforts this year.

Inmet is working intensively on external outreach in Panama. More information is available in the company's sustainability report and on its website (see below).

CRISIS MANAGEMENT PLANNING Inmet completed crisis simulation exercises in 2009 at all its majority-owned sites and closed properties. The corporate office had its last simulation in 2008.

Pyhäsalmi conducted a crisis and emergency response exercise with town responders and emergency response personnel from a nearby mine. The facility followed up by enhancing its crisis and emergency response training and is now improving its mine rescue systems.

ENERGY USE AND GREENHOUSE GAS MANAGEMENT

Inmet's company-wide energy intensity for 2009 improved by 2.3 percent compared to 2008 and by 1.1 percent compared to 2007, the target reference for the year. The company continued to take part in the Carbon Disclosure Project in 2009 and plans to do so again in 2010.

For more information, including the company's sustainability report, please visit Inmet's website at www.inmetmining.com.





Inmet Mining Corporation

EXTERNAL OUTREACH

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Çayeli Mine	Yes	Yes	Yes
Copper Range Company (closed)	Yes	Yes	Yes
Corporate	Yes	Yes	No
Norbec (closed)	Yes	Yes	Yes
Ok Tedi Mining Limited (18% shareholding)	Yes	Yes	Yes
Pyhäsalmi Mine	Yes	Yes	Yes
Samatosum (closed)	Yes	Yes	Yes
Sturgeon Lake (closed)	Yes	Yes	Yes
Troilus	Yes	Yes	No
Winston Lake (closed)	Yes	Yes	Yes



COMMUNITY OF INTEREST (COI) INDENTIFICATION EFFECTIVE COI ENGAGEMENT AND DIALOGUE COI RESPONSE MECHANISM

REPORTING

ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT



TAILINGS MANAGEMENT REPORTING ASSESSMENT



TAILINGS MANAGEMENT POLICY AND COMMITMENT

TAILINGS MANAGEMENT SYSTEM

ASSIGNED ACCOUNTABILITY AND RESPONSIBILITY FOR TAILINGS MANAGEMENT

- ANNUAL TAILINGS MANAGEMENT REVIEW
- OPERATION, MAINTENANCE AND SURVEILLANCE (OMS) MANUAL





RON ORE COMPANY OF CANADA

IOC is the largest producer of iron ore pellets in Canada and one of the leading producers of iron ore pellets and concentrate in the world. The company currently employs over 2,000 people in its mine, milling and pelletizing facility in Labrador City, Newfoundland and Labrador; its deep-water port facility in Sept-Îles, Quebec; and the 418-kilometre rail corridor that connects the two sites.

MAC's TSM principles are aligned with IOC's sustainable development principles and the standards and policies of Rio Tinto, IOC's major shareholder and operator.

For 2009 IOC engaged an external verifier to evaluate the company's TSM performance. While most areas saw improvement, there is still work to do to improve performance in tailings management and some crisis management indicators.

EXTERNAL OUTREACH

Over the past few years IOC has significantly improved its performance in the area of stakeholder engagement, a change substantiated by the company's verification scores in 2009. Committed to involving stakeholders in the communities where it operates, IOC has identified community issues with the help of the Community Advisory Panel (CAP) and has worked with those involved to better understand and address any concerns.

The CAP, which is made up of key community stakeholders, met regularly during the year in both the Labrador City and Sept-Îles facilities to discuss issues and opportunities within the community, along with IOC's operations and matters of common concern. Although the downturn in the mining industry required IOC to shut down for five weeks, the company's community engagement continued.

One casualty of the economic downturn was IOC's concentrator expansion project, which was suspended in 2009. Since the stronger market of the second half of 2009, IOC has considered reactivating the project in 2010. OVER THE PAST FEW YEARS IOC HAS SIGNIFICANTLY IMPROVED ITS PERFORMANCE IN THE AREA OF STAKEHOLDER ENGAGEMENT. Community engagement identified several ways the expansion project would affect the community, one of which involved crosscountry ski trails affected by the expansion construction. IOC agreed to replace the trails, and completed them last summer in time for the 2009–2010 ski season.

CRISIS MANAGEMENT PLANNING IOC's disaster management and recovery plan meets the intent of the TSM crisis management planning element. Although the company saw improvements in 2009 with the establishment of a disaster management and recovery plan for the corporate office in Montreal, more work is needed to establish a robust crisis management plan. The company will take steps in 2010 to finalize the requirements.

Both IOC facilities have active disaster management and recovery plans in place, though there was some slippage in the training requirements for the Labrador City site. Again, the company will address this deficiency in 2010 to ensure that IOC has a well-established and suitable crisis management plan.

