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Stpie, Adam; Koivurova, Timo; Käpylä, Juha; Mikkola, Harri; Nojonen, Matti

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7. Chinese-Finnish economic relations within the Arctic context: hopes and disappointments

Adam Stepien, Timo Koivurova, Juha Käpylä, Harri Mikkola and Matti Nojonen

7.1. Introduction

In its 2013 Arctic Strategy, the Finnish government stated that there is great value in bilateral Arctic partnerships with various actors (Prime Minister's Office, 2013: 15). In light of the increasing Chinese economic activities in the Arctic (see Chapter 6), Chinese investors, companies and clients could be, in principle, interesting partners for Finland in that regard.

This chapter focuses on the economic relations between China and Finland in the Arctic context. This is done from two perspectives. First, we consider China's investments and presence in northern Finland and particularly in Finnish Lapland, the country's northernmost province, the majority of which is located north of the Arctic Circle. At present, the sectors with Chinese investment presence are bioeconomy and tourism. In terms of future prospects, mining, renewable energy, data centers, testing facilities, and participation in the Arctic railway project could become relevant. Second, we look at the instances of economic cooperation in areas of Finnish Arctic expertise. These include Finnish investments in China, Chinese in Finland, and joint ventures.

There is scant data available in terms of the monetary value of current Chinese investments in Arctic sectors and even less in terms of assessing future potential. The potential for Sino-Finnish economic cooperation is thus discussed here without quantifying the overall value of investments or contracts. In most of the identified areas for business collaboration, there have been few or no examples of implemented

Arctic-specific actions. Therefore, rather than providing uncertain and indicative monetary calculations of Chinese investment potential, this chapter presents a broad overview of sectors in which activities have already been implemented or in which cooperation may occur in the future. Rare cases of implemented or announced investment and other activities or plans are described in greater detail. The potential for Sino-Finnish economic ties was considered by taking into account the following: the sectors of Finnish Arctic expertise,[1] the developmental trajectories in northern Finland, China's main areas of interest in the Arctic,[2] and recent investments and current plans.

The work on this chapter was carried out as a desk study supported by personal communication with experts and stakeholders dealing with or engaged in instances of Sino-Finnish cooperation, persons promoting Finnish Arctic expertise, as well as relevant public and private actors in Finnish Lapland. The interviews had a semi-structured format and they were carried out in person, by phone or by email. All interviews are anonymized with the exception of interviewees who explicitly wished to be mentioned by name. For contemporary and ongoing developments, these interviews are often the main source of information included in this chapter in addition to recent media reports.

7.2. Overall economic relations between China and Finland

[1] Based on Finland's official Arctic documents: 2013 Strategy and 2017 Action plan (Prime Minister's Office, 2013; 2017).

[2] Chinese interests in the Arctic; and thus, potential activities of Chinese public and private actors are those identified by the Chinese government in its Arctic Policy White Paper from January 2018 (PRC State Council, 2018).

Chinese-Finnish economic relations

Finland has established a broad range of ties with China, ranging from diplomatic, trade and investment relations to scientific collaboration and tourism. Historically, Finland was one of the first Western countries (with Sweden and Denmark) to recognize (in 1950) the People's Republic of China and to establish diplomatic relations. The Finnish embassy was established in Beijing in 1952. In the following year, Finland and China signed an economic cooperation agreement – the first of its kind between a Western (capitalist) state and the newly established People's Republic. In practice, however, bilateral relations did not intensify before the late 1970s because of domestic turmoil caused by the Cultural Revolution in China. Moreover, Finland's foreign policy was heavily directed by the *Agreement of Friendship, Cooperation, and Mutual Assistance* (1948–1992) with the Soviet Union, which had ideological tensions with China since the Sino-Soviet split in the late 1950s. A crucial step in bilateral relations was taken in 1979, when China entered its opening and reform period, with Chinese Premier Geng Biao's official visit to Finland. In the same year, an Agreement on economic, industrial, scientific and technological cooperation was signed. Numerous state visits took place in the 1980s and the 1990s[3] (Embassy of Finland, Beijing, 2014). Today, there are about 400 Finnish companies engaged in various operations in China (Finnish Business Council Beijing, n.d.), in a broad variety of activities. For instance, to name a few illustrative examples, Finnish company Valmet supplied a waste-fired boiler to Shanying Huazhong Paper's paper mill in Jingzhou in Hubei province, Nokia will deploy a cloud-native core network in seven Chinese provinces, laying the foundation for future 5G connectivity (Business Finland, 2018, February 5), and

[3] For instance, Finnish Foreign Minister Paavo Väyrynen visited Beijing in 1984, Prime Minister Kalevi Sorsa in 1986, and President Mauno Koivisto in 1988. Chinese President Jiang Zemin visited Finland in 1995, and after that, several official meetings have taken place between the two countries (Embassy of Finland, Beijing, 2014).

Wärtsilä in 2017 won a contract for the construction of a gas-fueled power plant (30 MW combined heat and power plant) in Guangzhou.

For Finland, China is an important trade partner. Recently, Finnish-Chinese trade has been generally growing year-to-year, both in terms of imports and exports (however, service imports from China went down by 16 percent and exports to China fell by four percent from 2016). In 2017, the import of goods from China reached €4.560bln (€4.995bln when services are included), constituting 7.3% of all Finnish imports and representing a 12% year-to-year growth. The export of goods was at €3.392bln, representing 5.7% of all Finland's exports and a year-to-year growth at 27% (€4.242bln when services are included) (Statistics Finland – Finnish Customs, 2017). Within these international trade numbers, Finnish high technology imports from China reached €1.573bln (representing 22.1% of all high technology imports and the annual growth by 23%) and high technology exports to China stood at €517m (representing 12.9% of all exports and the annual growth by 25%) (Customs Finland, 2018). Finland's overall trade relations with China are therefore strong and China is clearly of high importance for the Finnish economy.

