

Arctic Shipping: Future Polar Express Seaways? Shipowners' Opinion

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Since about 1995, climate change has begun to mark Arctic region.¹ The first and strongest signs of global-scale climate change exist in the high latitudes of the planet.² The Earth is indeed facing what is now known as Global Warming. The observed warming in the Arctic in the latter half of the 20th century appears to be without precedent since the early Holocene.³ Also, changes in northern climate are expected to continue throughout the 21st century and persist for many centuries to come, bringing with them major physical, ecological, sociological and economic transformations.⁴

With the world economy continuing to grow rapidly, driven in particular by fast economic take-off in countries such as China, Brazil and India, these climate changes are likely to rush the Arctic's development and usher in a new phase of globalization. Meanwhile, demand for energy (oil and gas) and raw materials (iron, nickel, zinc, etc.) is increasing. This contributes in part to explain the rapid rise in prices of many commodities which has been observed in recent years of strong economic growth. As for crude oil, in its

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¹Lasserre, F. (2008). Étude des impacts géopolitiques de l'ouverture du Passage du Nord-Ouest à la navigation, rapport de recherche, *Les Cahiers de l'Institut EDS, série Vulnérabilité et adaptations aux changements climatiques*, Université Laval, Numéro 1, 16 p. Available at: <http://www.ihqeds.ulaval.ca/fileadmin/fichiers/fichiersIHQEDS/Publications/CahiersInstitutEDS/CahiersInstitutEDSSerieVulnerabiliteAdaptationn1.pdf> (accessed September 16th 2010). This quote, like all others whose native language is French, was translated freely by the authors.

²Barber, D.G., J. V. Lukovich, J. Keogak, S. Baryluk, L. Fortier et G. Henry (2008). The changing climate of the Arctic, *Arctic* 61 (suppl.1): 7-26. Borgerson, S. G. (2008). Arctic meltdown: the economics and security implications of global warming, *Foreign Affairs* 87(2): 63-77.

³Mann, M.E. and P.D. Jones, (2003). Global surface temperatures over the past two millennia. *Geophysical Research Letters*, 30:1820-1824.

⁴IPCC (2001). *Third Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge.

2008 World Energy Outlook, IEA⁵ projected an average price of \$100 per barrel up to 2015, rising to over \$120 in 2030.⁶ As the reserves of some important resources such as oil run out, and assuming that diversification of supply sources has been seen as the key to energy security,⁷ energy companies scour the globe in search of promising new fields, and now in inhospitable regions—such as the Arctic—which until recently aroused little interest given the importance of costs of such exploration projects. In addition, global interest in polar regions including the Arctic is increasing in its own right: the year 2007-2008 was the fourth International Polar Year.

I

EXPLOITATION OF NON-RENEWABLE NATURAL RESOURCES, MAIN GROWTH ENGINE OF ECONOMIC DEVELOPMENT?

From the standpoint of resources, the entire Arctic seems to become a new Eldorado and the media have widely reflected the idea that the Arctic holds important deposits of minerals as well as oil and gas. In 2008, the USGS⁸ completed an assessment which indicates that the area north of the Arctic Circle contains about 30% of world's undiscovered gas reserves and 13% of world's undiscovered oil reserves, more precisely 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids that may remain to be found, of which approximately 84 percent is expected to occur in offshore areas on continental shelves under less than 500 m of water.⁹

The Canadian Arctic, and to some extent Greenland, would also be regions rich in natural resources, rich enough at least to stimulate a resurgence of underwater mapping. The aim here, for Canada and the countries bordering the Arctic Ocean in general, is to ensure ownership of virgin territory, should promising deposits discovery occur. However, it is important to keep in mind that the amount of these reserves made by the USGS are estimates, not proven, and should be considered as such to prevent the spread of false ideas that may substantially impact public policies. It suffices

⁵IEA (2008). World Energy Outlook, *International Energy Agency*, Paris, p. 202.

⁶Id.

⁷Offerdal, K. (2009). High North energy: myths and realities. in *Security prospects in the High North: geostrategic thaw or freeze?* NDC forum paper, *NATO Defense College*, 151-178. Hereafter "Offerdal, 2009."

⁸The United States Geological Survey, responsible in particular for the study of natural resources, has undertaken a multi-year research on the oil resources of the Arctic entitled *Circum-Arctic Resource Appraisal* (CARA).

