AIR ACCESSIBILITY IN NORTHERN CANADA: PROSPECTS AND LESSONS FOR REMOTE COMMUNITIES

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ABSTRACT

This paper assesses the impact of Canada's air transportation policy on air accessibility of remote and arctic communities in a context of liberalization of the aviation industry. The central objective is to examine policy's impact on essential air services and compare it to the U.S. approach. An observational study of the federal government's National Airports Policy (NAP) of divesting smaller airports to local entities is conducted using airport cases both inside and outside the National Airports System (NAS) covering 11 communities in Ontario (Ont.), Manitoba (Man.), British Columbia (B.C.), Quebec (Que.), the Northwestern Territories (NWT), and Yukon Territory (YT). The paper also investigates the impact of several federal government departments – Transport and Infrastructure Canada, Indian and Northern Affairs Canada (INAC), Health Canada, and First Nations and Inuit Organizations in assuring air accessibility to remote areas. It is argued that: (a) Canadian policy is effective in the sense that airports are providing service to small remote communities on a year-round basis and in compliance with safety regulations, (b) remote and arctic airports seem to be unable to sustain and operate their infrastructures without receiving local or federal contributions,

(c) there is insufficient data to compare management approaches and to conclude about their efficiency gains, and (d) Health Canada, Indian and Northern Affairs Canada (INAC), and Inuit and First Nations organizations, such as the Makivik Corporation through its subsidiaries carriers First Air and Air Inuit, play a significant role in making air travel accessible. It concludes that, although the decentralization strategy and the subsidy mechanisms are benefiting remote communities, Canada's policy success is constrained by its failure to incorporate changing conditions, integrate transportation modes, loss of focus, and flaws in performance evaluation.

1. Introduction

The importance of air transportation in Canada's remote and arctic regions is well recognized. Canada covers an immense landmass and there are important differences between urban, remote and arctic Canada. Outside of urban major centers, population concentration declines and access to services and its cost increase. It is estimated that, in 2006, rural Canada covered 99.8% of the nation's territory and accounted for 24% of its population (Dolea, 2009).

Meeting the diverse needs of its diffuse population with land transportation infrastructure is extremely challenging: the cost and effort of the construction, operation and maintenance of low traffic density all weather-roads or railways is considerable or insurmountable. As a consequence of the climate, vast distances, and environmental concerns, remote Canada is thus highly dependent on aviation to transport passengers and freight on a year-round basis. Air accessibility is the most efficient and economic mean of hindering the detrimental impacts of isolation - limited access to public services and consumer goods, and high living costs. The infrastructure costs are low and service is available year round. However, the operational costs of air transport are significant.

In response to the inequalities in demand for air transportation and worldwide liberalization of the aviation industry, and more specially U.S. deregulation, there have been substantial developments in air transportation policy in Canada in recent decades. These developments began with a movement towards deregulation and decentralization, founded on the political consensus that the provision of transportation infrastructure should be more financially self-sustaining (Stambrook, 2006). Yet Canada's policy has not neglected areas where self-sufficiency is unattainable and that need additional support: the National Airport Policy (NAP) and Transport Canada (TC) in *Straight Ahead: A vision for Transportation in Canada* identified and established remote and arctic services as national priorities (TC, 2003).

Most of the policy debate concerning the impacts of deregulation and the reform of the airport governance structure has centered on larger infrastructures (Carney & Mew, 2003, Forsyth & Society, 2004, and Gillen & Morrison, 2005) and regional airports (Dion, Slack, & Comtois, 2002). To complement that discussion, this paper focuses on the provision of basic air accessibility for small remote communities in Northern Canada. It summarizes the main policy developments since the 1970s and investigates the impacts of several federal government departments and of the mechanisms put in place to support air service in remote regions. An observational study of the federal government's NAP was conducted using airport cases both inside and outside the National Airports System (NAS). Methods include interviews with people responsible for implementing national policy, and an analysis of the written record − policy documents, studies undertaken by TC, Statistics Canada, ICAO and WTO-OMT, contribution agreements, and other Internet documents.

The remainder of the paper is organized as follows. Section 2 discusses Canada's air transportation policy framework and deregulation. Section 3 describes the methods used for the analysis of the policy impacts. Section 4 presents the data and some characteristics of the communities. Section 5 shows an analysis of service at the communities and of the impact of government departments and First Nations and Inuit organizations on air accessibility. Section 6 describes the qualitative survey gathering the views of airport managers on the policy implementation. Section 7 presents the results. In Section 8, the Canadian policy procedures are compared with the US

provisions. Finally, in section 9 recommendations are made for the provision of remote areas with essential air service under deregulated conditions.

