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## GLOBAL WARMING - Climate change impacts on the Canadian mining sector

By: James Ford, Tristan Pearce, Frank Duerden, Jason Prno and Dale Marshall

Climate change is already affecting the mining sector in Canada, and presents both risks and opportunities to current and future operations. The nature of these risks and the ability of the mining sector to adapt to reduce the negative impacts and take advantage of opportunities, however, remain unknown. A project being conducted by ARCTICNORTH CONSULTING is seeking to address this gap. Working with stakeholders from the mining industry, the project will examine current and potential impacts of climate change on the mining sector, and will outline adaptation strategies that could be implemented to mitigate those impacts.

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### INTRODUCTION

The scientific evidence that climate change is occurring is overwhelming, and Canada is at the forefront of our changing climate. From the frozen arctic tundra to the farmland of southern Ontario, and from the forests of British Columbia to the communities of the Atlantic coast, climatic norms are shifting, which has implications for business, industry and households.

The Canadian mining sector is already being affected by these changes. Changing ice and snow regimes have increased costs for companies relying on ice roads to access their operations in winter. An increase in the magnitude and frequency of hazardous conditions has forced many to invest in new protection measures and has affected delivery and maintenance schedules. Climate change has even forced some companies to re-evaluate the integrity of operations in current locations.

Not all the impacts, however, have been negative. Less ice and longer periods of open water, for instance, are increasing the window of opportunity for shipping, especially in our arctic regions. Some sectors of the mining industry even anticipate expanding markets as demand for fertilizers and uranium increase as bio-fuels and nuclear energy potentially become increasingly important energy sources.

The latest scientific assessments indicate that continued and accelerated climate change can be expected in the future. Mine operations across the nation will be exposed to altered precipitation, temperature and climate regimes, and it is expected that there will be an increase in the magnitude and frequency of natural hazards.

Investors are increasingly concerned about these risks; the likelihood of adverse impacts has created interest in developing measures to reduce or moderate the expected negative effects; in taking advantage of new opportunities; and reducing greenhouse gas emissions responsible for climate change. Yet, as NATURAL RESOURCES CANADA's recently released National Adaptation Assessment report makes clear, our understanding of the vulnerability of industrial sectors to climate change remains limited and our adaptation needs unspecified.

### ADDRESSING RESEARCH NEEDS

In March 2008, the "Climate Change Impacts on the Canadian Mining Sector" project was initiated by ArcticNorth Consulting. The project will work with stakeholders from the mining industry to examine current and potential impacts of climate change on mining, and will outline adaptation strategies that could be implemented to mitigate those impacts. For the purposes of this project, the mine sector encompasses mines producing metals, non-metals and mineral fuels (i.e., coal), consistent with the reporting done by the Canadian Minerals Yearbook, produced by Natural Resources Canada (see for example [http://www.nrcan.gc.ca/mms/cmy/pref\\_e.htm](http://www.nrcan.gc.ca/mms/cmy/pref_e.htm)). Petroleum and natural gas operations are specifically excluded from this research.

The project has four key objectives:

- 1 - to characterize how the Canadian mining sector is sensitive to climate change and assess how the problem is perceived among different operators;
- 2 - to document strategies the sector has adopted to deal with changes in climate currently affecting operations, and assess how these strategies differ across Canada and by mine type;
- 3 - to identify strategies to deal with expected future changes and explore potential costs of adaptation; and
- 4 - to identify greenhouse gas mitigation strategies currently used by the mining industry.

The first stage of the project involves reviewing the published literature (including academic journals, scientific reports, trade journals, and newspapers) to identify what we know about the sensitivity of the mining sector to climatic conditions and climate change.

The second stage of the project will survey industry experience and perspectives on problems and opportunities presented by climate change, opportunities and constraints to adaptation, and greenhouse gas emission technologies being employed. A trial survey was administered to delegates at the recent PROSPECTORS AND DEVELOPERS ASSOCIATION OF CANADA convention in Toronto, and the results will help in developing a Canada-wide, phone-mail-internet survey to canvass industry perspectives in greater detail. This expanded survey will be conducted in May and June; we look forward to collaborating with readers of the CANADIAN MINING JOURNAL on this assignment.

Results from the survey will feed into the final stage of the project, which will use in-depth case studies with relevant stakeholders (mine owners, operators, transportation providers, etc.) to investigate key trends revealed by the surveys. Selection of stakeholders will be guided by trends documented in the surveys, but we welcome hearing from interested parties.

## CONCLUSION

ArcticNorth Consulting is conducting one of the first assessments of climate change impacts, vulnerability, and adaptation in the mining sector in Canada. The project is expected to develop a general understanding of what the main impacts of climate change are, identify adaptation options currently being used, and outline potential for future adaptation. It is hoped the project will help improve capacity in the mining sector to manage current climatic stresses, reduce vulnerability to future climate change, and enhance business security.

The main report documenting the project findings will be completed in December 2008, and preliminary results can be expected in future editions of the Canadian Mining Journal. An overview of the project and results from the trial surveys will be presented at the CANADA INSTITUTE's Arctic Logistics conference, June 5-6 in Calgary, Alta. Project activities can also be viewed at [www.arctic-north.com](http://www.arctic-north.com).

## ABOUT THE AUTHORS

Dr. James Ford ([james.ford@arctic-north.com](mailto:james.ford@arctic-north.com)) and Tristan Pearce ([tristan.pearce@arctic-north.com](mailto:tristan.pearce@arctic-north.com)) are partners in ArcticNorth Consulting. ArcticNorth specializes in vulnerability assessment and adaptation planning, with a focus on climate change, natural hazards, and resource development. Jason Prno ([jprno@knightpiesold.com](mailto:jprno@knightpiesold.com)) of Knight Piesold Consulting is using this research as an opportunity for continuing professional development within his home firm. Frank Duerden ([fduerden@gmail.com](mailto:fduerden@gmail.com)) of Ryerson University is a consultant employed on the project. Dale Marshall ([dmarshall@davidsuzuki.org](mailto:dmarshall@davidsuzuki.org)) is a climate change policy analyst for the David Suzuki Foundation.

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