There's a right way.
And it's Canada's way.

TOWARDS
SUSTAINABLE
MINING

Towards Sustainable Mining
Vers le développement minier durable

> **"TSM PROVIDES A PRACTICAL AND TANGIBLE SYSTEM OF CONTINUOUS IMPROVEMENT OF SOCIAL AND ENVIRONMENTAL MANAGEMENT."**
>
> - CANADIAN BUSINESS FOR SOCIAL RESPONSIBILITY (2009)

TABLE OF CONTENTS

WHAT IS TOWARDS SUSTAINABLE MINING?

The Towards Sustainable Mining (TSM) initiative is the Mining Association of Canada's (MAC) commitment to responsible mining and participation in the program is mandatory for our members. It is a set of tools and indicators to drive performance and ensure that our members are doing the right things for the right reasons at each of their facilities. Adhering to the guiding principles of TSM, mining companies demonstrate leadership by:

- **Engaging with communities.**
- **Driving world-leading environmental practices.**
- **Committing to the safety and health of employees and surrounding communities.**

Today, communities expect more of mining companies and the industry expects much more of itself. TSM helps mining companies meet society's needs for minerals, metals and energy products in the most socially, economically and environmentally responsible way. At its core, TSM is:
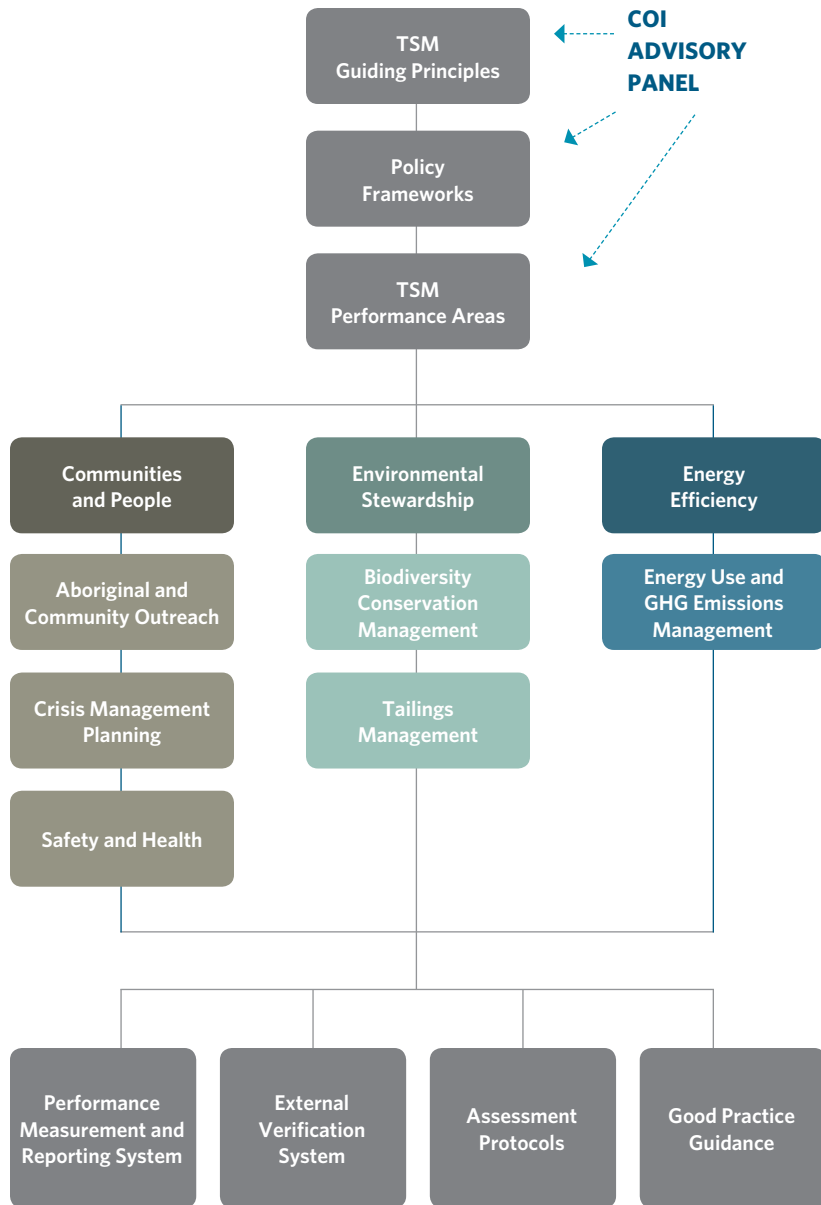
ACCOUNTABLE

Assessments are conducted at the facility level where mining activity takes place – the only program in the world to do this in our sector.

TRANSPARENT

Members publicly report their performance against 23 indicators annually in MAC's *TSM Progress Reports* and results are externally verified every three years.