2. Canada's air transportation policy framework and deregulation

Since the 1960s, Canada's Government distinguished between two categories of airport infrastructure: those capable of self-sustainability and those requiring continuous subsidization. The system as a whole was nonetheless expected to be self-sufficient and cross-subsidization was in place: airports under-recovery of costs from users were sustained by the Consolidated Revenue Fund. Moreover, Canada's cross-subsidization policy relied on the government ownership of both airports and the national airline. The Federal Government owned and operated all significant airports in the country. The national airline Air Canada and regional carriers were charged with the "public duty" of serving remote communities (Button, 1990, and Christopher & Dion, 2002), and, from 1974, the Air Transportation Tax (AAT) additionally funded operational costs.

In 1978, the U.S. Congress approved the U.S. Airline Deregulation Act (ADA), thus ending the economic regulation of the aviation industry. Growing demand from carriers for less regulation and more competition and the U.S. policy changes forced Canada's progressive liberalization during the 1980s. Canada formalized its deregulation with its 1988 National Transportation Act (Christopher & Dion, 2002).

During this period, Canada began its revolutionary but slow process of transfer of airport operations from the central federal government. This process was also one of decentralization. The Government kept the ownership and operation of several infrastructures, but leased, contracted out and had three territorial governments operating others under special agreements. Likewise, the Government subsidized airports owned by other operators and operated airports owned by others (Dion, S lack, & Comtois, 2002, Gillen & Morrison, 2005, and Small, 1993). The Airport Capital Assistance Program (ACAP) funded partly by lease revenues was established by the NAP and implemented in 1995 to "provide assistance to airports in financing capital projects related to safety, asset protection and operating cost reduction" (Departmental Evaluation Services, 2004).

The NAP divided airports into 5 categories: those in the National Airports System (NAS), regional/local airports, small, remote and arctic airports. Remote and arctic airports are those that provide the only year-round reliable transportation link for isolated communities; small airports do not have scheduled air service; regional/local handle commercial service under 200,000 passengers per year. All the provincial and territorial capitals are included on the NAS, regardless of geographical remoteness or demand size.

With respect to basic air service for remote communities, Canada followed a different direction than the U.S. It chose to maintain light regulation in its Northern region - north of the line of demarcation at roughly 50-55 degrees, and a phased long-term process of deregulation (Small, 1993, and Button, 1990). The system was considered "too fragile and immature to sustain wide-open competition" (Christopher & Dion, 2002). The 1986 National Transportation Act made official the retention of a modified form of regulation for the north and remote areas of Canada, and the 1988 National Transportation Law established a Federal Government direct subsidy program based on competitive bidding to support the air services in this region (ICAO/WTO-OMT, 2005). This form of regulation was only removed by the 1996 Canada Transportation Act (CTA) (Christopher & Dion, 2002), and different programs were instituted on a provincial basis (ICAO/WTO-OMT, 2005). Thirteen airports − Sandspit (B.C.), Fort Chipewyan (Alberta), Churchill, Norway Horse (Man.), Moosonee (Ont.), Îles-de-la-Madeleine, Lourde-de-Blanc-Sablon, Eastmain River, Wemindji, Waskaganish, Kuujjuaq, Chevery and Schefferville (Que.) − were specifically excluded from the transfer process. At the time, eight arctic airports were transferred to the territorial governments.

Despite the conscious phased liberalization, service to small and remote communities was jeopardized by the airline restructuring process, consisting of the merger of Air Canada and Canadian Airlines in the late 1990s. In response to this event, the Government adopted a "dominant carrier" policy supporting both service and infrastructure. The protection of basic air service for isolated communities was assured by several air carrier impositions to prevent service disruption[1]. On the infrastructure's

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[1] The policy required the dominant carrier and any wholly-owned affiliates to: (i) continue existing service to small and remote communities for a three-year period, unless a new or existing carrier would start providing this service of a similar quality at a

side, funding was to be a Government's commitment "where the cost of operation would be prohibitive in the absence of government support": ACAP funding and eligibility were reviewed and expanded (Standing Committee on Transport, Government of Canada, 1999).

Following the continuance period, regional airlines assumed the role of main air service providers in remote Canada. In 2007, the following carriers served remote and arctic communities: Air North, Canadian North, First Air, Aklak Air, Kenn Borek Air, Arctic Sunwest, Buffalo Airways, Air Tindi and North-Wright Airways. In 2009, 9 air carriers competed in Canada's North, including West Jet and Canadian North (TC, 2009).

