Isolated communities and inadequate airstrips: The challenges of airport infrastructure in Northern Canada

Kayle Hatt

During the last year, the issue of food security and food prices in the North has received a lot of attention. Photos of food on Northern store shelves, labeled with very high prices, have gone 'viral' on social media. Claims were made that some Northerners were foraging for food in a garbage dump and there was a resulting controversy in the House of Commons. And recently, the auditor general released a highly critical audit of the Nutrition North program created in 2011.

According to Statistics Canada's Survey of Household Spending, the average Canadian household spent $7,739 on food in 2012 but in the North it was significantly higher: in the Yukon it was $8,678, Northwest Territories was $11,022 and in Nunavut families spent an average of $14,744 on food.[1]

Why is food in the North so much more expensive?

The issue is multifaceted and there are several causes, but a major contributing factor is the role of transportation costs and a lack of infrastructure.

Much of Northern Canada is either poorly served or not served at all by ground transportation infrastructure, such as roads, highways and rail networks. In this context, air transportation becomes more important for the trade of commercial goods including food stuffs[2] as well as for human mobility and economic development. However, despite this increased importance, there are several significant problems with air infrastructure in Northern Canada that may be contributing to high food prices and hurting economic development in the North.

Gravel runways and cold war airplanes

Alaska, which is half the size of Canada's territories in terms of land area, has 61 paved airstrips. How many do you think Yukon, Northwest Territories and Nunavut have?

Ten.

The difference between paved and gravel runways is not without consequence. Only certain types of planes can land on gravel airstrips — most jet planes cannot land on gravel with the only major exception being the Boeing 737-200 Gravel Kit series of planes. For most jet planes, landing on gravel carries a major risk of stones being sucked into their engines and causing damage or accidents; the Boeing 737-200 GK has higher engines than most and special gravel deflectors. This model primarily dates to the 1970s, however, and the planes are reaching the end of their service life, making them rarer, harder to service, and more expensive to operate. Except for this model, only smaller and slower propeller or turbo-prop aircraft can land on gravel airstrips, but these planes have shorter ranges and can carry less cargo.

Furthermore, according to a 2013 study by the Standing Senate Committee on Transport, "a significant portion of Northern [gravel] airstrips are 1,200 metres or shorter. In many cases, this is due to geographical constraints. A minimum distance of 1,520 metres is required to safely land the newer generation of small aircraft. This situation places additional constraints on the types of aircraft that the airports can accommodate."[3]

Many Northern airstrips date to the construction and operation of Distance Early Warning (DEW) line during the cold war. These airstrips were built for the requirements of airplanes of that era and many haven't been significantly upgraded in decades.

Electronic infrastructure

The problems with air infrastructure in the North are not limited to physical landing surfaces — there is also a lack of adequate electronic infrastructure to aid in modern flying.

At some Northern airports, as many as 25 per cent of flights need to be canceled or diverted because of weather conditions — particularly fog.[3] This problem is compounded by inconsistencies with weather reporting but could be partially solved with certain electronic equipment.[4]

According to Chris Ferris, vice president of the Arctic airline First Air, "Adequate reporting is critical in the Arctic where weather plays such a significant role. With few data collection points in the area, and local [community weather] reporting being hit and miss, weather reporting poses real operational challenges in certain communities."[5] Most southern airports use Automated Weather Observation Systems (AWOS) to monitor weather patterns and to gather important weather information for pilots and airlines; however, according to the Senate report, AWOS coverage in the Canadian territories is minimal with the main obstacle to establishing electronic weather reporting being cost.[6] Each monitoring sta-

A geophysical survey plane parked on the Rankin Inlet tarmac.

tion costs between $500 thousand and $1 million to construct and network.

Another important electronic resource for airports is detailed GPS mapping of airstrip approaches and surrounding terrain. Transport Canada and NAV CANADA set landing regulations for each airport based on a number of criteria. At airports with better ground mapping and better computer communication beacons, airplanes can get lower to the ground before needing to make visual contact with the airport. The Senate report states: "As surveys and overlays are fine-tuned and the GPS signals become more accurate, the peak height at which pilots must commit to landing can be lowered substantially, thereby reducing the number of missed approaches in Northern or remote locations." In essence, better mapping leads to better navigation, more consistent travel and fewer planes that need to be diverted — all of which would lower transport costs.