In 2009-2018, Chinese foreign direct investments in Finland stood at US16.28$bln, compared to US$11.96bln in Sweden and US$4.31bln in Norway (AEI, n.d.), although the high number for Finland is primarily a result of a couple of major company takeovers, such as Tancent's acquisition of the shares of Finnish game maker company Supercell. Due to the latter transaction, Finland statistically became one of the largest recipients of Chinese Foreign Direct Investment in the EU in 2016. Nonetheless, compared both to the total level of foreign investment in Finland and to overall Chinese overseas direct investment (ODI), only a small percentage of Chinese investments have been located in Finland and Chinese investments constitute only a

small part of foreign investment activity in the country (10% in 2016-2017, mostly accounted for by the Supercell transaction, see OECD Data, n.d.). Overall, the majority of Chinese investments in Finland focus on high tech. These include the aforementioned Tecent Supercell purchase, as well as the acquisition of the Finnish company Okmetic by China-based National Semiconductor Industry Group, and Rightware being bought by Thundersoft. Huawei operates two research and development (R&D) units in Finland. Among others, the predominance of technological investments may be a result of "structural upgrade to knowledge intensive industries" in China (Zhu Bin at Business Finland, 2017, April 11). Considering the structure of the Finnish economy, such a shift may be beneficial for Sino-Finnish economic relations. A stronger focus on innovation in China – both in terms of innovative products and 'innovative markets' – makes Finland an attractive partner for Chinese companies. Finland can also become a testbed for Chinese products and solutions due to developed business-research clusters, the Finnish startup landscape, the culture of innovation, and the stable and predictable business environment. Good transport connections between Helsinki and China may also play a role in encouraging Chinese investors to look at opportunities in Finland. A synergy of particular value could be the combination of Finnish innovation and Chinese scaling-up capabilities (Ibid.). At present, Finland remains among the European countries perceived in China as most open and welcoming to Chinese investments. In some countries, Chinese companies may receive special treatment. That is not necessarily an advantage if there is a possibility of such a special status being revoked for political or other reasons, adding to business risk level. In Finland, Chinese investors are generally treated on par with European and Finnish business actors, which, in principle, may attract those who value long-term certainty over higher profits in the short term (personal communication,

Interviewee 10, August 20, 2018).

On the other hand, among aspects discouraging Chinese investors are: the small size of the Finnish market, high operation costs and high taxation, as well as a lack of familiarity with Finland among Chinese companies. In addition, slow and complex zoning and permitting procedures may be discouraging for Chinese firms. Of concern are also lengthy and (perceived by some as) "unfriendly" visa procedures, partly related to the limited capacities of Finnish consular services in China (personal communication, Interviewee 10, August 20, 2018).

The interest in and political support for Sino-Finnish economic relations was heightened following the visit of President Xi Jinping to Helsinki in April 2017. On the occasion of this state visit, a number of business and cooperation agreements were signed, including: the Memorandum of Understanding (MoU) between China's Ministry of Science and Technology and Tekes (at present Business Finland); a collaboration programme between Finpro (currently, following a merger with Tekes, operating as Business Finland) and China Development Bank; an agreement between Finpro and China Council for the Promotion of International Trade; as well as agreements related to two bioeconomy projects in Lapland, described later in this chapter. A committee for innovative business cooperation was also established. The Joint Declaration, signed upon Xi's visit, lists energy, information and communication technology (ICT), tourism and winter sports as among the sectors in which joint activities are to be encouraged. The commentators' expectations following Xi's visit were that it would raise interest in and awareness of Finland among Chinese companies and investors. Overall, there have been signs of Chinese encouragement for Nordic investment in the country. For example, in 2016, state-owned Beijing Capital Investment announced plans to start a €400mil fund aimed at finding Nordic companies with growth potential in China, with a

focus on high-tech, cleantech, health care, renewables and production technology (YLE Uutiset, 2016, September 6).

Several companies from Finnish Lapland are present in China, making the Chinese market an important one in terms of the commercial success of Lappish entrepreneurs and the region's labor market. For instance, the Rovaniemi-based playground and outdoor sport equipment producer Lappset has gained a significant position as a foreign investor in the Chinese market in its area of business (including via the so-called "Happy Sport China Plan"). Rovaniemi LogHouses – producing log buildings for winter sports facilities, among other uses – is present in Chinese skiing resorts and golf courses (personal communication, Esko Lotvonen, Rovaniemi, June 20, 2018; Interviewee 11, September 03, 2018). Furthermore, the company operating the Santa Park theme park in Rovaniemi has been developing a project to establish a Santa Claus theme park in the northern Chinese province of Heilongjiang.

Business Finland and Team Finland, both of which support Finnish businesses in China, have offices in Beijing, Shanghai, Hong Kong and Guangzhou, although these support services conduct activities all across the country. Since 2005, the Finland-China Innovation Centre (FinChi) has been operating in Shanghai (FinChi, n.d.), offering support for Finnish high tech companies when entering the Chinese market and finding collaboration partners. Interviewees from Finnish companies based in Lapland and active in China described the support of these institutions as helpful.