3. Methods

This paper evaluates the performance of the Canada's National Airports Policy (NAP) implementation. Social and economic policy's impacts were examined from the perspective of Transport Canada (TC), airport operators and local governments, under several headings including passenger and cargo, and medical evacuations (MedEvac) traffic statistics. A case study approach using a mix of qualitative and quantitative methods was followed.

Qualitative methods included: (a) interviews with people responsible for implementing national policy, airport and airline managers, and (b) analysis of documentation – policy documents, studies undertaken by Transport Canada, contribution agreements, and Internet documents. Due to data limitations, subsidy was qualitatively evaluated in the form of type of support. Quantitative methods included: (a) the analysis of the airports' catchment area measured by population, (b) remoteness. Mixed methods were adopted for service evaluation using 2 indicators – number of destinations and number of carriers.

Information, including background data information such as ownership, management, and access to federal support, was collected for nine of the twenty-four airports included

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reasonable price; (ii) replace of an independent carrier that ceased to provide scheduled air services for a one-year period. Additionally, the policy required all air carriers to give 48 hours notice to the Canadian Transportation Agency prior to initiating a service disruption (Standing Committee on Transport, Government of Canada, 1999).

in the National Airports Policy (NAP) remote and arctic categories (37.5%) – Sandspit (B.C.), Churchill (Man.), Moosonee (Ont.), and Kuujjuaq, Schefferville, and Wemindji (Que.), and Inuvik and Yellowknife (N.W.T.), and Whitehorse (Y.T.), and for two additional airports in the regional/local category. – Havre St. Pierre and Natashquan (Que).

4. Data

As far as assessing governance, ownership and funding, Table 1 lists the eleven communities studied and provides information regarding their airport IATA code, NAP category, population, ownership and management forms, and funding mechanisms.

Table 1. Airport Overview: NAP category, ownership and management

Community	Airport (IATA Code)	NAP category	Population served (aprox.)	Owner-ship	Management	Funding Mechanism	Source of Capital Funding
Havre St. Pierre (Que.)	YGV	Regional/local	7,000 (TC)	TC	In review: transferred and taken back by TC since January 1st 2009	TC Region (in review)	TC Region, no ACAP (in review)
Natashquan (Que.)	YNA	Regional/local	3,000 (TC)	TC	In review: Local government (Village de Natashquan)	TC Region (in review)	TC Region, no ACAP (in review)
Sandspit (B.C.)	YZP	Remote	NA	TC	TC Region	TC Region	TC Region
Churchill (Man.)	YYQ	Remote	NA	TC	TC Region	TC Region	TC Region
Moosonee (Ont.)	YMO	Remote	NA	Province and Local Gov.*	Local government	TC and Municipality	Owner and ACAP
Kuujjuaq (Que.)	YVP	Remote	4,000 (TC)	TC	Local government (Kativik Regional Government)	TC and Municipality	TC Region
Schefferville (Que.)	YKL	Remote	1,500 (TC)	TC	Local non-profit organization	TC and Municipality	TC Region
Wemindji (Que.)	YNC	Remote	1,300 (TC)	Local Gov.	Local Government (Conseil de Bande de Wemindji)	O&M contract and TC Region	TC Region
Inuvik (N.W.T.)	YEV	Arctic	NA	Local Gov. (GNWT)	Government of Northwest Territories Ministry of Transport	Gov. Airport Funding, Federal Infrastructure Funding, Partnership Funding	Owner, Federal Program "Building Canada", ACAP, and resource development projects
Yellowknife (N.W.T.)	YZF	Arctic (NAS)	NA	Local Gov. (GNWT)	Government of Northwest Territories Department of Transportation	Gov. Airport Funding, Federal Infrastructure Funding, Partnership Funding	Owner, ACAP, and resource development projects
Whitehorse (Y.T.)	YXY	Arctic (NAS)	NA	Local Gov. (Gov. of Yukon)	Government of Yukon Territory	Gov. Airport Funding, Federal Infrastructure Funding	Owner and ACAP

(*)The Province of Ontario owns the land and the Town owns the facilities.

Transport Canada's Regions to which these communities belong are shown in Figure 1.

Figure 1. Transport Canada Regions. Source: Transport Canada.

Table 2 presents information on air service (scheduled commercial flights) for those communities.