⁹Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle. Available at: <http://pubs.usgs.gov/fs/2008/3049/> (accessed September 24th, 2010).

here to think of the occasional alarming tone used by the press to portray the geo-political economy of the Arctic. Overestimated reserves might also mislead governments. Politicians and the press often forget to point out that almost all of these reserves (95%) would find themselves inside non-contestable exclusive economic zones of countries bordering the Arctic; that said, any tensions or hostilities (the media often refer to the term “Cold War”) arising from the ownership and control of these resources are unlikely in the near future. It should also be noted that these potential deposits are actually significant but still modest compared to the proven reserves of Saudi Arabia (about three times larger), which are technically easier to extract. Current climate change could indeed authorize new ambitions and make the Arctic more accessible to exploration and extraction of these raw materials, both energetic and mineral, keeping in mind that industry interest is a necessary condition for development of Arctic resources.¹⁰ It is these resources that could be at the heart of issues related to tomorrow’s Arctic shipping and it is necessary to take note of the nature and extent thereof. We focus here (in a non-exhaustive way) on the resources of the Canadian Arctic, Greenland and Russia.

A. Energetic Resources

First, in regard to energetic resources, that is to say, oil and gas, those located within Canada are distributed in three areas: the first is in the region of the Mackenzie River Valley and coastal land in the Yukon (28 discoveries and two producing fields); the second in the Arctic Island (19 discoveries) and finally the third in the Mackenzie Delta and Beaufort Sea (discovered resources in excess of one billion barrels of oil and ten trillion cubic feet (tcf) of gas in 60 significant discoveries).¹¹ Several exploration licenses were sold to oil companies by the Canadian government (through Natural Resources Canada and AANDC) in 2007 and 2008. In 2007, Imperial Oil and Exxon paid \$585 million for a single exploration block in the Beaufort Sea, 120 km offshore while in June 2008, the British giant BP announced it would spend \$1,2 billion to be entitled to a block in the same region.¹² The

¹⁰Offerdal, 2009.

¹¹Aboriginal Affairs and Northern Development Canada (AANDC) (2008). Oil and Gas in Canada’s North—Active Exploration and New Development. Available at: <http://www.aadnc-aandc.gc.ca/eng/1100100037301/1100100037302> (accessed October 12th 2010). Aboriginal Affairs and Northern Development Canada, whose duties include the management of oil and gas resources. Hereafter “AANDC 2008.”

¹²*Oil & Gas Insight* (2007). Reuters, July 19th. *Oil & Gas Journal* (2008). Special Report: Canadian drilling activity continue to slow, October, 106(40). Available at: www.ogj.com/articles/save_screen.cfm?ARTICLE_id=343477 (accessed October 10th, 2010).

North American Arctic is clearly in the cross hairs of the industry, and it is only a matter of time before the starting gun of a new era of energy exploration in the Far North is heard in corporate offices.¹³ In regard to its domestic consumption, Canada consumes about one million barrels of its own crude oil per day (and exports approximately 2 million barrels per day of crude oil to the US). At present, the Canadian Arctic region is only a minor contributor to this production. Anticipated increases in natural gas consumption in the coming decade due to higher oil and petroleum costs will heighten the need for new natural gas deposits to be found.¹⁴

The case of Greenland seems limited. Exploration is focused now on its western coast. Trials in 1976, 1977 and 1990 had proved negative but the demand and high prices have encouraged the autonomous government to revive the exploration in July 2002; four waves of selling new concessions have been held since.¹⁵

With regard to Russia, the extent of its reserves of energetic resources makes it the main Arctic hydrocarbon reservoir of tomorrow, which explains its interest in Arctic exploration and exploitation. Nearly 80% of oil reserves and 90% of gas reserves of Russia are found in the Arctic.¹⁶ Russian firms know hydrocarbon deposits lie in the Barents and Kara Seas and are considering exploring the East Siberia Sea, where data are lacking.¹⁷ For example, the Shtokman field (or Chtokman) in the Barents Sea, about 500 kilometers outside the Russian border, by 350 meters deep, is ten times more abundant than the Snøhvit project operated by Statoil (north of Hammerfest) and might constitute the largest natural gas reserves on the planet. It will be operated by Russia's Gazprom.¹⁸ In that country, the exploitation of natural resources has always been an important driver for developing its Nordic region (Siberia and the Northern Sea Route) and corresponds to a political wish dating back to Soviet times (planned economy for northern region enhancement). In terms of production, the share of Russia is huge and makes

¹³Beauchamp, B. et R. Huebert (2008). Canadian sovereignty linked to Energy Development in the Arctic, *InfoNorth, Arctic* 61(3): 341-343.