7.3. Developments in Northern Finland: potential for Chinese involvement?

While Finland's 2013 Arctic Strategy (Prime Minister's Office, 2013) considers the whole territory of Finland as a part of the Arctic, Lapland and Northern Finland were given particular attention. The strategy expresses a conviction that "Lapland has every

chance of providing an attractive living environment in the future" based on infrastructure, expertise, existing networks and Arctic/Barents economic developments (Ibid.: 20). In principle, Chinese companies and investors could support and influence the region's economic growth and job creation. The activity of Chinese companies in Arctic regions constitutes one dimension of China's Arctic policy. "To develop the Arctic" is one of the objectives of the 2018 White Paper (PRC State Council, 2018). This goal is to be achieved through contributing to the "economic and social development of the Arctic" and improving the "living conditions of the local people". The activities of Chinese companies in the Arctic can be expected to receive strategic and political support from the Chinese government, as they may be seen as beneficial for China's overall aims in Arctic regions.

At a declaratory level, "common development" and win-win approaches mean that China's presence in the Arctic should benefit the Arctic regions at the same time as it is profitable for Chinese actors. This is a language typically used, for example, with regard to the Belt and Road Initiative (BRI). The 2018 White Paper states that "all stakeholders in this area should pursue mutual benefit and common progress in all fields of activities" and "cooperation should ensure that the benefits are shared by both Arctic and non-Arctic States as well as by non-state entities, and should accommodate the interests of local residents including the indigenous peoples" (PRC State Council, 2018). Such statements are, however, declarations and it is not necessarily true that the Chinese government has full control over Chinese companies' activities at the operational level.

Chinese companies may be in a position to offer competitive prices for construction work and other services needed for the implementation of development projects in Northern Lapland. This may be, however, problematic for Finnish

companies afraid of losing part of the domestic market and may affect the labor market in some sparsely-populated regions of Finland. Some experts in Lapland believe that the Chinese presence can be economically important for Lapland's economy, which is considered to be somewhat overlooked by domestic investors (Jaakko Ylinampa from Lapland ELY-Keskus at News Now Finland, 2017, November 6). The three most prominent areas in which Chinese actors are already involved or where there is potential for future activities are bioeconomy in northern Finland, tourism in Lapland, and the plan to construct a new railway to the Arctic Ocean. These sectors are discussed below in greater detail, followed by other areas of regional economy such as mining and renewable energy.

Biorefinery and biofuels projects

The forestry sector remains one of the key industries in northern Finland, constituting between 8% and 17% of economic activity in Lapland.[4] Currently, a number of investment plans across Lapland, Northern Ostrobothnia and Kainuu are expected to add to the existing wood refining capacities. Among its many objectives, the Finnish Arctic Strategy (Prime Minister's Office, 2013: 54) sets the goal to increase the use of wood as a local renewable energy resource, as well as increase the diversity of business and entrepreneurship based on northern forests. Finland also adopted a 30% target for the share of biofuels in road traffic by 2029 (Business Finland, 2019, February 19).

The EU's revised Renewable Energy Directive (2018/2001/EU) integrates biofuels into EU targets, especially for transport transition, while setting new

[4] Considering annual fluctuations in economic activity.

sustainability criteria for biofuels that can be accounted for. The new legislation is expected to support biofuel production in Finland, as it effectively promotes non-food-based biofuels and creates stable rules for business operations when national legislation implementing the directive is adopted.[5]

Bio-refining, bioenergy and biofuels constitute an important area for prospective Chinese investment. Many actors in Lapland believe that the region has significant potential in terms of underutilized annual forest growth and side-streams originating from the forestry industry (e.g. wood chips). Chinese companies have acquired a technological edge and expertise in bioenergy and biofuels. Currently, two bioeconomy projects in Lapland involve Chinese investors: the Kemi biofuel project (by the Chinese firm Kaidi) and the Kemijärvi Boreal Bioref Ltd. bio-refinery project.
The Kaidi biofuels project in Kemi (on the coast of the Bay of Bothnia) is a €900m investment plan for the construction of a refinery producing biodiesel (75%) and biopetrol (25%). Annual production is estimated at 225,000 tonnes of biofuel, utilising 2.8mil cubic meters of raw material originating from within a radius of up to 200km from Kemi (Kaidi, n.d.). The company – following the National Forest Inventory (VMI) assessment – claims that the planned annual wood use is within the sustainable harvesting limits in the region. Technology developed by the Chinese parent company, Kaidi Sunshine, would be utilized. Kaidi Finland estimates that 4000 work-years would be needed for the construction phase, and the operational phase would generate 150 jobs in Kemi. Annual tax output is projected at €200m.

Since early 2016, Kaidi Finland has been searching for investors. In April 2018, the project received a preliminary environmental and water management decision, but

[5] The text of the directive is, however, a compromise outcome and has been criticized for effectively supporting forestry (Searchinger et al., 2018).

the investment decision has been postponed at least until 2021, following the adoption of the national law implementing the EU's Renewable Energy Directive (Kaihlanen, 2019, January 23). The project is likely to be seriously delayed or completely abandoned as the Kaidi parent company is facing challenges in China, and some experts have doubts about the efficiency of the proposed biorefining technology (personal communication, Interviewee 3, June 12, 2018; Interviewee 10, August 20, 2018).