TAILINGS MANAGEMENT

Although the external verifier noted improvements in all other performance elements, the scores for tailings management were lower than IOC had hoped. The company is committed to improving management of its chemically inert tailings and is planning step-by-step improvements to how its tailings are managed. A two-day workshop in April 2010 helped to identify issues and develop an action plan to bring tailings management to a better performance level.





For the Sept-Îles operation, the tailings area has been classified as a closure issue, as all the infrastructure has been removed and a decision was made not to reactivate the concentrator and pelletizing plant. There are no operational or maintenance activities associated with the Sept-Îles tailings area, which will be rehabilitated over the next few years.

ENERGY USE AND GHG EMISSIONS MANAGEMENT

Managing energy use and greenhouse gas emissions is a high priority for IOC. The company has set energy and GHG performance targets for Labrador City and Sept-Îles, and has implemented an energy use management system that is subject to external verification. The external verifier rated IOC very favourably based on its 2009 data.

The company's Energy and Environmental Projects Chief Engineer continues to identify and act on GHG and energy reduction initiatives. As in 2008, IOC met or exceeded its intensity targets in 2009.

For more information on IOC's sustainable development activities, please visit the company's website at www.ironore.ca.

Iron Ore Company of Canada

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	No	Yes	Yes
Labrador City	Yes	Yes	No
Sept-Îles	Yes	Yes	Yes



EXTERNAL OUTREACH

ENERGY USE AND GHG **EMMISSIONS MANAGEMENT** ASSESSMENT



ENERGY USE REPORTING SYSTEMS

ENERGY INTENSITY PERFORMANCE TARGET

GHG EMISSIONS REPORTING SYSTEMS

GHG EMISSIONS INTENSITY PERFORMANCE TARGET

GHG EMISSIONS MANAGEMENT SYSTEMS



TAILINGS MANAGEMENT **REPORTING ASSESSMENT**





North American Palladium Ltd. (NAP) is a Canadian diversified precious metals company with two producing mines and a pipeline of growth projects in mining-friendly jurisdictions. The company's flagship operation, the Lac des Iles mine near Thunder Bay, Ontario, started producing palladium in 1993 and is Canada's only primary producer of the metal. NAP also owns and operates the Sleeping Giant gold mine in the Abitibi region of Quebec.

NAP has a strong portfolio of development and exploration assets near both of its mine sites. The company is pursuing an aggressive exploration program in order to increase its reserves and resources, with the objective of upping production of palladium and gold.

Although 2009 was a productive year for NAP, the Lac des Iles mine remained closed on a care and maintenance program. This imposed some challenges on the company when it came to improving TSM scores.

Nonetheless, NAP remains committed to the TSM protocols, the environment and the company's neighbouring communities, and continuously strives to improve its systems and procedures for tailings management, energy use and greenhouse gas emissions. Aiming for excellence in all areas of operation plays a large role in NAP's culture. The company is committed to pursuing sustainable growth by operating with respect for the environment and by being a socially responsible company.

For more information, please visit the North American Palladium website at www.nap.com.

NAP IS COMMITTED TO PURSUING SUSTAINABLE GROWTH BY OPERATING WITH RESPECT FOR THE ENVIRONMENT AND BY BEING A SOCIALLY RESPONSIBLE COMPANY.





North American Palladium Ltd.

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	No	No	No
Lac des Iles Mine Ltd.	Yes	Yes	Yes
Sleeping Giant Mine	Yes	No	Yes

5 -



EXTERNAL OUTREACH

ASSESSMENT

ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT



TAILINGS MANAGEMENT REPORTING ASSESSMENT







SHELL CANADA ENER

On January 1, 2009, Shell Canada Energy (Shell) became the operator of the Muskeg River mine, located 75 kilometres north of Fort McMurray, Alberta. Shell operates the mine on behalf of the owners of the Athabasca Oil Sands Project: Shell Canada Limited (60 percent), Chevron Canada Limited (20 percent) and Marathon Oil Sands LP (20 percent).

Shell continues to focus on safety, people, and environmental and social performance in developing Canada's oil sands resources.

ENVIRONMENTAL SUSTAINABILITY

Shell takes a "best in class" approach to environmental management. In 2004 the Muskeg River mine became the first oil sands operation ever certified to the ISO 14001 standard. This standard, though voluntary, is externally audited and is recognized as the international standard for environmental management systems. A maintenance surveillance audit in 2009 concluded that the mine is in compliance with the standard.