¹⁴Kolisnek, G. (2008). Canadian Arctic Energy Security, *Journal of Energy Security*, December. Available at: <http://www.ensec.org> (accessed October 10th 2010). Hereafter, "Kolisnek, 2008."

¹⁵Lasserre, F. (2010a). Mines et pétrole: vers une rapide expansion de l'exploitation des ressources naturelles du sous-sol dans l'Arctique?, in *Passages et mers arctiques, géopolitique d'une région en mutation*, Presses de l'Université du Québec, p. 373-409. Hereafter, "Lasserre, 2010a."

¹⁶Franckx, E. (1993). *Maritime Claims in the Arctic. Canadian and Russian Perspectives*, Dordrecht, Martinus Nijhoff, p. 30. Hereafter, "Franckx, 1993."

¹⁷Lasserre, F. (2009). High North shipping: myths and realities in *Security prospects in the High North: geostrategic thaw or freeze?* NDC forum paper, *NATO Defense College*, pp. 179-199.

¹⁸Gran, J. (2006). Law and order in the Arctic, Center for International Climate and Environmental Research—Oslo. Available at: <http://www.cicero.uio.no/fulltext.asp?id=4271&lang=en> (accessed October 8th, 2010).

her the world's largest gas producer and second largest in oil. If the Arctic contributes 10% of global oil production and 25% of global gas production, Russia provides for 80% of Arctic oil production and 99% of Arctic gas production.¹⁹ Reserves of around 10,000 billion cubic meters of gas and 4.5 billion tons of oil have been discovered in the Yamal Peninsula and the region of the mouth of the Ob.²⁰ According to separate estimates by Gazprom and NorskHydro, there may be 275-400 million tons of extractable offshore oil reserves in the Pechora Sea, which – if exploited – are likely to be exported by sea.²¹ Regarding the continental shelf of the Barents and Pechora Seas, it contains 5% of oil reserves and 19% of gas reserves.²² Thereby, with such large amounts of resources, it is becoming clear that the Russian energy potential might be exploited sooner or later. It will, therefore, justify the commissioning of a maritime conveyance without doubt rather than road or rail (these two modes are not the favorites in the context of Siberia's extreme climate) to ensure the refinement but also possibly routing to the consumption centers.

B. Mineral Resources

Secondly, in terms of mineral resources, the most likely to be exploited at present are gold, silver, lead, nickel, zinc, uranium (deposits in subarctic Canada are making the country the number one producer in the world), iron, cobalt and diamonds. Long limited to restricted activity, exploitation of resources of the North American Arctic is now starting to attract major international companies such as Rio Tinto (UK), De Beers (South Africa) and Areva (France); if these projects are developed as suggested by the companies' reports, an important traffic route to and from mines should develop in the Arctic archipelago and around Greenland.²³ Also, if the exploitation of the mineral potential is confirmed, important maritime traffic would result, whether for ore transport by heavy bulk carrier or to support the logistical needs of the various mines. For now, Baffinland Iron Mines Corporation's goal to exploit the iron deposits at Mary River on Baffin Island is the largest industrial project under way in the Canadian Arctic. The project's promoters

¹⁹Beauregard-Tellier, F. (2008). *The Arctic: Hydrocarbon resources*, PRB 08-07E, Ottawa, Library of Parliament, 24 of October, p. 3.

²⁰Lasserre, 2010a.

²¹Ragner, C. L. (2000). *Northern Sea Route Cargo Flows and Infrastructure – Present State and Future Potential*, FNI Report 13, Oslo, Fridjof Nansen Institute, p. 52. Available at: <http://www.fni.no/doc&pdf/FNI-R1300.pdf> (Accessed on October 17th, 2010).

²²Ocean Futures (2006). *Oil and gas, Focus North*, Vol. 5, Oslo.