Table 2 - Community air service (Source: Airports and carriers, communities, and Statistics Canada)

Community	Number of domestic destinations (March 2011)	Number of carriers (schedule March 2011)	Total Movements (2009)	Total Passengers (2007)
Havre St. Pierre (Que.)	2	1	8,973	NA
Natashquan (Que.)	3	1	3,309	NA
Sandspit (B.C.)	1	1	4,087	NA
Churchill (Man.)	13	2	10,843	NA
Moosonee (Ont.)	NA	1	4,601	NA
Kuujjuaq (Que.)	7	2	11,778	NA
Schefferville (Que.)	4	1	NA	NA
Wemindji (Que.)	NA	1	1,457	NA
Inuvik (N.W.T.)	11	5	16,411	NA
Yellowknife (N.W.T.)	14	5	52,367	298,335
Whitehorse (Y.T.)	5	2	24,505	191,930

5. Analysis: air service evaluation at the community level

This Section performs a comparative analysis of air accessibility of remote areas. The role of national, regional, private entities and organizations and First Nations and Inuit corporations on air transportation to small remote communities is investigated.

5.1. Service overview

For most remote communities, commercial scheduled air service was provided by only one or two airlines. The maximum number of commercial airlines serving one community was five, which was only observed at Inuvik and Yellowknife (N.W.T.), on the arctic and NAS category, respectively. These carriers are regional commuters, such as Aklak Inc, North Wright, Inuit Air, First Air, Canadian North, Air North, Kivalliq, and Aviation Air Labrador, mostly using low speed transport aircraft and small commuter turboprop propulsion aircraft with a capacity ranging from 9 to 19 seats.

The three airports with more available destinations, as of March 2011, were Yellowknife (NAS), Churchill (remote), and Inuvik (arctic). Air accessibility appears to be heterogeneous across regions, though the collected data is insufficient to further evaluate and conclude about regional accessibility level.

5.2. Government departments

Federal Government: Transport and Infrastructure Canada

Despite the on-going divestiture process, TC retains the ownership of many small communities' airport facilities, and contributes to air accessibility for remote regions through mechanisms focused on both maintenance and operation, and capital funding. All the remote and arctic airports that do not belong to TC are owned by local governments. The transfer effectively took place at the management level: all remote and arctic facilities are currently regionally operated, either by local governments or TC regions (TC, 2011). Though local operation was expected to be "more viable, more responsive to community needs and better able to match service levels to local demands and resources" (Tretheway, 2006), we found insufficient evidence to assess the corresponding efficiency gains.

Regarding airports' maintenance and operations, three instruments were identified as major sources of funding for small remote communities (Department of Evaluation services, TC, 2007):

- TC's Municipality O&M contributions;
- Contractual agreements for operations between TC and a third party; and
- Direct operation through a TC regional office.

These mechanisms were designed to cover the anticipated deficits relating to operations and maintenance expenditures of municipal airports[2]. Some efficiency gains were acknowledged by the Department of Evaluation services, TC, (2007):

1. In 2004, only 9 of the 31 airports receiving TC's Municipality O&M contributions in 1994 kept receiving this fund, and
2. Overall funding requirements had been reduced: $6.1 Million annually for the three fiscal years (2000-2001 to 2002-2003) were reduced to approximately one third by 2004.

Additionally, the capital focused Airports Capital Assistance Program (ACAP) Program was designed and is in place to support capital expenditure. Federal funds help finance projects that will maintain and improve safety and are proportional to the scheduled commercial passenger traffic of the facility: the higher the traffic, the lower the contribution. Airports that are under 1,000 or over 200,000 annual passengers are not eligible for funding. Remote airports are favored, as they automatically qualify for ACAP, and are not required to meet the minimum passenger criterion. Moreover, for facilities north of the 60th parallel, TC minimum contribution for approved project costs is of 85% (Sypher/Jacobs Consulting, 2006).

Finally, the seven year plan Building Canada (2007 to 2014) provides supplementary "stable, flexible and predictable funding" to Canadian municipalities for airports that fall into the category of core infrastructure priorities (Infrastructure Canada).

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[2] Following the transfer process, there are currently 6 remote and 1 regional/local airports receiving funding from the Airports Operations and Maintenance Subsidy program (O&MSP).

Local Governments

Transport Canada's provinces are found to follow different approaches to match federal airport funding and support air accessibility in their regions. Examples of this diversity are the Community Airport Program (CAP) in Alberta, assisting community-owned public-use airports for their rehabilitation and construction requirements; the ACOA funding in the Atlantic Region; funding from FedNor (a Federal Regional Development Organization) and former Remote Airports and Municipal Airports Programs in Ontario; Quebec's support to remote airports by exempting jet fuels used for flights from fuel taxes; and Western Economic Diversification Funding in Western Provinces (Sypher/Jacobs Consulting, 2006).