CREDIBLE

TSM is overseen by an independent Community of Interest (COI) Advisory Panel, which shapes the program for continual advancement.

TSM
Guiding Principles

COI
ADVISORY
PANEL

Policy
Frameworks

TSM
Performance Areas

Communities and People
- Aboriginal and Community Outreach
- Crisis Management Planning
- Safety and Health

Environmental Stewardship
- Biodiversity Conservation Management
- Tailings Management

Energy Efficiency
- Energy Use and GHG Emissions Management

- Performance Measurement and Reporting System
- External Verification System
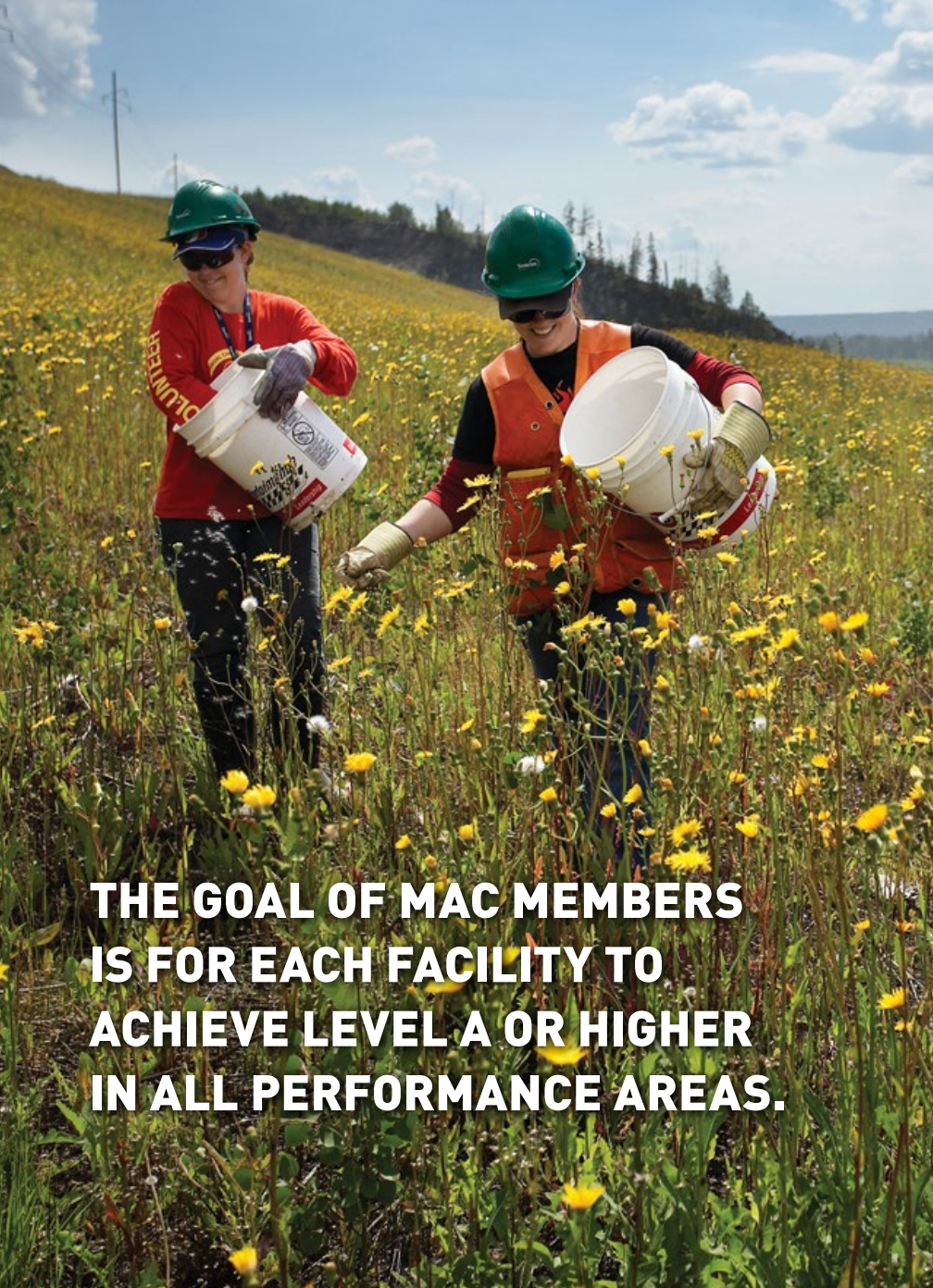- Assessment Protocols
- Good Practice Guidance

HOW TSM WORKS

To translate commitments into action on the ground, MAC developed six performance protocols that focus on three core areas: **Communities and People**, **Environmental Stewardship** and **Energy Efficiency**.
Each protocol is made up of a set of indicators that help mining facilities build, measure and publicly report on the quality of their management systems and their performance in key areas of mining activity.

