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Airships and ice roads

Global warming forcing a re-think of how best to supply remote communities

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MOST discussions of climate change, melting ice caps and global weather events are focused on measurement. The debate needs to shift to consider how we are going to cope with these changes.

In no case is this more critical to Canada than the failing of the ice road transportation system. Over the past 10 years, the network in Manitoba has gone from 55 to 60 days of usage to 20 days or less in some years.

A similar contraction of the ice road season is also evident further north in Alaska and the Northwest Territories. In 2006, the Northwest Territories diamond mines needed to airlift 20 per cent of their supplies because the ice road season ended early.

If we fast forward another decade or so, ice roads may not be worth building. How do the remote communities that depend on this transportation system obtain fuel, construction materials and food supplies?

Manitoba and Ontario build 5,000 kilometres of ice roads each year. The costs of converting this ice road network into all-weather gravel roads is approximately \$2.5 billion with an annual maintenance cost of \$50 million. This is significantly more than the cost of building ice roads for Manitoba and Ontario which is less than \$20 million annually. Is anyone contemplating this level of infrastructure investment?

Airplanes could also be used to supply remote communities but in addition to their high operating costs, landing strips would have to be improved to accommodate larger aircraft. This idea is so easily dismissed that no estimates of using cargo airplanes to replace ice roads exist.

Two alternative modes of transport that could serve the remote northern communities are airships and hovercraft.

Hovercraft would require an improved travel corridor that is clear of trees, large obstructions and steep hills. Hovercraft velocity depends on the curvature of the route and the operating width of the right-of-way, but truck speeds can be obtained on the straight segments. Modern hovercraft can climb moderate grades provided the hill tops are rounded so they do not lose their air cushion, but most ice roads would require significant modifications in order for hovercraft to operate in the Canadian Shield.

Airships are faster, more flexible and less expensive than hovercraft. Very little investment is required in fixed facilities to operate airships because "the vehicle is the infrastructure." Airships can go where the elevation is below 2,000 metres and can be operated amphibiously like hovercraft.

The limitations of hovercraft and airships are no longer technical. The only important questions are economic. How do their costs compare to the construction of all-weather roads and airports?

In the case of hybrid airships the business case has been researched. A 50-tonne lift airship could compete with the costs of trucks over the ice roads in Manitoba.

Global climate change is demanding serious attention be given to the future connectivity of our remote communities. "Making it happen" involves business risk. Entrepreneurs will accept such risk, but they are not going to accept all the risk that is required to solve the problems of these small communities.

Governments have responsibility for ensuring transportation connectivity. Moreover, governments have a great deal of indirect benefits that businessmen can never gain from improving the lives of the people that live at the ends of these unreliable roads.

The remote First Nations communities face food prices that are up to three times more than paid by urbanites. They are impoverished with high rates of unemployment and inferior public services that urbanites would not tolerate. Housing in some remote communities would be condemned if found in a city, while crowding is unacceptable.

The combination of bad housing and inadequate diets leads to poor health with higher incidences of diabetes and tuberculosis than is found in urban settings. The public savings in health care and welfare costs that would flow from reliable, low cost connectivity could be more than enough to justify a major investment in solving the ice road problem, even if the impetus of climate change did not make it imperative.

The experience with activist governments during the 20th century has made voters skeptical of bold public initiatives. Politicians have become very cautious and generally

try to lead by following. No one is arguing for more public intervention, but governments must play a role when the business sector either cannot or will not do so alone.

The situation of Canada's ice roads is receiving less media attention than the melting ice cap, but the process is happening with similar speed. It is time to accept the problem, and move from measurement to solutions.

Barry Prentice is a professor of supply chain management at the University of Manitoba. He is organizing the Fourth Annual Airships to the Arctic Conference -- Making it Happen -- to be held Oct. 29-31 at the Fort Garry Hotel.