Partnership Funding

A few Resource Development Projects, such as the McKenzie Gas Pipeline Project in Inuvik (N.W.T.), were also found to be contributing to infrastructure expenditure.

Health Canada

Health Canada is found to have a major role in the provision of air service to small remote communities. Equal access to health services is a primary objective of the Canada Health Act. As a result, Health Canada implemented several programs at the provincial level to ensure communities' access to medical care services. Where alternative transportation modes are scarce or not available, these programs are fundamentally forms of support to air travel.

Medical transportation settlements are consistent with the Non-Insured Health Benefits (NIHB) Medical Transportation Policy Framework. Eligible benefit recipients – in need for health services that cannot be obtained on the community of residence - receive support for eligible Scheduled flights, charter flights, helicopter, air ambulance and Medevac to ensure access to adequate and timely health care.

Beginning in the 1970s, there was a transfer of control of health services delivery from Health Canada to First Nations and Inuit communities. Medical transportation benefits

are currently decentralized and managed at a regional level. Services are provided either by First Nations and Inuit Health Branch Regional Offices or by Inuit organizations (including territorial governments). Funding is available from Health Canada under signed contribution agreements. One example of these programs is the Northern Health Travel Grant in Ontario. Audit practices, and account verification procedures vary from region to region with different results (Health Canada, 2010).

For the period 2009-2010 it was found that NIHB total medical transportation expenditure was of $301.7 Million, of which 48.4% ($146.2 Million) corresponded to contribution agreements, and 24.8% to direct support to air travel in the form of scheduled flights ($46.7 Million, 15.5% of total expenditure) and air ambulance and chartered flights ($28.1 Million, 9.3% of total expenditure) (Health Canada, 2010). Insufficient data did not allow for evaluation of the portion of the contributions agreements spent on support to air travel.

Indian and Northern Affairs Canada (INAC)

Indian and Northern Affairs Canada is also found to have a major role in the provision of air accessibility to small remote communities being responsible for "meeting the Government of Canada's obligations and commitments to First Nations, Inuit and Métis and for fulfilling the federal government's constitutional responsibilities in the North" (INAC, 2011). The two main sources for contributions are: the land claim and self-government agreements that are negotiated and implemented by INAC and the Food Mail Program. The amount of funding associated with each source is greatly different. Furthermore, land claims and agreements concern many other government departments, including abovementioned Health Canada, and First Nations and Inuit Organizations funding.[3]

The Food Mail Program is a combined subsidy to food cargo (and other essential items) for isolated northern communities of INAC, Health Canada, and Canada

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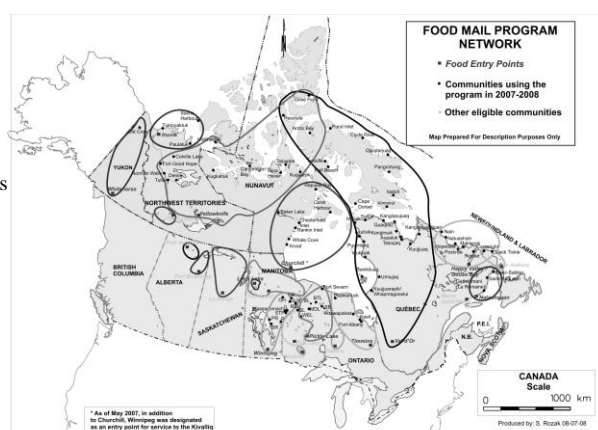
[3] The impacts of this source are addressed and further discuss
Inuit Organizations.

Post. The program covers the difference between the revenues collected by Canada Post and the direct costs of service provision, and thus serves the objectives of the Government of Canada of granting equal access to essential items by "providing Northerners with healthy food choices at affordable prices" (INAC, 2011). These items are provided to over 80 communities across the North, and the main expenditure is for Nunavut and Nunavik (60% and 30% of total expenditure, respectively). The program showed flaws and has been reviewed in order to improve its performance[4].

Food Mail Program network and communities using the program in 2007-2008 are shown in Figure 2.

5.3. Inuit and First Nations organizations

At the local level, several Inuit and First Nations organizations hold a significant position in the support of air accessibility for small remote communities in Northern Canada. These organizations are mandated to receive and administer compensation monies and manage the implementation of government agreements, and partly use these funding resources on the provision of air service.