²³Lasserre, 2010a.

are counting on producing 18 million tonnes of direct-shipping iron ore for at least 25 years primarily to European steel mills; a fleet of between 10 and 17 vessels, operating year-around, would be required, depending on production volume and actual size of the vessels.²⁴ The project is quite advanced, with the technical studies completed and ongoing environmental assessment; in addition, in terms of shipping, tests (three loads of minerals into northern Europe) have already been made at the end of the 2008 navigation season.²⁵ Fednav, the only Canadian company that operates in the Arctic Shipping Pollution Prevention Control Zone in the winter thanks to her two ice-breaking bulk carriers *Arctic* and *Umiak I*,²⁶ is established as a commercial operator of dry bulk ships and specializes in two geographic markets: the Great Lakes and the routing of mineral resources from the Arctic to the processing sites. Involved in most of Northern mining projects, Fednav transports the annual production of the Raglan mine from Deception Bay to the Port of Quebec City.²⁷

Greenland, meanwhile, is no exception. After mining cuts of 2001 and 2002, a recovery took place for lead, zinc, iron, coal, gold, platinum, uranium and molybdenum. The number of granted exploration licenses has increased from 19 in 2001 to 71 in 2009.²⁸ Greenland is also rich in bauxite, at least enough to attract the interest of Alcoa which focuses on building an aluminum smelter with a yearly capacity of 340,000 tonnes (which would come into production in late 2014) and a deep-water port.²⁹

Mineral resources of Russia are mainly nickel and copper. Norilsk Nickel, a company that provides 20% of world production, produced in 2009 124,000 tonnes of nickel and 324,000 tonnes of copper thanks to its Norilsk deposit.³⁰ This major production is already sent by ship (double-action containership MS Norilskiy Nickel—class LU7—built by Aker Yards) on the Yenisei River to the plant on the Kola Peninsula.

²⁴Ryan, L. (2009a). The awesome Baffinland venture, *Maritime Magazine*, N° 52, Spring 2009, pp. 66-69.

²⁵Guy, E. et J.-F. Pelletier (2010). Développement du transport maritime en Arctique: quelles perspectives pour l'industrie maritime canadienne? in *Passages et mers arctiques, géopolitique d'une région en mutation*, Presses de l'Université du Québec, p. 427-447.

²⁶Ryan, L. (2009b). Fednav shows the way through ice-infested waters, *Maritime Magazine*, N° 52, spring 2009, pp. 70-72.

²⁷Guy and Pelletier, 2010, *supra*.

²⁸Government of Greenland, Bureau of Minerals and Petroleum (2009). List of mineral and petroleum licences in Greenland, 16 décembre 2009. Available at: www.bmp.gl/minerals/list_of_licences.pdf (accessed February 20th 2011).

²⁹Labévière, R. et F. Thual (2008). La bataille du Grand Nord a commencé . . . , Éditions Perrin, p. 248.

³⁰Norilsk Nickel (2010). Polar Division ore mining and metals production. Available at: http://www.normik.ru/en/our_products/polar_divisions/ (accessed February 23rd 2011).

As we can see, the accelerated summer melt of sea ice in the Arctic Ocean, a phenomenon widely observed and documented on a recurring basis, suggests new challenges. These key issues are twofold: first the formation of three shorter shipping routes between the Atlantic and Asia (parts of Northwest, Northeast or Northern Sea Route and Arctic Bridge, the latter linking the port of Murmansk, Russia, to that of Churchill, Manitoba, Canada) and second the renewed interest in the potential for exploitation of mineral and energy resources as the Arctic deposits again become attractive. Besides these two major economic and strategic perspectives, the predicted climate changes will lead to the isolation of remote industrial areas and easier navigation for the Military.³¹ The Northwest Passage's navigation season could rise from 20 to 30 days per year to 90 or 100 days by 2080.³²

It is true that there is a gain in terms of distances: the route London—Yokohama by the Northwest Passage, for example, is 15,700 km, shorter than by Suez (21,200 km) or Panama (23,300 km).³³ This observation fuels the belief that these Arctic routes, shorter in distances, are likely to attract major transit navigation therefore become a major political issue. But will this reduction in transit distance, in the case of the Arctic zone, result in an automatic reduction in transit time? Not necessarily. Despite this advantage, many obstacles remain to navigation which will have an impact on the decisions of the actors.³⁴ Moreover, and this is the aim of this paper, the scenarios of development of maritime traffic in the Arctic are largely hypothetical and do not take into account the views of shipowners, key economic players responsible for the development of the maritime region.

II METHODOLOGY

This article set out to deliver the results of an empirical survey conducted among shipping companies, in order to measure interest in developing their activities in the Arctic. To do this, 142 ocean carriers directly operating ships were contacted. The survey also focused on operators navigating in the northern hemisphere only: the advantage in terms of distance disappears if the pair origin/destination is located in the southern hemisphere. The lead-

³¹Lasserre, F. (2004). Les détroits arctiques canadiens et russes: souveraineté et développement de nouvelles routes maritimes, *Cahiers de géographie du Québec*, 48 (135): 397-425.