In 2009 the Muskeg River mine was recognized by the Alberta government as an EnviroVista leader. EnviroVista is a voluntary program involving industry, municipal governments and the Alberta government that promotes enhanced environmental performance. The program acknowledges facilities that have at least five years of exemplary environmental performance, an audited environmental management system and five or more years of compliance with Alberta's environmental legislation.

In addition, ongoing and meaningful involvement with multi-stakeholder groups remains an important part of Shell's environmental management strategy. The company is an active member of the Cumulative

Environmental Management Association, the Wood Buffalo Environmental Association and the Regional Aquatics Monitoring Program, as well as several other organizations.

SOCIAL SUSTAINABILITY Shell helps manage any infrastructure impacts associated with rapid growth in the region. SHELL CONTINUES TO FOCUS ON SAFETY, PEOPLE, AND ENVIRONMENTAL AND SOCIAL PERFORMANCE IN DEVELOPING CANADA'S OIL SANDS RESOURCES. For example, in Fort McMurray the company has teamed up with Keyano College on several educational and community initiatives, including making a significant investment in Keyano's Sport and Wellness Centre, a recreational facility open to the entire community.

Shell has been a champion supporter of Keyano College's environmental technology program and a lead contributor to the Aboriginal entrepreneurship certificate program. The company is also a principal supporter of Leadership Wood Buffalo, a community-focused program that identifies and develops future leaders in the region.

TSM FACILITY ANNUAL REVIEW

Shell continues to maintain high standards in both the crisis management planning and external outreach performance elements, with management programs in place that are reviewed, tested and documented. The company continues to work extensively on engagement and dialogue with communities of interest, including consulting within communities and hosting community members at the facility. Communities are informed about the company's environmental performance through the annual environment report, as well as presentations given to each community to allow for open dialogue.

Tailings management initiatives continued in 2009 with a new health, safety, security and environment policy that is site-specific but also aligned with Royal Dutch Shell's global policy and business practices. The new policy includes specific components that address items within the tailing management guidelines, as well as other region-specific standards and requirements.





In the first quarter of 2009, the facility's OMS manual was completed with formal third-party document review. Consultation with communities of interest was scheduled for early 2010.

GHG emissions management and reporting continue to improve as Shell adopts more automatic systems to increase its data reporting capabilities. In 2009 the mine underwent an ISO 14064 GHG gap assessment to improve the GHG management system.

Energy use management programs and initiatives continue to be embedded within the company and are captured in the environmental management system. Shell approved three capital projects for 2010 that will reduce energy use in specific areas of the operation.

For more information, please visit the Shell Canada Energy website at www.shell.ca/oilsands.

Shell Canada Energy

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	Yes	No	Yes
Shell Albian Sands	Yes	No	Yes



ENERGY USE AND GHG **EMMISSIONS MANAGEMENT** ASSESSMENT

ASSESSED LEVEL SHELL ALBIAN SANDS ENERGY USE MANAGEMENT SYSTEMS ENERGY USE REPORTING SYSTEMS

GHG EMISSIONS REPORTING SYSTEMS





ANNUAL TAILINGS MANAGEMENT REVIEW

TAILINGS MANAGEMENT

REPORTING ASSESSMENT

OPERATION, MAINTENANCE AND SURVEILLANCE (OMS) MANUAL





SUNCOR ENERGY INC

Suncor Energy Inc. recovers bitumen from oil sands near Fort McMurray, Alberta, and upgrades it to refinery-ready feedstock and diesel fuel. With production capacity of about 300,000 barrels per day and enough reserves to sustain production for the next 50 years, Suncor remains a leader in oil sands development.

In 2009 Suncor merged with Petro-Canada to become Canada's largest energy company. Ultimately, the merger may result in a second oil sands mining operation for Suncor in this region.

OVERALL TSM RESULTS

Suncor's 2009 TSM results were externally verified and were generally on a par with its externally verified results from 2006. The current results reflect a number of unusual or one-time occurrences, including the merger with Petro-Canada and a number of emergency events, such as fires and an interruption of on-site production by an environmental group protest. Although the merger did not directly affect Suncor's mining operations, all employees were involved in merger-related activities, particularly in the latter part of 2009.

CRISIS MANAGEMENT PLANNING

Crisis management planning is vital to a facility of the scope and size of the Fort McMurray mining and upgrading operations. For this performance element, Suncor met the criteria for the crisis management review indicator. In practice, it also met both the preparedness and training indicators, but there was insufficient documentation to provide the necessary assurance that either had been completed. In particular, the company applied live emergency events as opposed to mock events, but the follow-up documentation was not fully completed.