Boreal Bioref Ltd. plans a single-line bio-refinery project in Kemijärvi in Eastern Lapland. If constructed, the refinery will produce bleached kraft softwood pulp, dissolving pulp and microcrystalline cellulose (MCC) — three kinds of cellulose utilized for different products and purposes in the industry. The refinery will utilise Lapland's timber production (2.8mil cubic meters including the local sawmill and glulam plant's leftover wood chips). In addition, biogas will be produced from waste products (Rautajoki & Lakkapää, 2018). In 2017, Chinese economic actors decided to invest in the Kemijärvi project. CAMC Engineering Ltd. (CAMCE) (*Zhonggong Guoji Gongcheng Gufen Youxiangongsi* 中工国际工程股份有限公司) has become a shareholder in Boreal Bioref Oy, and the engineering, procurement and construction contract was signed (also including CAMCE Swedish partner, Silvi Industries AB). The financing agreement for the construction of the bio-refinery was signed with the Chinese Development Bank (*Guojia Kaifa Yinhang* 国家开发银行). Shenyang Investment Management Ltd. and Shanying International Holding (*Shanying Guoji Konggu Gufen Gongsi* 山鹰国际控股股份公司) are to become the majority shareholders as well as product buyers and operational partners. Shanying is a Chinese paper and wood company with a presence in Japan, the USA and Europe, including Sweden. In contrast to Kaidi, the Kemijärvi project is to operate based on technology developed primarily in Finland (personal

communication, Interviewee 8, June 28, 2018). China is Finland's largest single export market for pulp, so the interest of Chinese investors in Finnish bioenergy projects should not come as a surprise (Rautajoki & Lakkapää, 2018: 29-42). So far, no specific contracts have been signed for the purchase of the Boreal Bioref production, and while it is expected that the majority of production will be exported to China, the market for pulp – according to project developers – is diverse and broad enough at the moment to prevent dependence on a single buyer or exclusively on the Chinese demand (personal communication, Interviewee 8, June 28, 2018). The Boreal Bioref Oy project is fairly advanced, awaiting a formal environmental permit (at the time of finalizing this book). Multiple changes in the project structure and investments value, however, raise doubts about the chances of its implementation.

Globally, Chinese companies are currently particularly interested in biorefinery investments. This is due to the expectation among Chinese producers that shortages of raw materials may occur in connection to newly introduced limits on the imports of cardboard and paper waste into China. At the same time, the opportunities for biorefining in China are limited. In the Arctic context, Finland appears more attractive than, for instance, Russia, owing to its political stability and strong forestry and biorefining traditions, EU market access, as well as the availability of technological solutions provided by companies such as Valmet or Andritz (Ibid.).

It is possible that investments such as the Kemijärvi biorefinery would be followed up by other Chinese activities. For instance, as most of the produced pulp is planned to reach Chinese clients, the improvement of transport connectivity could be among interesting areas of future long-term engagement, including the railway project discussed further in this chapter. The current economic feasibility of the biorefineries under development is not, however, dependent on transport connections additional to

the currently available ones (personal communication, Interviewee 3, Rovaniemi, June 12, 2018).

An emerging challenge related to biorefinery investments in northern Finland is the availability of raw material. National assessments indicate that economically-used forests in the region are underutilized. This situation may change if all projects currently in the pipeline are implemented. Recently, Metsä Group announced its own investment plans for the Kemi biorefinery, with estimated raw material needs reaching 6.7mil cubic meters. It could be the case in the future that wood for Finnish refineries would need to be imported from Russia, Sweden and the Baltic states (Kallio, 2018, September 25). However, project developers believe that the amount of wood in Lapland is sufficient to allow sustainable use by all biorefineries planned at present (personal communication, Interviewee 8, June 28, 2018). There are, however, environmental concerns related to biodiversity in the areas of increased wood production. Old-growth forests are biodiversity hotspots, forests provide other ecosystem services than wood, and forestry may also adversely affect the forest bedding and the multiple species dependent on it (see e.g. WWF, 2016).

Tourism

The Finnish Arctic tourist attractions include the Lappish natural environment, winter conditions, skiing resorts, cultural heritage, as well as Christmas-related sights and activities. The whole Arctic region has recently become an object of public interest owing to media attention related to climate change impacts, among other factors. Good transport connections make Finnish Lapland one of the easiest circumpolar locations to access. Due to the emergence of Helsinki as a hub for Europe-Asia flights, northern Finland is already easily accessible for Asian tourists. In 2016, the StopOver

Finland offers were launched (potentially leading to increased numbers of Chinese tourists also in the North). There is a possibility for direct Beijing-Rovaniemi flights in the near future, making it an even more attractive destination. Among the goals of Finland's Arctic Strategy is to improve tourists' access to Finnish Lapland.

In general, "sustainable tourism" – a term largely undefined and abstract[6] – is one of the central themes of Finland's Arctic Strategy in regard to Lapland's regional development. Moreover, the connections between the Arctic bioeconomy and tourism are sought, for instance, via the focus on endemic food production in the North and integrating it into tourism offers (Prime Minister's Office, 2017: 5). Policymakers declare the aim towards the "sustainable concentration of tourist services" (Prime Minister's Office, 2013: 55).

The tourism industry in Lapland has been growing dynamically in recent years, with almost 3 million overnight stays in Lapland (not including AirBnB and private cabin rentals), 52% of which were foreign tourists (6% year-to-year growth). Chinese tourists are still a relatively small group – 67,674 within the 1,563,495 nights spent by foreign tourists in Lapland – although their numbers are growing every year (35,084 in 2016

[6] The portal VisitFinland defines sustainable tourism as "committed to having a positive impact on nature, society and the economy, leaving a low ecological footprint and honouring local cultures. Keep nature clean by choosing environmentally-friendly options in modes of travel, and recycle, reuse and reduce your overall consumption and waste. Choose locally-produced and ethically-made food and products [...]" (Visit Finland, n.d.). Such a definition would, in fact, be a better fit to describe responsible tourism or even responsible nature tourism. It is unclear how encouraging the increased number of (often long-haul) flights for hundreds of thousands of new visitors is to be presented as sustainable, especially considering that China declares a commitment to promote "low-carbon tourism" (PRC State Council, 2018). A report for the Nordic Council of Ministers (Øian, 2018) provides a less ambitious definition: "[t]ourism is held to be sustainable to the extent tourism-specific planning and management systems take full account of current and future economic, social and environmental impacts. The interests of visitors, the industry, the environment and host communities should accordingly be balanced against each other."