³²Gran, 2006, *supra*.

³³Data calculated by Frédéric Lasserre on Mapinfo GIS.

³⁴Lasserre, F. (2010b). Vers une autoroute maritime? Passages arctiques et trafic maritime international, in *Passages et mers arctiques, géopolitique d'une région en mutation*, Presses de l'Université du Québec, 449-478.

ers of these companies were contacted from February 2008 to August 2010.³⁵ Companies were invited to answer questions: “Do you plan to develop activities in the Arctic?” and “Why are you considering whether to develop your activities in the Arctic?”; 98 responses in total were obtained, the answers to the first question being “yes”, “no” and “perhaps” while those of the second question were identified by response category. This relatively small sample does not lend itself to statistical analysis, so the use of results offers no quantitative statistical analysis: only the qualitative approach remains appropriate here.

A. Results

Among the companies that have expressed an interest in the Arctic, eight are already present on the Arctic transport market: three in the bulk segment and the other five in the segment of general merchandise. These companies are all active in serving local communities or mining and oil facilities from the Canadian and Russian Arctic. All these companies have expressed the desire to strengthen their presence in arctic shipping.

In all segments, a large majority of respondents noted the lack of interest in their company for Arctic routes. Only 17 companies responded yes, 10 perhaps and 71 not interested. (Table 1).

However, the segmentation revealed very different approaches from the ocean carriers: The general cargo segment, for which many companies in the sample were already present in the Arctic, seems to be the one where the highest proportion of companies show a desire to develop an arctic shipping offer: 5 yes and 4 no. In the bulk segment, the overall answer is negative with 25 no, 9 yes and 6 perhaps. In the mixed segment and bulk and container, the answers are rather negative: 5 no against only 2 yes and one perhaps. In Ro-Ro (for Roll-on and Roll-off – goods are being loaded by wheeled vehicles) and container sectors, no doubt: the answer is a clear refusal with 35 no and 3 perhaps.

B. Analysis

The replies to the second question—“Why are you considering whether to develop your activities in the Arctic?”—allows us to describe the distributions of responses according to the strategies of carriers.

³⁵Companies will not be named individually here to preserve, as agreed with them, the confidentiality of information disclosed during the interviews.

Table 1. Overview of responses according to company's home region and main sector of activity.

	Sector of activity						Total
	Container	Ro-Ro	Container and bulk	Bulk	General Cargo	Special projects	
Yes			2	9	5	1	17
No	35	2	5	25	4		71
Perhaps	3		1	6			10
Total	38	2	8	40	9	1	98

	Home region			Total
	Europe	Asia	North America	
Yes	10		7	17
No	32	25	14	71
Perhaps	5	3	2	10
Total	47	28	23	98

Among the companies looking to increase business opportunities in the Arctic, and who are saying they wish to develop their activities (yes), or at least are thinking about it (perhaps), the arguments are:

First, the argument of costs, potential savings, interested companies who wish to engage in transit by Arctic routes, between Europe and Asia or between Asia and north-east coast of North America. It should be noted that of the 12 companies that show an interest in this transit option, there are 2 yes and 10 perhaps. Then, the local service, whether local communities or for natural resources exploitation, is more successful and allows a greater number of companies to display an interest (15 yes). The market for local service and especially mining and hydrocarbon deposits seems promising, and it is this niche that attracts shipowners. However, eight of 15 companies say they favor the Northeast Passage for it is better equipped in infrastructure, with more local ports to be served, more mining or oil activities.

Among the companies that do not consider the development of activities in the Arctic, companies from all segments note the following points:

First, the market for Arctic routes, local service or transit, is a thin market. For local service, the volumes to be transported are limited and competition fierce (4 mentions). The exploitation of natural resources creates traffic but fewer ships might be sufficient to serve deposits: although it is growing rapidly, the market is not significant (9 mentions). Secondly, the ongoing risk and uncertainty on these routes: drifting ice, extreme cold, scarcity of port

facilities or navigation aids; imprecision of charts, isolation, and therefore high cost of policies of insurance (18 mentions). Third, the risks associated with growlers (small blocks of hard ice floating just above the water) and small icebergs, very difficult to detect, require slow speed when the probability of encountering such blocks of ice is significant. In this case, the transit time is lengthened, thereby reducing the interest of Arctic transits (6 mentions). Finally, expensive strengthened vessels, at least 1A Class³⁶ are essential to meet minimum insurance requirements; these ships must be equipped to navigate polar regions (de-icing system, two drive shafts etc.). Ships must also be temperature controlled to protect the goods from chills, especially for the container sector. These ships represent a high capital cost and are expensive to operate (lower hydrodynamics; heavier, therefore higher fuel consumption per km) (13 mentions).

