



CHALLENGES IN ARCTIC PORT DEVELOPMENT

CAN SABETTA BECOME A MULTIFUNCTIONAL PORT?

Daria Gritsenko, Postdoctoral Researcher,
University of Helsinki, Finland

Sabetta is one of the most ambitious contemporary Arctic seaport projects ever developed. The port is constructed on the western shore of the Ob estuary in the Yamal peninsula and is a key component of the Yamal LNG project which includes a large liquefied natural gas (LNG) plant capable of producing 16.5 million tons of LNG per year (compare: the Snøhvit LNG in the Barents Sea has production capacity of 4.3 million mt per year), an international airport and a settlement. Sabetta port is a joint venture between Novatek - a large producer of natural gas - and the Russian government.

A PORT FOR ARCTIC LNG TRANSPORT

Sabetta can be considered a 'critical case' in the ongoing industrialisation of the Arctic. The absence of adequate onshore infrastructure, primarily ports and terminals, is an obstacle to furthering prospects of the Arctic energy development. Many energy analysts

suggest that LNG will be a part of the energy mix for years to come and that there is place for Arctic LNG on the market. Yet, the success of projects like Yamal LNG largely depends on the reliability of LNG transport for customers, thus, existence of a well-functioning modern port is a necessary condition.

The Arctic region poses significant challenges to LNG logistics due to the harsh operational conditions and large costs associated with Arctic operations (icebreaking and ice management, pilotage, insurance). In case of Yamal LNG, the challenges of Arctic navigation will make LNG logistics seasonal. During the summer season, LNG produced in the Yamal plant will be exported to the Asia-Pacific markets (China, South Korea, Japan, India) via the Eastern part of the NSR using the special ice strengthened LNG-carriers. During the winter season, the Western part of the NSR will be used to

deliver LNG to the Asian markets through the conventional Suez Canal route via the Zeebrugge LNG terminals.

Given that the Yamal LNG planned capacity of 16.5 million tonnes annually, and 10.9 million tonnes have already been sold, there is little doubt that Sabetta will be an operational LNG terminal. Moreover, Daewoo Shipbuilding & Marine Engineering were contracted to build sixteen ice-class Arc7 gas carriers for the Yamal LNG project. Yet, the real question is, can Sabetta make the move to become a multifunctional port?

SABETTA WITHIN THE SYSTEM OF RUSSIAN ARCTIC PORTS

Sabetta was initially conceived as a specialised LNG port; but early in the planning stage, the public partners emphasised benefits that could be gained from developing Sabetta as a multifunctional deep-water port and a

Port	2010	2011	2013
Dikson	0	0	29,2
Dudinka	1092	1102	970
Igarka	0	2,5	n/a
Pevek	141,9	189	232,0
Provideniya	26,8	22,5	21.3
Tiksi	40,3	55,5	327,1
Murmansk	32809	25687	31406

Table 1. Port turnover in NSR ports and Murmansk (thousand tons)

Botnaryuk, MB (2013). Analysis and Perspective of the Northern Sea Way Development. URL: <http://cyberleninka.ru/article/n/analiz-sostoyaniya-i-perspektivy-razvitiya-severnogo-morskogo-puti>.

new logistical node at the Northern Sea Route (NSR). Increasing exploitation of the NSR, in particular as a short-cut for transcontinental transit, is among the highest political priorities in Russia and is included in both the state's Arctic and Maritime development strategies.

However, researchers are sceptical regarding the attractiveness of the NSR for international transiting, drawing attention to the fact that the distance is not the only economic determinant of maritime transport. Regulatory requirements of the Polar Code are needed for icebreaker assistance. There are also risks and uncertainties connected to Arctic shipping because of additional costs and high insurance fees. To date, most of the NSR transport is destination-to-destination, complemented by a limited number of export bulk voyages.

The overall low level of shipments along the NSR results in low turnover rates in the Arctic ports. Strictly speaking, among the nineteen Northern ports in the Russian Federation, only nine (including Sabetta) are NSR ports. Table 1 shows that freight turnover in the NSR ports has been very low in the past decade, with the exception of Dudinka, which is a port utilised by Norilsk Nickel for their shipments. From all Northern ports, only Murmansk, which is not located within the NSR, has a significant turnover and positive dynamics, ranking #2 after the Big Port of St. Petersburg in the Russian North-West region. In what follows, we will present the three challenges that face Sabetta if it desires to become a multifunctional port.

LOCATIONAL CHALLENGES

Located at 71° North and 72° East, Sabetta is equally well positioned to serve trade flows to/from Europe, America and Asia. According to the initial plan, the port area will cover fifty-nine hectares onshore, a fifty kilometer sea channel, and a six kilometer long by 420 meter wide approach channel. The port also intends to have a four kilometer long canal for storage of ships,

and a control station. These plans will allow Sabetta to receive larger vessels (eleven meter berth), including large gas carriers.

While the port's physical location is promising for developing infrastructure, inland connections remain poor. Currently, there is no railway link for Sabetta - a 180 km railway connecting line to Bovanenkovo (an extension of the existing railway further to Labytnangi) was envisioned, but construction did not commence due to estimated costs being too high. This absence of railways cuts Sabetta off the projected hinterland, but the dilemma is that construction and maintenance of railways in the High North is very expensive.

