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.

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)

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