

Cost of Adaptation for a Winter Road

Economic implications of climate change adaptation for mine access roads

CONTEXT

Northern ice roads provide vital access to businesses and communities. They are essential for continued northern development and prosperity. The focus of this study is the Tibbitt to Contwoyto winter road, which provides access to three active mines in the Northwest Territories. This road was chosen due to its sensitivity to climate change, the availability of past research and analysis and its regional economic importance. It is the busiest heavy-haul ice road in the world and the viability of the road into the future is a key concern for existing and potential mines along the route.



Economic Implications of Climate Change
Adaptations for Mine Access Roads in Northern Canada



Photo: Northern Climate ExChange

The approximately 600 km ice road is constructed on a yearly basis and allows the transportation of goods, materials and personnel to the mines. The road is open for several months every winter and is the sole overland access to the mines. Studying the costs of responding to climate change on northern ice roads can inform current

projects and continued northern development in the NWT, Nunavut, Yukon and other circumpolar jurisdictions.

OBJECTIVE

This project developed a cost-benefit analysis to assess climate change adaptation options for a major northern mine access road.

APPROACH

A multi-disciplinary team worked together to identify the adaptation costs for a mine access road. Team members brought expertise in northern climate change impacts, adaptation, vulnerability assessments, adaptation economics and climate analytics.

Researchers analyzed key climate change vulnerabilities associated with the ice road, and potential adaptations that could be used to modify the road. They then conducted an analysis of the financial costs and benefits associated with those vulnerabilities and adaptations, and the distribution of those costs and benefits.

EXPECTED RESULTS

Understanding the costs associated with adapting to climate change is critical for the current and future prosperity of the transportation and mining industries. The results of this study:

- Provide decision-makers with information and tools, including the cost of implementing adaptations, to help them with future decisions about transportation in a changing climate;
- Inform how adaptation cost-benefit analyses might be usefully conducted in other regions and on other types of infrastructure.

Significance

Conducting a cost-benefit analysis for a range of adaptation options for a major northern mine winter access road will help to better inform future decisions about transportation infrastructure in a changing climate.

Partners

- Northern Climate ExChange, Yukon Research Centre, Yukon College
- International Institute of Sustainable Development
- Risk Sciences International
- Nodelcorp Consulting Inc.
- EnviroEconomics
- Natural Resources Canada
- Pan-territorial Adaptation Partnership (Governments of Yukon, NWT, and Nunavut)

FOR MORE INFO

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