ENERGY USE AND GHG EMISSIONS MANAGEMENT

Energy efficiency and GHG management are critical to an oil sands operation. Suncor's externally verified 2009 results match the company's self-assessed score for 2009. During the year Suncor IN 2009 SUNCOR MERGED WITH PETRO-CANADA TO BECOME **CANADA'S** LARGEST ENERGY COMPANY. adopted the goal of improving energy efficiency by 10 percent by 2015. Like many energy-intensive companies in Canada, Suncor is awaiting clarity on a national GHG strategy/regulation, which will help focus efforts on some indicators in this area.

TAILINGS MANAGEMENT

Oil sands tailings ponds have come under increased public scrutiny in the past few years. That is part of the reason why higher levels of regulatory oversight, through new regulations and guidelines, are now in place.

As with the energy and GHG management element, Suncor met many of the criteria for Level 3 or 4 for most tailings management indicators. However, documentation was not at the level needed for assurance. The company's communities of interest have received copies of the tailings management policy, but extensive consultation on it has not been completed. Also, senior-level sign-off on the policy was not documented.

EXTERNAL OUTREACH

For Suncor, external outreach has always been a key part of maintaining a social licence to operate. The company regularly reviews its communities of interest and its interaction with them. Communities of interest have an important say in how the company does business, and Suncor's success depends on earning the trust and consent of residents in the communities where it operates.

Suncor maintains a stakeholder relations policy that outlines the company's commit-





ment to collaboration, transparency and respect for all views. The policy guides Suncor as it develops long-term relationships with those affected by its business, including employees, community members, shareholders, customers, organizations and governments.

For more information, please visit Suncor's website at www.suncor.com.

Suncor Energy Inc.

CRISIS MANAGEMENT PLANNING ASSESSMENT







Syncrude is a leader in Canada's oil sands industry, producing 15 percent of the nation's crude oil requirements. The company operates technologically advanced oil sands mines, extraction and upgrading facilities, and utilities plants at its two sites north of Fort McMurray, Alberta. Following a major expansion in 2006, Syncrude's production capacity increased to 350,000 barrels of crude oil per day.

Syncrude's commitment to superior environmental, health and safety performance, as well as excellence in community relations, has been strengthened by participating in TSM. In fact, for the 2007 reporting year Syncrude received the first-ever TSM award for meeting performance standards in all categories.

Syncrude's performance remained consistent for 2009 except in the area of energy use and GHG emissions management. Here are some highlights:

Syncrude maintained Level 3 scores in all areas of tailings management. The current focus includes regular updates of the OMS manuals for all Syncrude tailings facilities. The company regularly monitors all on-site dams, holds external technical reviews and has emergency plans in place to respond to any incidents involving these facilities.

While Syncrude's Energy Conservation Team made steady progress towards improving overall energy performance, the company did not meet its energy use or GHG emissions targets in 2009, resulting in Level 2 scores in both areas. Both results were due to lower than anticipated production, which affected the company's overall performance. Syncrude sets aggressive performance targets each year and remains focused on improving its performance and reducing its energy and GHG impacts in 2010.

Strong corporate performance continued in the management systems areas of energy use and GHG emissions. Syncrude scored Level 5 in these areas.

Syncrude has consistently achieved Level 5 for external outreach. In 2008 the company STRONG CORPORATE PERFORMANCE CONTINUED IN THE MANAGEMENT SYSTEMS AREAS OF ENERGY AND GHG USAGE.



earned, for the fourth consecutive time, the Gold Level Progressive Aboriginal Relations award from the Canadian Council for Aboriginal Business. In addition, in 2009 the Alberta Chamber of Commerce presented Syncrude an award for its Aboriginal relations program.

Syncrude works extensively with regional stakeholders to manage the social and environmental effects of oil sands development. This work includes being involved in three multi-party organizations and industry associations that deal with socio-economic impacts and policy issues at the local level.

In the crisis management planning area, Syncrude scored "yes" for all the TSM indicators. The company regularly conducts emergency response exercises, including desktop and site-wide simulations, to ensure that all personnel are properly trained and tested. Pre-plans exist for all medium- and high-level risks.

For more information, please visit Syncrude's website at www.syncrude.com.



Syncrude Canada Ltd.

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Syncrude Canada Ltd.	Yes	Yes	Yes







FECK RESOURCES LIMITI

Teck Resources is a diversified resource company committed to responsible mining and mineral development. Through the company's interests in mining and processing operations in Canada, the United States and South America, Teck's expertise spans the full range of mining activities. The company is managed along commodity lines, focusing on copper, metallurgical coal, zinc and energy. Worldwide, Teck is an important producer of copper, the secondlargest producer of seaborne metallurgical coal and the second-largest producer of zinc concentrate.