and 63,668 in 2017) (Statistics Finland, 2019, April 9, see also Regional Council of Lapland, 2017; Yle Uutiset, 2019, February 11). Markedly, in 2017, Chinese tourists constituted 12% of foreign visitors in Rovaniemi alone (a higher percentage than for the whole of Lapland). The length of stay for Chinese tourists is quite short – 1.58 nights per stay as compared to an average of 2.41 nights for all tourists in 2017. This may be related to Chinese visits in Lapland often being part of package tours around Finland or Nordic countries.

In the 2018 White Paper (PRC State Council, 2018), the Chinese government places a special focus on Arctic tourism, mainly due to China being an increasingly important source of visitors in the region. Chinese companies are encouraged "to cooperate with Arctic States in developing tourism in the region". China is to contribute to environmentally conscious, sustainable, and respectful Chinese tourism in the Arctic regions, and commitments are being made for the Chinese government to take some actions towards achieving that aim:

> China conducts training for and regulates Chinese tourism agencies and professionals involved in Arctic tourism, and endeavors to raise the environmental awareness of Chinese tourists. China advocates low-carbon tourism, ecotourism and responsible tourism, and hopes to contribute to the sustainable development of Arctic tourism (PRC State Council, 2018).

The discourse on tourism presented in the White Paper resonates with the Finnish Arctic strategy objectives. Moreover, the aforementioned commitments are important, as the growing number of Chinese tourists in Lapland has already been followed by an increased interest in Lapland's tourism sector by Chinese investors. One hotel is being

built at the Arctic Circle in Rovaniemi (so far, this is the only major Chinese investment in Lapland to have been implemented) and another hotel is planned for Saariselkä (Inari) with the involvement of Alitrip, a major Chinese player in the tourism industry. In the vicinity of Rovaniemi, several small cabin areas have also been recently developed by Chinese companies and there are initial plans for further investments (personal communication, Esko Lotvonen, Rovaniemi, June 20, 2018). A major tourism development project north of Rovaniemi proposed by the Republic of Santa Claus Dream Work company is currently searching for investors, with Asian capital likely to be a part of the project portfolio (Nilsen, 2019, September 27; Republic of Santa Claus website). Furthermore, Chinese tourism operators organize tours across Northern Fennoscandia.

Importantly, investments in the tourism sector are often followed by real estate investments. While Chinese companies require approval from the government to invest their domestic resources in real estate abroad, which may slow down such processes, many Chinese business actors have assets abroad. Using such assets does not require Chinese governmental consent (personal communication, Interviewee 10, August 20, 2018).

A potential barrier for Chinese tourism in Lapland could be the lengthy visa procedures in China. While *VisitFinland* has had major success in promoting Finland in China, the service experience in the process of acquiring a visa appears to continue to be a roadblock (personal communication, Interviewee 10, August 20, 2018). However, 13 new visa application centers were opened in China in 2016. By the end of 2019, the Finnish Arctic tourism communication and marketing strategy is to be drafted, likely including some focus on Chinese or Asian visitors and their expectations.

Many tourists, especially from outside Europe, perceive Northern Fennoscandia

as a single tourism destination. Therefore, increased integration/complementarity of tourism services and improved transport connections between tourism locations may be beneficial for encouraging Chinese tourism in the region in different seasons (e.g. Husebekk, Andersson & Penttilä, 2015; Stępień, 2016; personal communication, Interviewee 1, Rovaniemi, June 2016).

The Chinese 2018 White Paper also emphasizes the question of safety and security in tourism (to a great extent referring to cruise tourism), areas in which Finland claims to have special expertise. Finnish Lapland has a "safety cluster" (with a tourism focus, amongst others) as one of the key components of its Smart Specialization Strategy (see Arctic Smartness, n.d.). Finnish operators highlight their excellence in maritime safety issues, which is potentially relevant to Arctic cruise tourism (Prime Minister's Office, 2013).

The growth in numbers of Chinese tourists, while generally seen in the region as a positive development, comes with its own set of challenges. There is an ongoing debate in Lapland regarding the problems related to mass tourism, potentially lowering both the quality and the value generated for the regional economy per visitor. Rising numbers of Asian visitors contribute to the transformation of some of Lapland's tourism activities towards mass tourism. Moreover, while welcoming Chinese tourists and investors, the actors in Lappish tourism wish to avoid labeling Lapland or Rovaniemi as "Chinese tourism destinations", so that the perception of the region remains as a place of interest for different nationalities and the composition of foreign visitors continues to be diverse (personal communication, Mika Riipi, June 27, 2018).

There are also concerns regarding the possibility that Chinese tourists in Lapland are serviced primarily by Chinese tourism operators as well as Chinese accommodation or other businesses. For local companies in Lapland, this possibility

could limit the benefits coming from the increased number of visitors from China. Major tourism investments, Chinese or not, may cause disturbances in the local tourism market. The recent growth in tourism implies that the market is big enough and expanding fast enough to accommodate any investment. However, there is a risk that one major investment, especially in small localities, will dominate the local tourism market and constrain the development of local tourism businesses, thereby preventing the emergence of diverse offer for tourists. A long-term strategic approach may be needed with consideration as to what sorts of tourism investments and in which locations are the most beneficial for the region (personal communication, Mika Riipi, Rovaniemi, June 27, 2018).