MEASURING, VERIFYING AND REPORTING PERFORMANCE WHERE IT COUNTS – AT THE MINE-SITE.

TSM EVALUATES PERFORMANCE AGAINST 23 INDICATORS UNDER 6 PROTOCOLS

Communities and People

Aboriginal & Community Outreach	Crisis Management Planning	Safety & Health
COI identification	Crisis management preparedness	Policy, commitment & accountability
Effective COI engagement & dialogue	Review	Planning, implementation & operation
COI response mechanism	Training	Training, behaviour & culture
Reporting		Monitoring & reporting
		Performance

Environmental Stewardship

Tailings Management	Biodiversity Conservation Management
Tailings management policy & commitment	Corporate biodiversity conservation commitment, accountability & communications
Tailings management system	Facility-level biodiversity conservation planning & implementation
Assigned accountability & responsibility for tailings management	Biodiversity conservation reporting
Annual tailings management review	
Operation, maintenance and surveillance manual	

Energy Efficiency

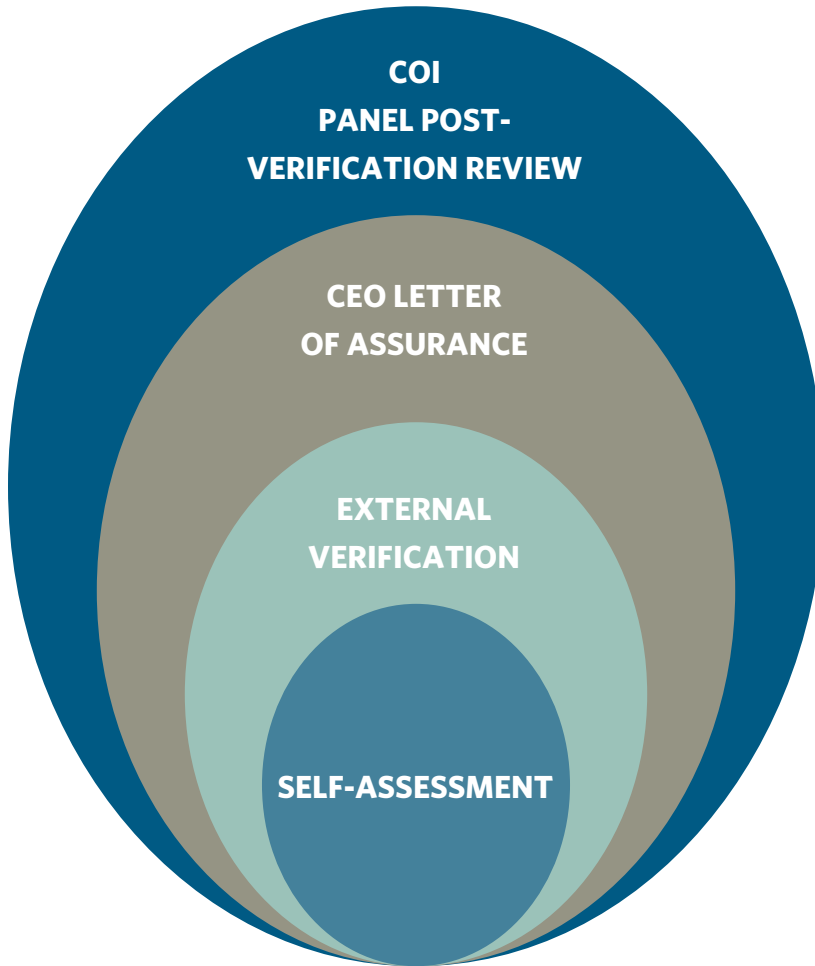| Energy Use & GHG Emissions Management |
|---|
| Energy use & GHG emissions management systems |
| Energy use & GHG emissions reporting systems |
| Energy & GHG emissions performance targets |

TSM PERFORMANCE RATING SYSTEM

Mining operations annually self-assess their performance against each of the TSM program's 23 indicators under the six protocols. For each indicator, they assign a letter grade that reflects their performance ranging from Level C to Level AAA. These grades are made public in MAC's annual *TSM Progress Reports* for each facility.

One of the key strengths of TSM is that mining companies are measured where the mining activity actually takes place – at the facility level. The results provide local communities with a meaningful view of how a nearby mine is faring.

THE GOAL OF MAC MEMBERS IS FOR EACH FACILITY TO ACHIEVE LEVEL A OR HIGHER IN ALL PERFORMANCE AREAS.