Seven of Teck's nine operations that participate in TSM publicly reported their results for the first time in 2009. They are the Duck Pond operation along with six Teck Coal operations: Cardinal River, Coal Mountain, Elkview, Fording River, Greenhills and Line Creek. Teck Coal participated in third-party verification of its results this year, which identified progress and gaps that will influence performance in the coming years. Highland Valley Copper also participated in third-party verification.

These seven operations are fairly new to the TSM process; therefore, Teck's performance scores saw little improvement over the year. For both new and long-term reporters, Teck will look for ways to improve performance by increasing communication, conducting gap analysis, setting goals, sharing best practices and providing more opportunities for training on TSM protocols.

TAILINGS MANAGEMENT

It continues to be challenging for MAC members to score above Level 3 in tailings management. Third-party verification indicated that a better understanding of MAC's *A Guide to the Management of Tailings Facilities*, followed by a gap assessment against current practices, could improve performance, particularly with new reporters. Teck will also increase training in this area and form a working group across its operations to help drive performance.

EXTERNAL OUTREACH

Operations continue to do well in this area, with both Highland Valley Copper and Trail scoring above Level 3. Teck's new Environment, Health, Safety and Community Management Standards and associated tools will help operations score above what is required for TSM, an achievement that is critical for social management. Teck's new Social Management and Responsibility Tool (SMART) will help operations meet commitments under the company's management standards and under the TSM external outreach element.

CRISIS MANAGEMENT PLANNING

Crisis management planning is an important aspect of Teck's risk management profile. Teck Coal is working to integrate the company's crisis management approach and practice, including alignment with the TSM crisis management planning protocol.

Third-party verification identified gaps and opportunities for improvement that will be implemented in the future. Highland Valley Copper developed a procedure to effectively notify employees of a crisis, which helped improve that operation's score. Starting in April 2009, all operations entered a crisis management period for pandemic planning. Operations completed crisis management plans for managing the H1N1 pandemic; these were reviewed at the corporate level.

ENERGY USE AND GREENHOUSE GAS EMISSIONS MANAGEMENT

Teck has tracked its company-wide energy use and GHG emissions for several years now. Trail continues to set the company standard for energy and carbon management, achieving Level 3 for each indicator in this performance area. Cardinal River, Fording River and Greenhills also improved their scores for 2009. Highland Valley Copper bettered its score for energy intensity performance targets by establishing targets for key energy inputs.

In 2010 Teck's seven BC-based operations will undergo full third-party assessments of their energy and carbon management practices. These assessments will not only strengthen current practices, but will ensure that Teck's carbon accounting and reporting practices comply with regulatory standards.

For more information, please visit Teck's website at www.teck.com.





Teck Resources Limited

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Duck Pond Operations	Yes	Yes	Yes
Highland Valley Copper	Yes	Yes	No
Teck Coal - Cardinal River Operations	No	No	No
Teck Coal - Coal Mountain Operations	No	No	No
Teck Coal - Elkview Operations	Yes	No	No
Teck Coal - Fording River Operations	Yes	Yes	Yes
Teck Coal - Greenhills Operations	No	No	No
Teck Coal - Line Creek Operations	No	No	No
Trail Smelter	Yes	Yes	Yes
Vancouver Corporate	Yes	Yes	Yes

EXTERNAL OUTREACH ASSESSMENT



EFFECTIVE COI ENGAGEMENT AND DIALOGUE

ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT



TAILINGS MANAGEMENT **REPORTING ASSESSMENT**



TAILINGS MANAGEMENT POLICY AND COMMITMENT TAILINGS MANAGEMENT SYSTEM ASSIGNED ACCOUNTABILITY AND RESPONSIBILITY FOR TAILINGS MANAGEMENT ANNUAL TAILINGS MANAGEMENT REVIEW

OPERATION, MAINTENANCE AND SURVEILLANCE (OMS) MANUAL





VALE INCO LIMITED

Vale Inco is a leading producer of nickel, copper, cobalt and precious metals. Headquartered in Toronto, the company is a wholly owned subsidiary of Vale S.A. (Vale), the world's second-largest mining company by market capitalization. Vale Inco has approximately 11,000 employees worldwide and had net sales of US\$4 billion in 2009.

Vale Inco is committed to sustainability and can fulfill this vision when its activities balance the generation of value for shareholders with a responsible approach to management, voluntary corporate actions and partnerships with a range of stakeholders. At all times the company strives to leave a positive social, economic and environmental legacy in the areas where it operates.