The Arctic railway: a connection to China but would there be Chinese involvement?

Physical and digital infrastructure are considered by the Finnish government to constitute the basis for the investment attractiveness of Finland and Lapland (Prime Minister's Office, 2017: 6). The Arctic region has gained a more prominent role in national connectivity planning. The most ambitious Arctic project in Finland is the proposal for connecting Lapland (and thereby whole Finland) by railway to the Arctic Ocean and thus repositioning northern Finland from the European periphery to one of the central nodes of the envisaged new northern transport route linking Europe and Asia via the Northern Sea Route (NSR). In turn, China's 2018 White Paper highlights the importance of the northern transport route to Europe for China. The alignment of Chinese and Finnish objectives can lead to the potential for involvement of Chinese companies and investors in project implementation.

The project for a new "Arctic corridor" has been debated in Finland for many years. The questions include the overall economic feasibility, the costs of different

routings and the possible impacts on Sámi livelihoods and on the environment. Notwithstanding the transit traffic via the NSR, the railway project has also been discussed in terms of Finland's own security of supply (there is no agreement as to whether the project will actually improve Finland's overall supply security) and the transportation of the outputs of industries in Lapland and wider Barents region to Central Europe via the Baltic or Barents seas. However, it is clear that the commercial viability of the railway would significantly increase if it were to become an element of global, inter-continental transport networks.

The discussion has gained pace significantly in the past two to three years. A number of studies analyzed the potential of the Arctic railway project (e.g., Kirkenes Nearingshage, 2018; Norconsult, 2018). In 2018, the Finnish and Norwegian ministries of transport chose the route between Rovaniemi and Kirkenes for further analysis (Finnish Transport Agency, 2018). The working group, established to investigate the feasibility of the investment, concluded that it is not economically justified at present (Ministry of Transport and Communications, 2019). Even if it had been evaluated as feasible, its implementation would require clear political will, focused planning efforts and financial commitments, none of which is present at the moment. Following the termination of public efforts for the time being, a proposal for a privately-funded railway was tabled by Peter Vesterbacka, the developer of the Angry Birds game and franchise and the leader of the private project to construct a tunnel between Helsinki and Tallinn. In May 2019, a memorandum of understanding with the development company of the Sør-Varanger municipality was signed (YLE Uutiset, 2019, May 9). The proponents of the project suggested that they might be capable of attracting private investment, primarily originating from Chinese funds. One way or the other, the project is likely to keep resurfacing in the coming years and decades.

The Arctic shipping routes have been promoted as a future component of the global logistical system with the Northern Sea Route connecting Asia and Northern Europe. Arctic sea lanes were integrated into the BRI in 2018. However, currently, the growth is primarily registered for destinational shipping (export of Arctic resources, cruise tourism, Arctic construction projects), while transit shipping has not picked up so far. While the NSR offers shorter shipping distance between Northern Asian ports and Northern Europe, there are numerous challenges for maritime transport, including: high costs, limited volumes, short shipping season with year-to-year fluctuations in terms of season length, environmental and safety risks, and a mismatch with global shipping logistics (see Chapter 6; Sander et al., 2016).

Studies dedicated to the Arctic railway concept (Finnish Transport Agency, 2018; Kirkenes Nearingshage, 2018; Norconsult, 2018; Ministry of Transport and Communications, 2019) and actors promoting such an investment (e.g. personal communication, Interviewee 6, June 20, 2018) often highlight the possible advantages of the new transport corridor and the construction of a port in Kirkenes at the Barents Sea coast. As there are high costs related to polar class vessels sailing directly to Central European ports through non-Arctic waters, Barents Sea ports offer the possibility of transshipment to regular vessels or to terrestrial transport. The railway could lower the costs for exports of Lapland's extractive industries and biorefineries outputs, especially to Asia. The investment could reposition Lapland and Finnmark from peripheries to transport hubs, resulting in regional development and employment opportunities. The railway, if constructed, is also believed to have the potential to decrease lorry transport in Northern Fennoscandia. A report by a Kirkenes-based consultancy (Kirkenes Nearingshage, 2018) claims that "even a share of 3-4% of the combined container imports from China, Taiwan, South Korea and Japan to Northern

Europe [*that is, the Nordic countries, the Baltic states, Germany and Poland, as well as the St. Petersburg region (clarification added)*] would generate comprehensive activity at the Port of Kirkenes and on an Arctic railway to Rovaniemi". Such an assessment is based on the assumption that there will be a 70% increase in overall container cargo shipping between Asia and Europe by 2040. For China, the NSR would constitute a shipping route located mostly outside of the control and operations of the United States Navy (Gavrilov & Kripakova, 2017; as quoted in Lim, 2018).[7]

However, the same studies suggest a number of constraints. As far as the container shipping from Asian manufacturing centers is concerned, for example, empty containers would need to be transported back to China from Central Europe via the Port of Kirkenes. Moreover, the transshipment to non-polar vessels in one of the Barents Sea ports may be competitive to the train transport from these ports to Central Europe. So far, there is very limited regional cargo basis for the transport hub, as various mining and biofuel projects in Northern Finland are still in the planning stage. There are also concerns regarding the environmental, social and cultural impacts of the new rail route (Finnish Transport Agency, 2018; Kirkenes Nearingshage, 2018; Norconsult, 2018). The Finnish-Norwegian working group also highlighted alternative options for improving cargo and passenger transport connections in Northern Finland (Ministry of Transport and Communications, 2019).