Minimal funding and one-size-fits-all regulations

A major cause of these infrastructure issues is funding problems. Unlike regional airports elsewhere, small populations and municipal tax bases in the North mean it's difficult for local communities to fund capital improvements to airports even if they are desperately needed. Canada does provide funding for airport infrastructure, but this funding does not have a specific Northern focus and, at $35 million a year for the entire country, it's a relatively modest amount.

Further exacerbating these issues is a "one-size-fits-all" approach to air transportation regulations, which Northern air providers have said isn't responsive to the different realities in the North. For instance, Canada's main funding program for airport infrastructure, the Airports Capital Assistance Program (ACAP), requires that there be regularly scheduled flights year-round at an airport in order to be eligible for funding. But to have scheduled service requires that an airport be certified by Transport Canada, a process that the Northern Air Transport Association has said "in many cases only adds cost and overhead with no safety gain" and may not reflect the that fact that some fly-in communities may have seasonal ground access that makes year-round service less economical or practical.

Likewise, recently there's been much debate over new Runway End Safety Area (RESA) regulations being developed after Air France Flight 358 overran its runway at Toronto Pearson International Airport in 2005. These regulations will require longer safety areas at the end of runways in case planes overrun the airstrips. While they may make sense in a southern context, in the North these upgrades would require millions in non-existent funding, making it un-

Airstrip at Ikpiarjuk (Arctic Bay).

likely that airports would be able to build extensions to their airstrips. To get around this, airports could designate a portion at the end of their existing airstrip as the mandated safety overrun area, but this would have the effect of reducing the length of the landing strip on paper and possibly impacting the type of aircraft that could land in that community. The Northern Air Transport Association has called for a risk-based regulatory approach to Northern air transportation regulations and for regulators to recognize the unique challenges faced by Northern air operators and airports.

Moving forward

Air service is not a luxury in the North — it is an essential service. Air service delivers food and important consumer goods, it aids economic development, it is the basic mode of human mobility between communities and, in times of illness or emergency, it is often the only ambulance service that matters.

The airport infrastructure deficit in Northern communities and other factors conspire to make air service less economical, which in turn makes Northern living more expensive. When only smaller planes can land in communities, less cargo can be transported and the economies of scale are smaller. When a lack of electronic infrastructure means some flights need to turn around, uncertainty and overhead for air service providers grows.

To address this problem the Northern Air Transport Association and the Federation of Canadian Municipalities have both called on the federal government to create a dedicated Northern airport infrastructure program.[7] Such a program could be tailored to the specific needs and realities of the North, while making the accessibility of Northern air transport a funding priority for the federal government.

Obviously, better airport infrastructure alone won't fix the issues of Northern food security or spark rapid economic development, but improving air services must play a role in long-term Northern strategies. It's something we should talk more about. ◉

Kayle Hatt is an MA Public Administration Candidate at Carleton University and a former Research Associate at the Canadian Centre for Policy Alternatives. In 2013, he did a summer fellowship at the Federation of Canadian Municipalities, where he first researched Northern air infrastructure.

Endnotes

1 Statistics Canada, CANSIM data table 203-0030 "Survey of household spending (SHS), household spending, territories". 2012 Data.

2 Office of the Auditor General, (2014) "Report of the Auditor General of Canada—Chapter 6 Nutrition North Canada—Aboriginal Affairs and Northern". Fall 2014.

3 Standing Senate Committee on Transport and Communications (2013), "One Size Doesn't Fit All: The Future Growth and Competitiveness of Canadian Air Travel". Parliament of Canada. April 2013.

4 Eichel, Garth, (2012) "Reality Check, North" CANADIAN SKIES | March/April 2012 http://dnn.nata-yzf.ca/LinkClick.aspx?fileticket=nhckmcsqIQw per cent3D&tabid=279

5 Senate report, page 6.

6 Federation of Canadian Municipalities, (2014) "Issues — Northern Communities—Northern and remote airports" February 2014. http://www.fcm.ca/home/issues/rural-and-Northern/Northern-communities/Northern-and-remote-airports.html <and> Northern Air Transport Association, (2014) "38th Annual General Meeting — Resolution #4—Funding for Northern Airports". April 30, 2014