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

LAYERS OF TSM VERIFICATION

COI PANEL POST-VERIFICATION REVIEW

CEO LETTER OF ASSURANCE

EXTERNAL VERIFICATION

SELF-ASSESSMENT

TSM VERIFICATION PROCESS

TSM requires a number of checks and balances to ensure that reported results are accurate. Every year, a facility is required to undergo a self-assessment to determine its level of performance. Every three years, an external verifier reviews a company's self-assessments at each of their facilities to determine if there is adequate evidence to support the reported ratings. The company's CEO (or equivalent) is also required to submit a Letter of Assurance confirming that the verification followed TSM's requirements.

Each year, a sample of companies is selected by the Community of Interest (COI) Advisory Panel to present their verified results, providing another opportunity to validate their performance. Letters of Assurance and the COI Advisory Panel's post-verification review reports are publicly available at www.mining.ca.

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

COI ADVISORY PANEL CORE CATEGORIES

ABORIGINAL	Individuals who represent the interests of Aboriginal Canadians, including First Nations, Inuit and Métis.
ENVIRONMENTAL NGO	Individuals with environmental expertise and advocates for environmental protection.
ECONOMIC AND COMMUNITY DEVELOPMENT	Individuals with expertise in business development at the community level and knowledge of community interactions with mining facilities.
SOCIAL NGO, INCLUDING FAITH-BASED GROUPS	Individuals who represent civil society with knowledge of social justice issues.
FINANCE AND INVESTMENT	Individuals with financial expertise and knowledge of socially responsible investing.
INTERNATIONAL DEVELOPMENT	Individuals with expertise in alleviating poverty and improving the standard of living through responsible development.
LABOUR AND WORKPLACE	Individuals with knowledge of the interests, safety and needs of workers.
MEDIA AND COMMUNICATIONS	Individuals with expertise in the reputation of industry and perceptions of the public.

COI ADVISORY PANEL

The COI Advisory Panel is an independent, multi-interest group that oversees the TSM initiative and serves as a consultative body for the Canadian mining industry. The Panel played a key role in the program's design from the very beginning, and continues to be integral to its evolution and implementation.

In addition to the Panel's role in the post-verification review process each year, it meets regularly with senior mining representatives to provide support and advice for TSM, as well as identify emerging issues for the sector, and encourage the mining industry to raise the bar in corporate responsibility. Every year, the Panel prepares a statement about TSM, the mining sector and relevant issues that is published in MAC's annual *TSM Progress Report*.

THE COI ADVISORY PANEL SHAPES TSM FOR CONTINUAL ADVANCEMENT.

COMMUNITIES AND PEOPLE

COMMUNITIES AND PEOPLE

TSM measures mining operations' performance in Aboriginal and community outreach, safety and health, and crisis management planning. Through TSM, mining operations can more effectively engage with people in surrounding communities, as well as ensure they are well informed of relevant issues. TSM also helps to ensure the safest possible working environment for employees and contractors at the mine site.

| Aboriginal & Community Outreach | Crisis Management Planning | Safety & Health |

ABORIGINAL AND COMMUNITY OUTREACH

TSM requires facilities to have formal systems in place to establish who they should be speaking with about their operations and how to best engage with them. Facilities must also establish two-way dialogue with their communities of interest (COI), have systems in place to receive and respond to concerns, and keep the public apprised of their activities and performance. Facilities are also required to publicly report on their engagement with communities.

The criteria to achieve each level in this area are outlined in the Aboriginal and Community Outreach protocol, available at www.mining.ca. Below are examples of actions a facility would have to take to achieve a Level A for this protocol:

- Implement a formal system to identify local COI, including challenging interests.
- Ensure that communications with COI are written in the local language and in a way that is clear and understandable.
- Establish a formal complaint and response system with processes for follow-up and tracking.

In the early years of TSM, most facilities had only informal systems or processes in place for engaging with communities and Aboriginal people. Today, the results for this protocol are very strong, with the overwhelming majority of facilities demonstrating good practice in this area.

ABORIGINAL & COMMUNITY OUTREACH
PERCENTAGE OF FACILITIES AT LEVEL A OR HIGHER

Community of Interest (COI) Identification: 52% (2006), 93% (2011), 95% (2012)
Effective COI Engagement & Dialogue: 54% (2006), 69% (2011), 88% (2012)
COI Response Mechanism: 59% (2006), 86% (2011), 93% (2012)
Reporting: 52% (2006), 93% (2011), 92% (2012)

● 2006   ● 2011   ● 2012

95% of the facilities have established and implemented formal systems to identify COI.

93% have formal processes to receive feedback from their COI and ensure they consider and respond to community complaints and concerns.

