

ESTIMATING FUTURE COSTS FOR INFRASTRUCTURE IN THE PROPOSED CANADIAN NORTHERN CORRIDOR AT RISK FROM CLIMATE CHANGE

Nathan S. Debortoli, Tristan D. Pearce and James D. Ford

KEY MESSAGES

- The Canadian Northern Corridor (CNC) region is expected to experience warming temperatures and increasing precipitation. At some locations, mean temperatures could increase by 10.9°C, and mean precipitation by 45 per cent by 2100 in some areas.
- Climate change could create chokepoints along the CNC route, affecting key areas essential for transportation flow. Central regions of the corridor are projected to be more likely to receive concomitant impacts on several chokepoints, including combined threats from increasing frequency of wildfires, freezing rain and permafrost thaw.
- Adding climate change impacts to investment costs such as the CNC chokepoints can increase infrastructure costs by more than 101 per cent. Transportation engineering infrastructure, electric power infrastructure and the institutional buildings sectors are mostly likely to be impacted.
- Baseline variables (not including climate projections) show that current costs soar when these are internalized in cost analysis up to \$12 billion for freezing precipitation (especially Alberta and BC), \$7 billion for wildfires (especially BC) and more than \$400 million for permafrost (especially Alberta and BC).
- Infrastructure built along the CNC route will need to be designed to remain functional under different climatic conditions that predominate today. Chokepoints will dictate how buildings and transportation infrastructure should be planned.