The most visible mechanism of air service support by these organizations is the establishment of fully-owned or joint-venture carriers. Table 3 provides information on Makivik Corporation (Inuit), Cree (First Nations), and Vuntut Development Corporation, and Table 3 summarizes air service by carriers associated with either Inuit or First Nations Groups.

Table 3. First Nations and Inuit Organizations supporting air accessibility to small remote communities

Organization	Communities	Agreements	Activity
Makivik Corporation (Inuit)	Inuit of Nunavik (Northern Quebec)	James Bay and Northern Quebec Agreement (JBNQA)	▪ Created or purchased subsidiaries carrier companies: First Air, NWT Air, Air Inuit, and worked with the federal government to support the construction of airport facilities. It is a non-profit entity with a business approach of creating profitable subsidiary companies.
Cree (First Nations)	The Cree (Ontario, Manitoba, Saskatchewan, Alberta, N.W.T, and	James Bay and Northern Quebec Agreement (JBNQA)	▪ Established Air Creebec, the Cree-owned airline primarily devoted to servicing the Cree communities. The Company had mandates beyond servicing the Cree communities themselves and it is envisaged as commercial

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[4] Effective April 1, 2011, a new program called Nutrition North Canada will replace the Food Mail Program. The goal of the new program is "to make nutritious, perishable foods accessible to Canadians living in isolated northern communities" (INAC, 2011).

	Quebec)		enterprise. Additionally, it aims at providing work for Cree people.
Vuntut Development Corporation (First Nations)	Citizens of the Vuntut Gwitchin First Nation (Yukon)	Vuntut Gwitchin First Nation Self-Government Agreement	▪ Jointly owns Air North. For-profit economic force participating in, planning for and facilitating the creation of successful business ventures.

Table 4. Carriers fully-owned or in joint-ventures with First Nations and Inuit Organizations service overview

Carrier	Services	Equipment Passenger capacity	Number of Scheduled Destinations	Northern Residents Special Programs and Discounts
Air Creebec (First Nations)	Scheduled and charter flights, and cargo services.	8-46 seats	17[5]	▪ NA
Air Inuit (Inuit)	Scheduled and charter flights, cargo services and emergency evacuation	9-50 seats	21[6]	▪ Ilaujuq program: entitles Nunavik beneficiaries to discounted air travel or to a discounted cargo shipment; and Katutjiniq business program: a contribution to new businesses start-ups or projects. ▪ Compassionate travel fare. ▪ Special rates for food shipments and special commodity rates for items significant to the Northern livelihood.
Air North (First Nations)[7]	Scheduled and charter flights, cargo services.	4-153 seats	8[8]	▪ Compassionate travel fare. ▪ Food Mail Program.
Aklak Air (Inuit)[9]	Scheduled and charter flights, cargo services and emergency evacuation	12-19 seats	6	▪ Special rates for local youth for sports and educational trips and enrolment in the Arctic Youth Leadership Expeditions (AYLE) program: transporting the participants and their gear to and from their home communities, Inuvik and the Horton River.
Canadian North (Inuit)	Scheduled and charter flights, cargo services.	21-112 seats	18[10]	▪ PIVUT fare to the beneficiaries of the Nunavut Land Claims Agreement and the Inuvialuit Final Agreement (>60% discount). ▪ Compassionate travel fare. ▪ Northern research special fares. ▪ Construction, nurses and teachers, medical professionals, groups and conventions fares, and children and youth fares.
First Air (Inuit)	Scheduled and charter flights, and cargo services.	40-115 seats	34[11]	▪ Elder 10% discount fare for northern resident and bereavement/Compassionate fare. ▪ Special rates for food shipments and special commodity rates for items significant to the Northern livelihood and preferred passenger and cargo rates to facilitate the shipment of tools and equipment for the beneficiaries of the Kivalliq Inuit Association (KIA).
Wasaya (First Nations)	Scheduled and charter flights, and cargo services.	9-18 seats	29[12]	▪ Bereavement fare.