Sabetta is located in the estuary of the Ob River, which means that the inland waterway connections are available. Despite this, the navigational season at the Ob River lasts only around four months and the Russian inland waterways fleet is outdated. This means that significant investment is required to restore and maintain this connection. The development of adequate inland infrastructure connections to provide port hinterland is crucial to allow diversification of port activity. Basically, until Sabetta becomes accessible in a reliable and cost efficient manner, it will not become a multifunctional port.

FINANCIAL CHALLENGES

Arctic ports require large capital investments that are unlikely to be repaid in the short or medium run. Thus, a close cooperation between public and private sector is required to finance and maintain such projects. In Sabetta, the port authorities maintain infrastructure (terminals, piers, cranes, etc.), provide navigational safety, and maintain the port state control. Coastal Search and Rescue (SAR) operations and oil spill response are organised by Rosmorrechflot, a unit of the Ministry of Transport of the Russian Federation, through the Marine Operations Headquarters. All transport objects, terminals, storage and administrative

facilities are in private ownership. Potentially, this could lead to conflicts over financial maintenance.

Initially, Sabetta was estimated to cost approximately 73.3 billion RUB (USD \$2.3 billion). As the port was envisioned as a joint venture, the RF federal government was supposed to finance a share of 47.3 billion RUB (\$795 million). In the summer of 2014, the total cost of the Sabetta port increased due to extensive dredging works, and the project deficit of 22.3 billion RUB (\$375 million) increased the share of public finance required for project completion to 69.6 billion RUB (\$1.2 billion). This forced the federal government to cover the deficit by cutting funding to other federal transport projects. It is difficult to assess the cost of port operations in the changing environment and it is not clear at what point the federal government will be ready to pick up the cheque for occasional cost overruns. The private partners, in their role, cannot be expected to invest more than what is in line with their core business, which is hydrocarbons. Thus, multi-functionality of Sabetta is also in part a financial challenge.

CLIMATE CHALLENGES

The impact of climate change on the development of Arctic ports remains unpredictable. First, there are uncertainties surrounding the Arctic Ocean and whether climate change will make navigation easier, or more difficult. Due to the melting of sea ice, the amount of drifting ice that is potentially hazardous to shipping is expected to increase. Climate change is also associated with the increasing unpredictability of weather conditions and heavy winds/storms, which may make the Arctic less, rather than more, navigable. In truth, it is not quite clear how climate change will affect conditions for Arctic shipping. Thus, the prospect that common open-water ships, containing the vast majority of the world's fleet, will enter the Arctic Ocean – and call at Arctic ports - remains speculative.



Second, due to increased seasonal variability and thawing of permafrost caused by the increase in global temperatures, building on Arctic soil poses certain engineering challenges. This means that port infrastructure will need to be robust to contend with the upcoming changes. Moreover, the extreme climatic conditions also limit the use of road transport and inland waterways, and the thawing permafrost may result in additional challenges for the maintenance of roads and railroads. As a result, climate change may cause less shipping, or more risks in shipping, and decrease accessibility of the Arctic ports from outside the region. This will make it unlikely that the trade pattern will be diversified and port will become multifunctional.

THE FUTURE OF SABETTA

At the moment, Sabetta's multi-functionality seems like a complex problem: cargo cannot be delivered without inland infrastructure, but it also requires adequate shipping capacity, which at the moment is lacking. A multifunctional port in Yamal peninsula and related inland infrastructure are only needed in case the Northern Sea Route will provide a cost-effective option for export and import of various cargo, including dry and liquid bulk, containers and general cargo, which currently is not the case. New solutions in terms of engineering and business models will be required if Sabetta is ever to take the step from LNG terminal to multifunctional port.

ABOUT THE AUTHOR

Daria Gritsenko holds a PhD in the Social Sciences from the University of Helsinki. She is a postdoctoral fellow at the Aleksanteri Institute (University of Helsinki) and a partner at the Finnish Centre of Excellence "Choices of Russian Modernization". Dr. Gritsenko specialises in public policy with a focus on private governance, corporate social responsibility and the transformation of socio-technical systems, including maritime transportation and energy infrastructure. Daria was assisted in the research of this paper by Elena Efimova. Elena is a Professor in the Department of World Economics at St. Petersburg State University. Her expertise is in the field of maritime transport and logistics.

ABOUT THE ORGANISATION

The University of Helsinki carries out research of an internationally high standard. Research funding, honours and prizes awarded to the Universities' researchers are an indication of the widespread esteem among the global scientific community. The University of Helsinki has regularly been ranked among Europe's 10 to 15 best universities on worldwide ranking lists of research universities. The Centre of Excellence "Choices of Russian Modernization" is administered by a board convening several times a year. The administrative core is formed by director Markku Kivinen, vice-director Tuomas Forsberg and research coordinator Sari Autio-Sarasma. The CoE's scientific plan is monitored by the International Advisory Board and the Scientific Advisory Board.

ENQUIRIES

daria.gritsenko@helsinki.fi