Vale Inco's TSM report includes information on each of its Canadian sites. The year was a challenging one for the company, with labor disputes impacting Canadian production in the latter half of 2009. It was also a challenging year for the economy in general. The global economic downturn brought decreased demand and forced difficult decisions to ensure the company's short- and long-term health. Nevertheless, Vale Inco made gradual progress towards its vision of sustainability.

EXTERNAL OUTREACH

Among the most significant accomplishments of 2009 for Vale Inco was the relaunch of the Public Liaison Committee in Thompson, Manitoba. This committee provides invaluable advice to company personnel on how best to reflect the principles of Vale's sustainable development policy while responding to the needs and perspectives of northern Manitoba communities. The company's outreach in Thompson includes an annual open house and extensive collaboration with community partners to achieve community goals.

External outreach was a focus in Newfoundland and Labrador as well. In addition to continuing its longstanding partnership with local Innu and Inuit communities, the company established formal liaison committees with the communities and fisheries

AT ALL TIMES THE COMPANY STRIVES TO LEAVE A POSITIVE SOCIAL, ECONOMIC AND ENVIRONMENTAL LEGACY IN THE AREAS WHERE IT OPERATES. industry in and around Long Harbour, the site of a hydrometallurgical processing facility currently under construction. Looking forward, the company plans to develop a formal external outreach system to ensure that all stakeholders in Vale Inco in Newfoundland and Labrador remain effectively engaged.

ENERGY USE AND GHG EMISSIONS MANAGEMENT

For 2009 Vale Inco established a 5 percent energy intensity improvement target for its Canadian, UK and Indonesian operations. To help meet the target, the company designated a company energy leader, did extensive auditing of its energy use and developed a Vale Inco "energy professionals" network for sharing best practices.

Company restructuring in the wake of the global economic crisis, as well as the ongoing labour disruption at the Sudbury, Port Colborne and Voisey's Bay operations, negatively impacted Vale Inco's ability to meet its energy intensity target. However, the company is currently revising its energy strategy and intends to drive performance forward once normal operations resume.

TAILINGS MANAGEMENT AND CRISIS MANAGEMENT PLANNING

Vale Inco maintained its performance in the areas of tailings management and crisis management planning. In 2009 the company revised its tailings management accountabilities to reflect a new organizational structure and continued with annual audits of tailings management performance. In future, the company will expand the review program to include all aspects of its tailings management system so as to meet





the specific requirements of MAC's tailings management guide, including review of low-risk components of the framework.

Also in 2009 Vale Inco completed the final components of crisis management required to cement its TSM score in this area. The Sudbury operation saw the first full review of the crisis management

system since its implementation in 2008. Vale Inco also met TSM requirements for annual meetings about the new system with local emergency response authorities.

For more information, please visit the Vale Inco website at www.inco.com.

Vale Inco Limited

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	Yes	Yes	Yes
Manitoba Operations	Yes	Yes	Yes
Ontario Operations - Port Colborne Refinery	Yes	Yes	Yes
Ontario Operations - Sudbury	Yes	Yes	Yes
VINL Labrador Operations	Yes	Yes	Yes



EXTERNAL OUTREACH

ASSESSMENT



TAILINGS MANAGEMENT **REPORTING ASSESSMENT**



ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT



TAILINGS MANAGEMENT POLICY AND COMMITMENT

TAILINGS MANAGEMENT SYSTEM

- ASSIGNED ACCOUNTABILITY AND RESPONSIBILITY FOR TAILINGS MANAGEMENT
- ANNUAL TAILINGS MANAGEMENT REVIEW
- OPERATION, MAINTENANCE AND SURVEILLANCE (OMS) MANUAL





XSTRATA COPPER CANADA

Xstrata Copper Canada is a member of the Xstrata Copper business unit headquartered in Brisbane, Australia, the fourth-largest copper producer in the world. The company employs 2,723 people including workers at the Kidd mine and metallurgical operations in Timmins, Ontario; the Horne smelter in Rouyn-Noranda, Quebec; the CCR refinery in East Montreal; the company's recycling operations; 16 closed sites; and the division office in Toronto.

The company's operations produce mainly copper and precious metals, which are marketed primarily in North America, Europe and Asia. In addition, sulphuric acid is produced at the Kidd metallurgical and Horne smelter sites, which are among the best base metal performers in Canada for sulphur fixation, with rates of 97.7 percent and 96.4 percent respectively in 2009.

To reduce energy costs, the Kidd mine optimized the operating time of its auxiliary vent fans in 2009. Programming capabilities allowed the fans to be operated by remote control at 25 levels within the mine. The program involved turning on and off up to four fans per level for at least four and a half hours a day without compromising air quality for workers.