92% have established formal systems to report on their engagement with their COI.
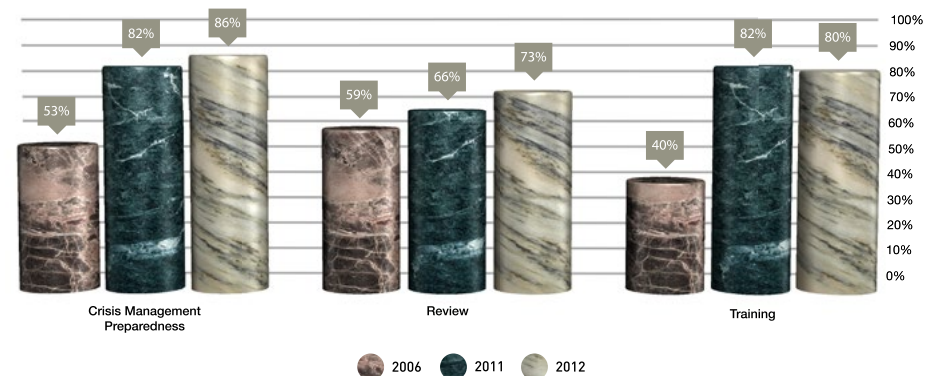
CRISIS MANAGEMENT PLANNING

For Crisis Management Planning, head offices and facilities achieve good performance when they answer "yes" to the protocol's three indicators.

The protocol requires both head offices and facilities to develop crisis management plans, and establish crisis communications teams to support the execution of these plans. Facilities must have crisis communications programs in place to effectively alert employees and the public of a crisis, as well as any developments and how the situation is being resolved.

The criteria is outlined in the Crisis Management Planning Protocol, available at www.mining.ca. Below are examples of actions companies would have to take to meet the protocol's requirements:

- Develop a Crisis Management Plan, which is regularly reviewed and updated.
- Conduct "table top" crisis simulation exercises annually and a full crisis simulation every three years.
- Meet annually with senior members of the local emergency response authorities.

CRISIS MANAGEMENT PLANNING
PERCENTAGE OF FACILITIES & COMPANIES RESPONDING "YES"

Crisis Management Preparedness: 53% (2006), 82% (2011), 86% (2012)
Review: 59% (2006), 66% (2011), 73% (2012)
Training: 40% (2006), 82% (2011), 80% (2012)

● 2006   ● 2011   ● 2012

86% have developed crisis management plans, established crisis management teams and implemented crisis communications programs.

73% have reviewed and updated their crisis plan to ensure it remains responsive and relevant.

80% have conducted crisis management training, including table-top simulations.
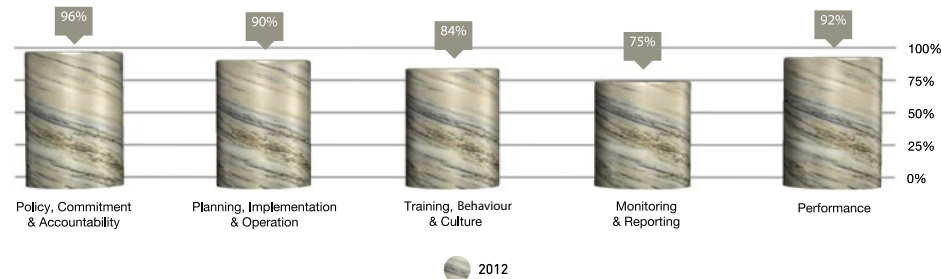
SAFETY AND HEALTH

TSM requires facilities to establish clear accountability for safety and health management and performance. They must adopt a formal management system to prevent the occurrence of all incidents, set targets for continuous improvement, and implement a monitoring program to facilitate internal and public reporting of their results. Facilities must also provide a training program that consists of a training needs analysis, as well as risk-based training and orientation for all employees, contractors and visitors.

The criteria to achieve each level in this area are outlined in the Safety and Health protocol, available at **www.mining.ca**. Below are examples of actions a facility would have to take to achieve a Level A for this protocol:

- Provide a formal safety observation program for workers to support and reinforce training, and encourage safe behaviour and work practices.
- Establish performance metrics that are clearly defined, consistently applied, regularly assessed and reported, and used for trending and prioritizing improvements.
- Implement a monitoring program that includes tracking and reporting of leading and lagging indicators, safety and health inspection and monitoring, health surveillance, and incident investigation and follow up.

SAFETY & HEALTH MANAGEMENT
PERCENTAGE OF FACILITIES AT LEVEL A OR HIGHER

96%	90%	84%	75%	92%
Policy, Commitment & Accountability	Planning, Implementation & Operation	Training, Behaviour & Culture	Monitoring & Reporting	Performance

2012

90% have implemented a safety and health management system consistent with industry best practice.

84% effectively trained employees and contractors to ensure they are competent in identifying hazards and preventing incidents.

92% have established performance targets for safety and health.

ENVIRONMENTAL STEWARDSHIP

ENVIRONMENTAL STEWARDSHIP

Through TSM, mining operations have access to best practices in tailings management and biodiversity conservation management and are evaluated on their performance in these areas. TSM helps to ensure that mining operations manage their tailings facilities responsibly to protect human safety and the environment. Mining facilities must also adopt management systems and set targets to limit impacts to local biodiversity and are encouraged to collaborate with local conservation groups to improve outcomes.

