

Climate Change and Canadian Mining: Opportunities for Adaptation

Jason Prno, Trailhead Consulting
Tristan Pearce, ArcticNorth Consulting
James Ford, ArcticNorth Consulting
Frank Duerden, Frank Duerden Consulting
Dale Marshall, David Suzuki Foundation

2010 CIM Conference
Vancouver, British Columbia
May 11, 2010

Context

- Climate change an issue of global significance
- Research is lacking
- Study initiated by the *David Suzuki Foundation*, led by *ArcticNorth Consulting*

climate change and Canadian mining

OPPORTUNITIES FOR ADAPTATION



David
Suzuki
Foundation

SOLUTIONS ARE IN OUR NATURE

Industry Surveying

- 34% and 48% of respondents indicated climate change is already affecting operations
- Majority believed climate change would have negative impacts in the future
- Cost and uncertainty of future impacts are major barriers to adaptation



Courtesy: www.pdac.ca

Case Study Insights

Ontario

- Extreme precipitation and snow melting events lead to flooding and infrastructure failure risks
- Drier conditions lead to reduced water availability

Quebec

- Extreme and poor weather events affect production
- Changes in precipitation levels affect mine operations

Saskatchewan

- Variations in precipitation and temperature affect production levels

Case Study Insights

Yukon

- Extreme precipitation leads to flooding and overflow conditions

NWT

- Warmer temperatures and permafrost degradation lead to infrastructure failure risks



Courtesy: Diavik Diamond Mine

Summary

- Majority of mines in case studies affected by climatic hazards
- Most mine infrastructure not designed for a changing climate
- Climate change a minor concern
- Little adaptation planning occurring
- GHG mitigation the dominant response
- Vulnerabilities exist in the post operational phase of mining



What Does Climate Change Mean for Mining Operations in the Future?

In the context of water use and availability:

- Variability in amount
 - 'Drier' conditions
 - 'Wetter' conditions
- Variability in timing
 - When does the precipitation fall?
 - When do drought conditions occur?
 - Occurrence of 'extreme' events
- Dependent on geography

What Does Climate Change Mean for Mining Operations in the Future?

- Infrastructure & production risks
 - Buildings and built structures
 - Site drainage/hydrology
 - Transportation (land, sea and air)
 - Retention structures
- Regulatory risks
- Opportunities



Recommendations

For industry leaders:

- More effective communication of the potential risks posed by climate change
- Identification of the most cost-effective measures and technologies that will allow mines to adapt to climate change

Recommendations

For government regulators:

- Regulations to mandate adaptation planning during operations and through to decommissioning
- Regulatory certainty in regards to GHG mitigation requirements
- Improved climate modeling and communication of climate change projections

**Thank You.
Questions?**