5.4. Other organizations

Other organizations, such as charity non-profit institutions also provide assistance to air travel to Canadians in remote regions where a specific medical care is not available. An example of these organizations is Hope Air that assures free air transportation to

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[5] Including service to the NAS Montreal (Que.), and to three remote airports: Moosonee (Ont.), Waskaganish and Wemindji (Que.).
[6] Including service to the NAS: Quebec City - Jean-Lesage and Montreal (Que.), and to the two remote airports: Schefferville and Kuujjuak (Que).
[7] Air North is presently owned by Joseph T. Sparling, the Vuntut Development Corporation and almost 600 Yukon Class C & Class D Shareholders.
[8] Including service to the NAS: Vancouver (BC), Calgary and Edmonton (Alta.), and Whitehorse (YT), and to the arctic airport Inuvik (N.W.T.).
[9] Joint-venture Inuvialuit Development Corporation (IDC) and Kenn Borek Air Ltd.
[10] Including service to the NAS: Ottawa (Macdonald-Cartier, Ont.), Edmonton (Alta.), Yellowknife (N.W.T.), and Iqaluit (NU), and to 3 arctic airports: Inuvik, Normal Wells, and Cambridge Bay (N.W.T.).
[11] Including service to the NAS: Winnipeg (Man.), Ottawa (Macdonald-Cartier, Ont.), Montreal (Que.), Iqaluit (NU), and Yellowknife (N.W.T), and to 7 arctic airports in the Northwest Territories.
[12] Including service to the NAS: Winnipeg (Man.) and Thunder Bay (Ont.).

recognized medical facilities for passengers in financial need and unable to afford the costs of an airfare flying for an approved medical appointment[13].

6. Qualitative Survey

A survey of airport operators was conducted in order to gather the views of airport managers on the national policy implementation. This survey was performed concurrently with the documents and reports review.

Airport managers were contacted by an email that was followed by a semi-structured interview conducted on the phone when returned a positive response. Interviewee's views on the NAP, the general divestiture process, the current funding mechanisms, existing support arrangements, and any ideas for potential changes were addressed. Amendments were made to the interview guide after the first interview, and all interviews were included in the analysis. On average interviews lasted about 25 minutes and were summarized on detailed notes taken during and immediately after the interview.

6.1. Scope and Interview Guide

The survey targeted NAS, regional, remote and arctic airports. A topic guide covered information on the general airport situation and interviewees' views on: annual traffic (number of passengers, cargo, and movements), form and level of Government support (federal, provincial, and local), management of fund attribution (by formula, by petition, for normal operations, or specific for special projects), subsidization of airfares, support evolution over time, positive results and recommendations for improvement.

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[13] Hope Air provides a maximum of 3 free round-trips per person per year. These seats are "empty seats" donated by carriers such as First Air, Canadian North, Air North, and Air Canada. In addition to the support given by airlines, Hope Air's funding mechanisms include private donations, and associations, corporations and the Provincial Government financial support.

6.2.Summary of results

All interviewees recognized the importance of funding at the two levels: Federal and Provincial. Airport managers specifically emphasized that the ACAP funding is critical to infrastructure sustainability.

Regarding the process of divestiture and transfer of airports, the majority of airports found limitations in appreciating efficiency gains. Airport managers held divergent opinions whether there were efficiency increases, or efficiency losses, or the conditions remained overall unchanged. While some stated that the transfer to local entities was beneficial with some efficiency improvements, others mentioned the personnel's lack of skills or knowledge of the industry as hampering factors to the infrastructure self-sufficiency.

All interviewees identified changes in safety regulations as a significant burden on smaller airports, with negative impacts on their financial position and recognized the need for specific support on compliance with safety regulations. Additionally, the economic fallout was seen as a major cause of continued instability in infrastructure sustainability by all airport managers. Some showed approval for specific supplements offered by the Federal Government.

All interviewees acknowledged that most of the traveling done by community members was personal and medical related, thus recognizing the importance of Health Canada and Inuit and First Nations organizations agreements. The majority of airport managers also identified Government employees as a significant portion of passenger traffic - these travels are funded by Federal and local Governments. Reduced landed fees were also mentioned in the support to carriers and passengers.

Finally, one of the airport managers mentioned intermodal competition as a hampering factor to self-sufficiency: "it is cheaper to drive than to fly south", hence suggesting that not all the airport locations are remote, and recognizing the need for integrated transportation planning.

7. Results

Canada's National Policy for providing basic air service to small remote communities appears to be effective under deregulation. Communities are supplied with regular service by carriers that fly to airports open on a year-round basis with no significant safety issues. Moreover, these facilities appear to be contributing to the socio-economic development of the communities.

Federal Government and Transport Canada policies are aligned and meet their goals to address the needs of remote Canada by providing infrastructure to support communities' development. Moreover, Health Canada, Indian and Northern Affairs Canada (INAC), and Inuit and First Nations Organizations play relevant roles in assuring equitable accessibility to services and commodities by supporting air transportation.