Tailings Management

Biodiversity Conservation Management

TAILINGS MANAGEMENT

TSM requires a facility to implement a system for responsible tailings management. This includes assigning executive-level accountability and responsibility for tailings management and developing and maintaining an operation, maintenance and surveillance (OMS) manual. A facility must also evaluate the performance and adequacy of their tailings management system annually.

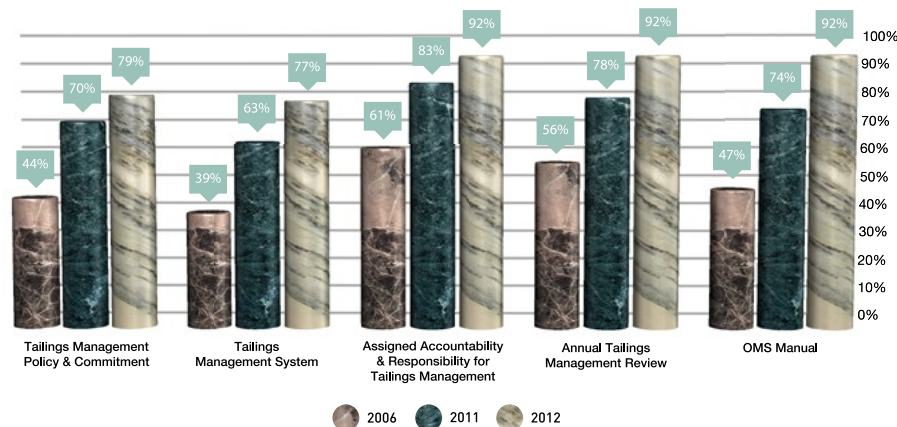The protocol is based on three MAC guides, recognized internationally as best practice:

- *A Guide to the Management of Tailings Facilities*
- *A Guide to Audit and Assessment of Tailings Facility Management*
- *Developing an OMS Manual for Tailings and Water Management Facilities*

The criteria to achieve each level in this area are outlined in the Tailings Management protocol, available at **www.mining.ca**. Below are examples of actions a facility would have to take to achieve a Level A for this protocol:

- Consult with COI in the development and/or review of its tailings management policy and management system.
- Annually report the results of the corporate review of tailings management to the accountable executive officer.
- Establish emergency preparedness and response plans.

Overall, performance has improved significantly over the past few years, largely as a result of wider application of the tailings guides.

TAILINGS MANAGEMENT
PERCENTAGE OF FACILITIES AT LEVEL A OR HIGHER

Legend: 2006, 2011, 2012

Categories: Tailings Management Policy & Commitment (44%, 70%, 79%); Tailings Management System (39%, 63%, 77%); Assigned Accountability & Responsibility for Tailings Management (61%, 83%, 92%); Annual Tailings Management Review (56%, 78%, 92%); OMS Manual (47%, 74%, 92%)

77% have implemented a formal tailings management system that is consistent with industry best practice.

92% have assigned overall accountability for tailings management to an executive officer of the company (CEO or COO).

92% have conducted an annual review and evaluation of their tailings management system.

BIODIVERSITY CONSERVATION MANAGEMENT

TSM requires facilities to establish formal commitments to manage biodiversity at their sites and ensure that action plans for significant biodiversity aspects are implemented. Facilities must also implement biodiversity reporting systems to inform decision-making and communicate their performance publicly.
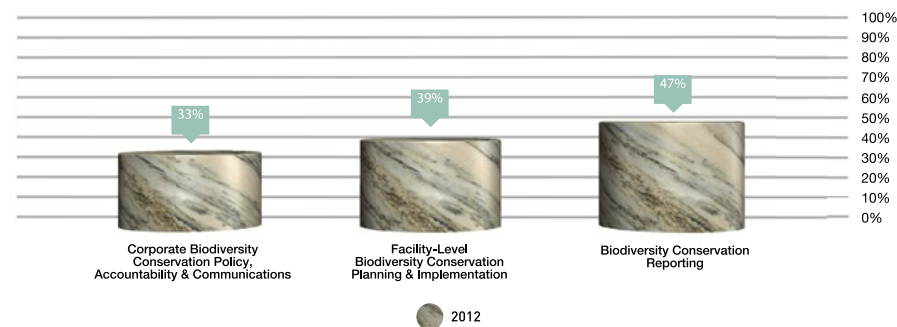
The criteria to achieve each level in this area are outlined in the Biodiversity Conservation Management protocol, available at **www.mining.ca**. Below are examples of actions a facility would have to take to achieve a Level A for this protocol:

- Identify and set targets for significant biodiversity aspects and develop action plans to achieve those targets.
- Assign roles, responsibilities and accountabilities for implementing biodiversity commitments, action plans and reporting.
- Engage with COI on their biodiversity action plans.