Xstrata Copper Canada is implementing a multi-year action plan to improve air quality near its operations. At the Kidd metallurgical site's copper smelter, a new baghouse was commissioned to reduce lead and particulate emissions. At the Horne smelter, at year-end, the second of two secondary gas hoods was installed on the anode furnaces as part of a three-year commitment to reducing arsenic.

Xstrata Copper Canada is a pioneer and world leader in the recycling of metallic copper scrap and electronic waste, including circuit boards, chips and cell phones (total recycling was 100,000 tonnes in 2009). From this material, the Horne smelter extracts metals for

smelting and refining. For the third year in a row, the smelter invited local residents to bring their end-of-life electronic and electric devices to the site for Recycling Day. More than 350 people participated, contributing some 25 tonnes of electronic and electric equipment.

XSTRATA COPPER CANADA IS A PIONEER AND WORLD LEADER IN THE RECYCLING OF METALLIC COPPER SCRAP AND ELECTRONIC WASTE.

After completing remediation of the closed Murdochville mining and metallurgical facilities in 2009, Xstrata Copper Canada began the process of handing over the former mine service buildings for use as an industrial park. The company also completed the initial plan for voluntary rehabilitation of residential properties in the Sandy Beach area of the port of Gaspé, where the company maintained a concentrate storage and transfer facility for many years.

Staff at Kidd metallurgical have introduced an innovative process to destroy thiosalts. These sulphur compounds, formed during the milling process, can oxidize in tailings ponds and receiving waters in the presence of bacteria, producing acidic conditions that may reduce the water's pH. The process used at Kidd has been recognized as a best practice in water treatment by the Thiosalts Consortium, a government, industry and academic consortium led by the CANMET Mining and Mineral Sciences Laboratories (part of Natural Resources Canada). The Kidd site improved the tailings management area, including dredging two treatment ponds for added retention time, and in May 2009 commissioned a unique water treatment plant that uses hydrogen peroxide to oxidize thiosalts. To date the results have been very positive, leading Kidd metallurgical to openly share this innovative solution to an industry-wide issue.

In 2009 Xstrata Copper Canada made noticeable improvements in the areas of crisis management, external outreach, energy use and greenhouse gas emissions management, and tailings management as measured using TSM protocols.





Energy and greenhouse gases remain challenging areas, because the deepening of the underground mine requires more ventilation and more hoisting distance. In addition, opportunities to improve energy requirements at the refinery are limited, since electrical consumption is proportional to the tonnage of copper needing treatment.

In 2010 Xstrata Copper Canada will continue to work on several TSM fronts, aiming to bring its lower scores up to Level 3 or better.

For more information, please visit the Xstrata Copper Canada website at www.xstrata.com.

Xstrata Copper Canada

EXTERNAL OUTREACH

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
CCR Refinery	Yes	Yes	Yes
Corporate	Yes	Yes	Yes
Horne Smelter	Yes	No	No
Kidd Metallurgical	Yes	Yes	Yes
Kidd Mining	No	Yes	Yes



REPORTING

TAILINGS MANAGEMENT REPORTING ASSESSMENT



ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT





XSTRATA NICKEL

Xstrata Nickel is the world's fifth-largest nickel producer, with annual managed production of 88,000 tonnes of refined nickel. The company is also one of the world's largest recyclers and processors of nickel and cobaltbearing materials. A commodity business unit within Xstrata plc, a major global mining group, Xstrata Nickel is headquartered in Toronto.

Xstrata Nickel's Canadian mining operations and processing facilities are located in Ontario and Quebec, and the company also has facilities in the Dominican Republic, western Australia and Norway. Xstrata Nickel also has a promising portfolio of growth projects, including Koniambo in New Caledonia and Kabanga in Tanzania.

Sustainability lies at the foundation of Xstrata Nickel's business strategy and activities. Sustainability requires meaningful engagement with communities of interest. It also requires maintaining the highest regard for environmental stewardship, social responsibility, corporate governance and transparent reporting, while delivering superior shareholder returns. These values underlie the company's support for the TSM initiative.

In 2009 all sites reviewed and revised their identified communities of interest and launched formal engagement plans. At the Sudbury operations, activities included hosting public engagement sessions related to operational activities, specifically concerning the release of the Sudbury Soils Environmental Risk Assessment results. At the Raglan mine in northern Quebec, a formal committee of representatives from neighbouring Inuit communities and site management meets regularly. The mine also hosted visitors from the Inuit communities and from political, scientific and business sectors.

