

# Environment/Sustainability

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Under CEMI opportunities to support environmental research excellence as it relates to the sustainability of mines and mining are currently being evaluated. We invite your participation in these endeavours.

**Purpose** - Identify relevant and significant research gaps that CEMI can address and use to demonstrate research excellence.

**Context** – Issues related to the environment and the sustainability of mines and mining are of increasing interest to mining companies and to society at large. CEMI has determined through stakeholder consultation sessions that research into topics related to the possible impact of climate change on mining infrastructure; zero discharge mining operations; and energy reduction/re-use/recycling is of specific relevance.

**Objectives** - Demonstrate excellence in environmentally-focused research that addresses the sustainability of mines and mining.

## Current Future Project Scoping Work Underway:

### 1. The Impact of Climate Change on Mining Infrastructure

CEMI wants to explore whether there may be opportunities to support research excellence related to trying to determine the likely impact of a changing climate on the infrastructure associated with these mines. The implicit assumption is that mostly, or only, mining infrastructure in the Far North is affected but this may be too narrow a viewpoint. There may be impacts in the “more traditional” mining areas as well. Your views on this are most welcome.

What is the likely impact of climate change on mining infrastructure from a future design and construction standpoint? Will existing sites require re-configuration to adapt and will efforts being made by mining companies to reduce the footprint of their sites be negatively impacted?

Finally, what is the likely future economic impact of climate change on mining infrastructure?

### 2. Energy Reduction/ Re-use/ and Recycling

CEMI wants to explore whether there may be opportunities to support research excellence related to trying to determine whether there are more efficient ways to use energy in mines through its re-use or reduction, etc. For example, what scope is there for taking the waste heat generated by mining equipment and using it for some other purpose- in or outside the mine? Are there similar opportunities to use water differently in mines- for electricity generation, for example?

Also, are there opportunities for mines to expand upon work already conducted in the field of geothermal heat pumps/exchangers, thereby reducing reliance on the use of fossil fuels for electricity supply with consequent reduction in GHG emissions and the environmental footprint of mines?

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### 3. Zero water Discharge Mines

CEMI wants to explore whether there may be opportunities to support research excellence related to the reduction/elimination of water discharge from mining operations, thereby impacting significantly the footprint of mines.

Also, can we determine whether factors that impact the risks to ecosystems such as water management practices (including discharge); protection systems, mechanisms and techniques in sensitive areas can be improved through further research?

The appropriate research project- once selected- will be part of a four-year strategic program (SRP#5; see [www.miningexcellence.ca](http://www.miningexcellence.ca)) that will initially run four years at a minimum project cost of \$1M.

### Industry Sponsorship

Additional industry participation in this project will be welcomed through sponsorship and collaboration.

#### a) Current program sponsors:

– The current stakeholders are identified as the mining companies (Xstrata Nickel, Vale Inco,), appropriate research/consulting organizations, as well as universities.

#### b) New program sponsors can join as:

– A single strategic research program (SRP) sponsor and contribute \$50,000 per year for 4 years. If the program is extended, new sponsors will be expected to contribute at a higher rate to buy into previous achievements (\$75,000/years). Program sponsors are also expected to make in-kind contributions by providing access to data and information and by designating an active program participant.

– Multiple strategic research program sponsor and CEMI membership (as per bylaws) at \$100,000 per year for 4 years. CEMI Membership allows the member to participate in up to two SRPs and to assume technical advisory functions within CEMI's program management structure.

### Benefits to Strategic Research Program (SRP) Sponsorship

- Free access to the all products of the research (e.g., software tools, handbook, etc) for the duration of the project and for use at all of its operations (some confidentiality, IP or copyright rules may apply).
- Receive a final report in electronic form (e.g., the online handbook) for free use within all their operations.
- Members have the ability to focus the research on sponsor specific sites, data, and case studies.