The aviation liberalization process had important effects on the structure and operation of Canada's air transportation system. It has succeeded in establishing some degree of competition with positive impacts for small remote communities: the move towards commuter carriage using smaller equipment and matching lower capacity with low demand grants operational efficiency gains compared to flag and regional carriers that used to serve many small communities with larger aircraft.

The level of detail of the available data and the survey results are insufficient to compare the different infrastructure management approaches and to conclude about their efficiency gains; yet, there is no apparent advantage in a specific approach: airports operated by local entities tend to have lower operation costs, while those managed at the Federal level (TC) tended to have higher revenues.

Policy's failure to incorporate changing conditions in the communities' isolation designation, absence of formal performance evaluation, and insufficient funding coordination between the three modes of transportation - air, rail, and maritime, result in some inefficiency.

8. Canadian vs. U.S. provisions for small remote communities

Despite the variations in Canadian and U.S. approaches to aviation deregulation, some aspects are common to the two processes:

1. Both nations recognize the need for equitable air services and support their provision to small remote communities that would otherwise be underserved by a deregulated industry.
2. This need is clearly stated and sustained in their Federal Government policies and administrative and financial provisions, and aligned with the goals of addressing the communities' development.
3. Canadian and U.S. Governments have chosen to support both the transportation infrastructure (by funding airport operations and capital investments) and the air service. Provisions for infrastructure investment are similar in the two countries: smaller airports are cross-subsidized by the fee collection at larger facilities.
4. With carriers being free to exit and enter any routes, trunk or flag carriers and local carriers have withdrawn from service to small remote communities to focus on busier profitable links. Competition has been introduced to some extent on thinner markets with positive impacts on service. Small communities are currently being provided by small commuter carriers that by using smaller aircraft equipment fit for demand guarantee efficiency gains.
5. Inefficiencies are present in both systems and derive from the complexity of the "isolation" criteria and classification, failure to include changing conditions, and lack of coordination between transportation modes. Moreover, both Governments' provisions have been unsuccessful in incorporating evaluation measures into policies thus hindering their implementation.

The most relevant disparities between the policies of the two countries are observed in the support to air service. Unlike the U.S. that opted for full deregulation and establishes a minimum level of service and subsidizes carriers with a competitive bidding system on specific routes through the Essential Air Service Program, Canada chose to originally maintain light regulation in its more remote communities and later replace it with subsidies for travelers with concrete travel needs (medical care, shopping, etc.). While U.S. carriers are compensated with lump sums per annual service operations,

Canadian carriers receive additional financial support through contribution agreements with Inuit and First Nations organizations that are matched to specific shipment (food, medication, mail, tools, and equipment) and medical requirements. Therefore Canada's implementation appears to be more efficient than the U.S. policy by targeting both the more remote regions and the population's accessibility needs.

Other policy differences are related to the decentralization level. Canadian air transportation policy has formally decentralized infrastructure ownership, management, and operation, though with little or no evidence of benefits for the communities[14], and supports air service with both Federal and provincial based programs.

9. Conclusions: Policy recommendations for remote communities

Provision of essential air services to small remote communities in a context of liberalization of the aviation industry requires policy making mechanisms that support both the airport infrastructure and the air service itself. Though it is not obvious a priori how to properly develop the two key elements of air transportation, without the joint support, efforts to create effective air service provision to small remote communities in deregulated conditions are destined to fail.

Allowing carriers to exit and enter routes proves to be beneficial. Smaller commuter carriers, using small aircraft, can sustain the required basic air service to communities and provide for efficiencies in terms of reduced operating costs. Subsidy payments established through competitive bidding systems will produce additionally efficiency gains. Carriers are given incentives to adapt their services to small remote communities' specific conditions, by shifting to smaller equipment and responding to frequency and schedule.

Subsidy disbursement to passengers with valid travel needs can be closely matched to the accessibility requirements of each community and thus demonstrate to be more efficient than lump sums paid to carriers for annual service operations.

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[14] Since the 1970s, Canada's government policies have been advocating more direct control by First Nations and Inuit communities of their own matters. The divestiture process can be seen as an element of these policies that call for mechanisms to enable First Nations and Inuit communities to sustain the delivery of services to their members and it is thus effective in its goal.

Other sources of efficiency in policy making would likely be the development of performance measures for program evaluation and implementation of performance evaluation plans, and the benchmarking of management approaches in order to identify potential efficiency gains (operation costs reductions). Additionally, for less remote communities, the criteria used in the "remote designation" should be reviewed, and coordination across alternative transportation modes should be improved.

Acknowledgments

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