Some answers are specific to areas of activity:

1. Bulk transport:

First, to be amortized, a major investment such as buying an ice-strengthened vessel means being operated in Arctic waters, not ice-free waters. However, the bulk market is based on spot contracts (tramp) rather than regular liner shipping. Thus, long-term financial guarantees are required to enable these vessels to sail for several years in Arctic waters, which is not easy with the modus operandi of the market (7 mentions). Then, these roads will remain too risky, especially given the nature of cargo, and therefore probably too expensive to insure (3 mentions). Finally, in light of changing markets and geographic areas of operations and consumption, it does not seem interesting to try to develop such routes (8 mentions).

2. Container transport:

First, the transportation of containers—such as transport of cars via Ro-Ro—operates in just in time: firms do not only sell the transportation of goods, but also the delivery of a pre-determined amount of stocks according to specific schedules. However, the presence of drifting ice, icebergs in increasing numbers, heavy fog make compliance with these schedules difficult since the ship speed will vary constantly. A temporary obstruction of certain straits, making them very difficult passages, could result in delays or even requiring the ship to turn around to pass through Panama, with possibly disastrous delays (23 mentions). Second, the ice will always be present

³⁶Lloyd's Register classification allowing one ship to break 80 cm-thick ice.

in winter, with harsh conditions: extreme cold; full night; isolation. Potential transit routes therefore will not work in winter, implying that, twice a year, companies must remake their schedules, which is expensive and increases the risk of error, thus delays (22 mentions). Third, it is very difficult to predict when the ice will reform, and when it will break up, yet regular liner shipping schedules are determined several weeks in advance. This may lead to setting summer routes when some straits are not yet free of ice, or, vice-versa, resulting in missing many days of open water (8 mentions). Fourth, in light of a possible toll (already in force in the Northeast Passage because of the mandatory icebreaker escort in Russia) and higher insurance premiums, it is not certain that the actual cost of Arctic routes is interesting (10 mentions). Fifth, for containership transit, there is no intermediary market and no port equipped to handle containers to serve on the way, which reduces the commercial value of these routes as opposed to multiple loading / unloading along the more classic Suez or Panama routes (14 mentions). Finally, the container segment is very competitive; carriers try to optimize their rotations and amortize their ships on busy routes offering a strong potential for cargo. Thus, Arctic routes seem more theoretical than options that offer interesting solutions. Companies did not really think of it seriously (26 mentions).

Thus, the reasons given for shipowners' interest or lack of interest in potential Arctic routes highlight these key points: the container sector is not at all interested. Constraints in time, schedule elaboration and risk are too great, for relatively minor perceived gains. Niche segments, such as servicing local communities, have strong growth potential, and companies that are already present look forward to extending their offer of service. The bulk sector meanwhile has a nuanced answer. Transit could be interesting but few companies mention it. It is more the opportunity to participate in the rapidly expanding market of serving mining and oil facilities that seems to attract the attention of shipowners. Gains in terms of cost and transit time, largely put forward in the media, seem to attract only a minority of companies. Companies do not seem to be interested in transit activities, because of the perception of higher costs of capital and insurance, or a transit time which may be little different from other routes as a result of reduced speed obliterating the advantage of a shorter distance.

III CONCLUSION

Summer melting of sea ice feeds scenarios of tomorrow's explosion of transit traffic along the Northwest and Northeast passages. Indeed, shipowners are looking to reduce fuel expenses at all costs and increase their rota-

tions. However, an analysis of the intentions of the shipowners, on a sample of 98 companies, reveals a very different picture. If Arctic traffic does increase, it will be neither an explosion nor through traffic, but destination traffic supplying local communities, and traffic related to the exploitation of natural resources that drives that growth. The bulk segment remains cautious, while the container segment is not interested in Arctic routes at all. Finally, according to the concerned owners and because of too much uncertainty surrounding their sailing conditions, the Arctic passages are not about to become new Panama.