In 2013, results for this protocol were published for the first time and reveal that more attention should be placed on improving performance in this area. As new protocols are introduced, MAC's experience is that facilities reporting at a lower performance level will learn from their peers and will see their performance gradually improve as they implement leading management systems.

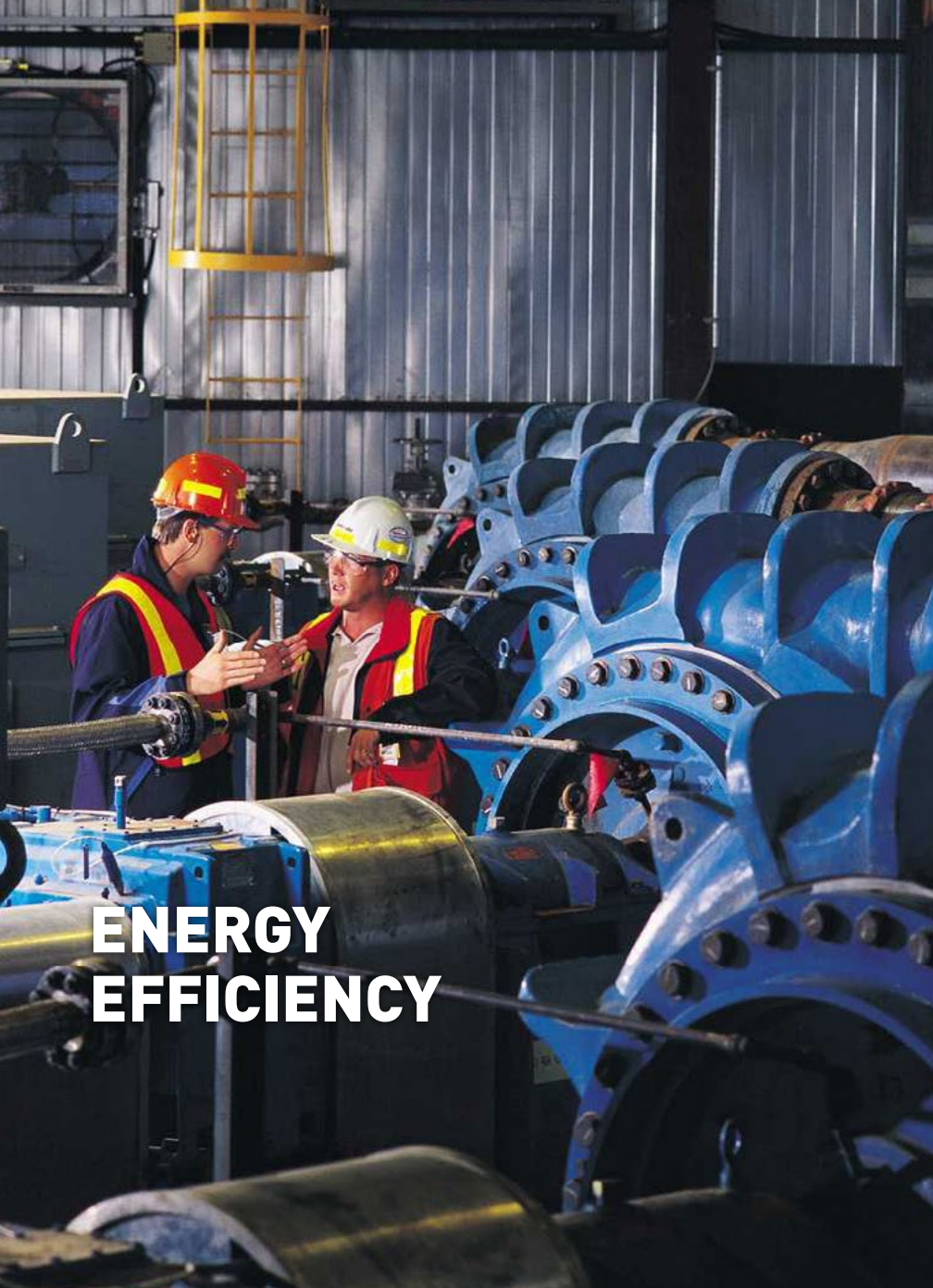## BIODIVERSITY CONSERVATION MANAGEMENT
PERCENTAGE OF FACILITIES AT LEVEL A OR HIGHER

2012

33% have established a corporate commitment for biodiversity conservation.

39% have effective plans and management systems to ensure that significant biodiversity aspects are managed responsibly.

47% have developed a process to track and report conservation efforts and publicly report performance.

ENERGY EFFICIENCY

Improving energy efficiency and reducing greenhouse gas (GHG) emissions are priorities for the mining industry, and TSM measures a facility's ability to track and report energy data, as well as establish and meet targets. Through comprehensive management systems, TSM helps mining operations reduce emissions that contribute to climate change, while helping to reduce operational costs.