The potential of the Arctic railway as a part of the Arctic transit corridor depends to a great extent on China (alongside other Asian actors), namely, choices

[7] However, there is a remote possibility – and a rather unlikely one, considering the expected Russian reaction – that the USA could attempt to conduct Freedom of Navigation operations in the Russian Exclusive Economic Zone (Department of State, 2019). There is also disagreement regarding the status of several straits between the Russian mainland and Arctic archipelagos, which Russia considers its internal waters. Any action, if taken, is most certainly temporarily limited.

made by Chinese shipping companies, Russian and Chinese political focus on the NSR, and trade volumes between China and Northern Europe. Equally, the feasibility of an Arctic railway for container shipping depends, according to studies (Kirkenes Nearingshage, 2018: 29), on appropriate connections to Germany, as Chinese imports to Germany would need to constitute a vast majority of container shipping transported by rail. Therefore, the completion of Rail Baltica, improvement of the capacity of Finland's main rail line between Helsinki, Tampere and Oulu and the highly challenging Helsinki-Tallinn tunnel (currently in the early conceptual stage, envisaged – ambitiously – to be built by 2035) might prove crucial for the Arctic railway to become economically feasible in terms of East Asia-Europe transit.

Moreover, the potential export of raw materials and products from northern Finland to China and other East-Asian countries could become an important element of the rationale for developing the railway project. For instance, part of the outputs of the planned Sakatti mine[8] in Finnish Lapland would be likely exported to China. However, some actors in the mining industry emphasize that the new railway connection may not be competitive at the present levels of mineral production, and, even if the Arctic Railway is built, road transport may remain more feasible than the rail transport at least for some Finnish mines (Sorjanen, 2018, November 16).

Chinese investments in biorefineries in Lapland – where the majority of production is to be exported to Chinese clients – could, in principle, serve as an incentive for the biorefinery owners or other Chinese investors to engage in transport infrastructure projects that provide supply for the Chinese market (personal communication, Interviewee 3, Rovaniemi, June 12, 2018). The export of Kemijärvi biorefinery pulp products via Kirkenes (in the summer via the NSR and possibly in

[8] Currently, the copper-nickel-platinum deposit is still in the exploration phase.

winter via the Suez Canal) might lower the costs compared to the currently planned transport via Kemi or Oulu ports with transshipment in major hubs in Central Europe, although the difference in transport costs appears to be of a secondary consideration in economic feasibility assessment for these projects (personal communication, Interviewee 6, June 20, 2018; Interviewee 8, June 28, 2018).

Chinese financial institutions could become key investors, especially if the 2019 private initiative makes progress. Greater Chinese involvement in the Arctic railway project could include Chinese companies entering into private-public partnerships (PPP), and thus the construction and long-term operation of the railway. Stakeholders supporting the railway project believe that investment loans or PPP, despite low return, could be attractive for international investment banks and companies, including Chinese actors. Presumably, this is because Nordic countries are considered safe locations to invest in, and such an investment would generate secure long term revenue (e.g. personal communication, Interviewee 6, June 20, 2018). As Chinese construction companies are in constant search for international contracts, if the Arctic Railway project enters into the implementation phase, some degree of interest by such Chinese firms can be expected (personal communication, Interviewee 10, August 20, 2018). There appears to be political interest from China to promote the above-mentioned forms of engagement in Arctic infrastructure projects. In the 2018 White Paper, the Chinese government “encourages [Chinese] enterprises to participate in the infrastructure construction for [Arctic] routes”. Furthermore, the NSR is considered in China as a security alternative or a backup in the case that disturbances along the Indian Ocean shipping lanes occur. This security perspective could further fuel the interest of the Chinese state and also state-owned actors in the NSR-related infrastructure projects such as the Arctic Ocean railway.

The development of the infrastructure within the BRI is to be carried out through cooperation between China and other states. Chinese interest in the NSR as part of the BRI network could therefore extend to the European access points, including the Port of Kirkenes and the Arctic railway project. So far, there has been no open expression of interest from Chinese investment banks or companies. This is not surprising, as the project is at an early stage of planning. However, there has been interest from the Chinese media and informal initial expressions of interest from business actors (personal communication, Interviewee 6, June 20, 2018; Esko Lotvonen, Rovaniemi, June 20, 2018).

China's BRI initiative is to bring direct economic benefits to Chinese economic actors. BRI projects can translate into profits for Chinese financial institutions in many ways, from loans related to infrastructural developments, to contracts for Chinese construction companies and operators of infrastructure, as well as to benefits for Chinese shipping companies if the new BRI infrastructure results in lower shipping costs (Rana, 2017). Chinese involvement in projects such as the Arctic railway, even if being of strategic nature, will therefore depend not only on strategic calculations but also on the potential of this particular investment to bring returns and provide new contracts for Chinese companies.

If the Chinese involvement in infrastructure projects such as the Arctic railway become significant, concerns related to control over what can be considered a strategic transport corridor may arise. This could be the case, for instance, if a Chinese company acts as the main constructor and operator of the railway in the format of public-private partnership. There might be also questions about undesirable political influence or corruptive relationships. Recent controversy related to Greenland airports is a good example of such concerns. The Danish government stopped the procurement

procedure for the upgrading of three Greenlandic airports — a procedure in which Chinese state-owned enterprise was likely to acquire the contract. The Danish concerns were related to the possibility of Chinese actors gaining partial control over important infrastructure (and even specific construction elements of that infrastructure) at a strategically important location[9] (Breum, 2018, June 30; Lim, 2018).