All sites maintain formal complaint and response systems, with processes for follow-up. In addition, each site develops and maintains corporate social involvement plans based on the priorities of the local community.

As underscored by the company's 2009 energy use and GHG emissions management results, all sites continue to have energy management systems and reporting mechanisms in place. These include appropriate and

SUSTAINABILITY LIES AT THE FOUNDATION OF XSTRATA NICKEL'S BUSINESS STRATEGY AND ACTIVITIES. verifiable GHG data collection processes for Scope 1 and Scope 2 emissions.

In 2009 each site developed an energy management plan based on achieving Xstrata Nickel's energy targets, with an emphasis on conservation and demand management. The company reviewed its GHG emissions profile, along with the associated risks and opportunities, and continued to monitor the potential business impacts of the rapidly evolving global regulatory environment.

During the year all Xstrata Nickel operations completed third-party audits against the company's 17 sustainable development standards. These standards itemize intent and performance against core requirements such as leadership, biodiversity conservation, communication and engagement, risk and incident management, and community, and they are reflected in the TSM protocols.

In the company's view, generating awareness of the TSM framework is complementary to Xstrata's sustainability framework and assurance program. The company supports the TSM industry leaders' efforts to identify ways of promoting alignment among the many corporate, national and global reporting requirements and sustainability frameworks that exist.

For more information on Xstrata Nickel's sustainability performance, please visit the company's website at www.xstratanickel.com.





Xstrata Nickel

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Corporate	Yes	Yes	Yes
Raglan Mine	Yes	Yes	No
Sudbury Mines/Mill	Yes	Yes	Yes
Sudbury Smelter	Yes	Yes	Yes



EXTERNAL OUTREACH

ASSESSMENT





GHG EMISSIONS INTENSITY PERFORMANCE TARGET

TAILINGS MANAGEMENT **REPORTING ASSESSMENT**





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XSTRATA ZINC CANADA

Xstrata Zinc Canada manages the North American operations of Xstrata plc's zinc business unit and includes mining and metallurgical operations in eastern Canada. The following facilities have implemented TSM:

- Brunswick mine, Bathurst, New Brunswick
- Brunswick smelter, Bathurst, New Brunswick
- Noranda Income Fund, CEZ refinery (25 percent interest), Valleyfield, Quebec

The Perseverance mine in Matagami, Quebec, came on line in late 2008. Implementation of TSM at this facility began recently and will be reported on in the future.

Xstrata plc has a stringent sustainable development framework that consists of 17 functional areas and is considered world-class. All facilities must implement the framework and must have their implementation externally verified. (For more details, see www.xstrata.com/sustainability.)

Several of Xstrata's framework standards apply directly to TSM indicators. For example, communication and engagement (Standard 4) and social and community engagement (Standard 12) relate directly to TSM's external outreach performance element. Xstrata Zinc has

demonstrated optimal performance in these areas, as shown by third-party auditing. As the Brunswick mine approaches the end of its mine life, this performance area is of increasing importance. The company is applying significant resources to minimize, as much as possible, the impact on employees and the local community.

XSTRATA PLC HAS A STRINGENT SUSTAINABLE DEVELOPMENT FRAMEWORK THAT CONSISTS OF 17 FUNCTIONAL AREAS AND IS CONSIDERED WORLD-CLASS. Tailings dam management is a vital environmental concern, and a tailings dam failure would be considered a catastrophic hazard under the Xstrata sustainable development framework (Standard 6). The Brunswick mine has a very strong management system in place because of the risk inherent in this type of facility. The management system, as well as the site's OMS manual, is subject to regular third-party audits and internal audits. No further work on the management system is anticipated at the Brunswick mine, where the current priority is effective closure planning.

Greenhouse gas and energy conservation remains an important metric at all Xstrata Zinc facilities, where the focus is on energy reduction.

At Xstrata, the top priority is to prevent crises from occurring. As a result, crisis communications planning has taken a secondary role. This is an area the company will enhance in the coming year.

For more information, please visit the Xstrata Zinc Canada website at www.xstrata.com.





Xstrata Zinc Canada

CRISIS MANAGEMENT PLANNING ASSESSMENT

	PREPAREDNESS	REVIEW	TRAINING
Brunswick Mine	Yes	Yes	No
Brunswick Smelter	Yes	Yes	Yes
Corporate	Yes	No	No

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EXTERNAL OUTREACH

ASSESSMENT

ENERGY USE AND GHG EMMISSIONS MANAGEMENT ASSESSMENT



TAILINGS MANAGEMENT REPORTING ASSESSMENT

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