Energy Use & GHG Emissions Management
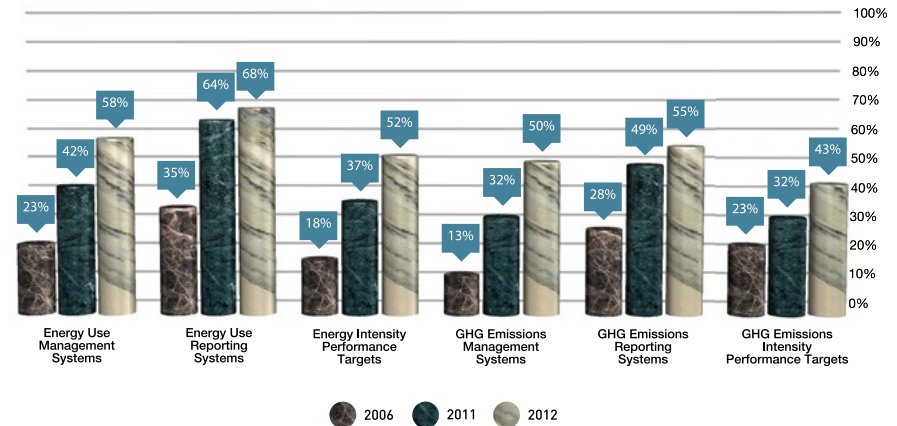
ENERGY USE AND GHG EMISSIONS MANAGEMENT

TSM requires facilities to establish comprehensive systems for energy use and GHG emissions. This includes providing energy awareness training and establishing systems to track and report data for internal and external reporting. Facilities must also set and meet targets for their energy use and GHG emissions performance.

The criteria to achieve each level in this area are outlined in the Energy Use and GHG Emissions Management protocol, available at www.mining.ca. Below are examples of actions a facility would have to take to achieve a Level A for this protocol:

- Implement a comprehensive energy use and GHG emissions management and reporting system.
- Assign accountability for energy use and GHG emissions to operational managers.
- Publicly report energy use and GHG emissions performance data annually.

Results for this protocol have been steadily improving since 2006, and the number of facilities achieving a Level A or higher has doubled for many indicators. Advancing industry-wide performance in this area remains a strong priority for MAC and its members.

ENERGY USE & GHG EMISSIONS MANAGEMENT
PERCENTAGE OF FACILITIES AT LEVEL A OR HIGHER

Legend: 2006, 2011, 2012

68% have developed and implemented a system to provide robust energy use data to COI and inform decision-making.

52% have set and achieved annual energy use performance targets.

55% have developed and implemented a system to provide robust GHG emissions data to COI and inform decision-making.

43% have set and achieved annual GHG emissions performance targets.

TEN YEARS OF TSM

Established in 2004, MAC's award-winning TSM initiative is now celebrating 10 years of driving performance at mining operations across Canada and beyond.

Over the years, TSM has reached many important milestones and has been recognized by reputable organizations with awards and accolades for its impact in the Canadian mining industry. TSM has been recognized with awards by the Globe Foundation (2005), the Prospectors & Developers Association of Canada (2012) and the Excellence in Corporate Responsibility Awards (2013), the latter sponsored by a group of highly-reputable sustainability experts including Green Living Enterprises, the Canadian Business for Social Responsibility, CIRAIG (Interuniversity Research Centre for the Life Cycle of Products, Processes and Services), The Natural Step Canada, Jantzi-Sustainalytics, Corporate Knights, Pembina Institute, SustainAbility and Bob Willard.

TSM has extended beyond the MAC membership. In 2011, the Mining Association of British Columbia (MABC) adopted TSM for its members. MAC continues to work with MABC to provide training for their members and prepare them for implementation and public reporting. MAC also continues to encourage other provincial associations to follow the same path.

TSM has been successful in pushing for continuous progress in the mining sector. The proof is in the results, which have seen steady improvement over the duration of TSM. For a detailed look at facility-level results, visit **www.mining.ca**.

"IT IS DIFFICULT TO UNDERSTAND HOW A COMPANY OPERATES BY READING CORPORATE SUSTAINABILITY REPORTS ALONE. THE TSM PROGRESS REPORT GIVES COMMUNITIES THE TOOLS TO EVALUATE PERFORMANCE AND PROVIDES WEIGHT IN TERMS OF HOW COMPANIES CAN BE COMPARED."

- BARRIE FORD, WILDLIFE BIOLOGIST, MAKIVIK CORPORATION

The Mining Association of Canada (MAC) is the national organization of the Canadian mining industry.

For more information about MAC and TSM, visit the Mining Association of Canada's website:

WWW.MINING.CA