Other sectors: mining, renewables, cold-climate testing, data centers, fiber-optic cables

There are a number of sectors that are already important or have some growth potential in northern Finland, including mining, renewable energy, cold-climate testing and fiber-based broadband infrastructure. While in principle there is some space for Chinese actors' presence in these sectors as clients, manufacturers or investors, so far no activity has been registered.

Finland's objective is to attract further foreign investments in its growing mining industry (Prime Minister's Office, 2013: 9). The Finnish regulatory environment is perceived as favorable to mining activities, including good availability of geophysical data. However, many actors in Lapland have concerns regarding extractive industries, considering their impacts on the environment, livelihoods and culture. Challenges for mining projects are numerous, including financing, fluctuating global resource markets, or high costs of mitigating and responding to environmental risks. While many mining developments have been canceled or postponed in recent years, several projects are in advanced planning stages, including the expansion of production in the mines in Kemi (chromite concentrate), Kittilä (gold) and Kevitsa (copper-nickel).

[9] For instance, the United States (US) military operates the Thule base in northern Greenland.

Chinese-Finnish economic relations

In the 2018 White Paper, the Chinese government "encourages [Chinese] enterprises to engage in international cooperation on the exploration for and utilization of Arctic resources by making the best use of their advantages in capital, technology and domestic market". This is in line with the overall policy promoting Chinese economic expansion abroad (see Chapter 6). Chinese investors have been interested in Arctic raw materials (see section 6.7.), but the Northern Fennoscandian mining sector has so far been overlooked by Chinese players. In principle, there might be potential for Chinese involvement in the Finnish mining sector, considering the global activities of Chinese investors and companies, including construction companies, and the fact that China will be among the main markets for most new mining projects. International players such as Anglo American, Agnico Eagle and Boliden are already active in Lapland. However, despite focus on Arctic minerals in China's Arctic strategy, the potential for Chinese involvement in the Finnish mining sector in the near future primarily depends on the situation in the resource markets and the profitability of particular projects rather than on any political considerations. Finnish metals exports to China stood at US$193m (2016 statistics, WITS, n.d). Globally, Chinese demand is one of the key factors shaping raw materials prices.

Some minerals for which there is high demand in China are either produced or have high discovery potential in Finland, including in Lapland. China imports 95 percent of chrome used in its production, 90 percent of its cobalt, 79 percent of its gold, 73 percent of its copper, as well as 73 percent of its iron ore (data for 2017, Zhang, 2018). In 2016, China was responsible for 26.4% of global copper imports, 25.6% of global nickel imports, and 9.1% of zinc imports (UN Department of Economic and Social Affairs, 2017). All these metals are produced (for iron ore there are

advanced projects) or have further moderate-to-good discovery potential in Finland (Geological Survey of Finland, 2010; Kaiva.fi, n.d. website for the current situation). Wind power has seen a period of significant expansion in northern Finland. In the mid-term perspective, an overall maximum investment potential is assessed at over €4b (Rautajoki and Lakkapää, 2018). China is a major global player in terms of wind and solar power. However, so far there has been no Chinese investment interest in projects in northern Finland.

A vibrant cold-climate testing industry has emerged in Finnish Lapland. A number of companies provide testing services in particular for cars and tires. In recent years, this has generated high turnover and employment. So far, there have been no Chinese manufacturers using Lapland's testing facilities and the likelihood of Chinese clients using Lappish testing facilities is currently low. However, the situation may change within the next two or three decades as Chinese manufacturers expand their activities and portfolios. For instance, Korean Hankook is already testing its winter tires in Lapland and the facilities could be used by Chinese manufacturers if they decide to gain a stronger presence in the global winter tires market (personal communication, Interviewee 3, Rovaniemi, June 11, 2018).

Northern regions are attractive as locations of data centers and cloud services due to the colder climate, which decreases the costs for cooling down servers. Of importance is also the availability of relatively cheap renewable energy, as many information technology (IT) companies aim at exclusively using renewable energy sources. Up to 80% of energy consumption when using online applications occurs in data centers (Nilsen, 2016; Warrenstein et al., 2016). The overall potential of Northern Fennoscandia also depends on the availability of low-latency broadband connectivity, which usually requires fiber cables considering the amount of data transferred (see the

discussion further in this section). The forerunner in terms of attracting data center investments in Northern Fennoscandia has been the Luleå-Boden area in the Swedish Norrbotten region (Facebook, Bitcoin and other data centers). Several Chinese companies have already joined the boom of data centers in Sweden or are deliberating investments. For instance, Alibaba is considering central Sweden for its second European data center location (Invest in Dalarna, 2017, September 29). From 2017, Chinese blockchain company Canaan Creative is using data storage capacities in Boden (Smolaks, 2017, February 9). Swedish Vattenfall has been negotiating further deals with Chinese companies interested in Sweden-based data centers (Karagiannopoulos, 2018, May 9).

So far, there have been no major data or cloud center investments in Northern Finland, although this sector's investment potential in Oulu is assessed as at up to €400m (Rautajoki and Lakkapää, 2018).[10] If Finnish policymakers decide to more strongly pursue the opportunities related to data centers, Chinese companies could be among the possible investors and users of the data storage space. Security and regulatory considerations could also play a role in future developments, limiting the interest of Chinese clients. This would be the case, for instance, if China forces companies to store more Chinese data on servers located in China. From 1 June 2017, "critical information" has already had to be stored domestically in China.

A prospective avenue for Chinese investors or for involvement of Chinese companies could become a marine fiber-optic cable project linking Asia and Europe via the NSR, linked to European networks via Lapland and Finland. The project would decrease the latency (delay in data transfer) as compared to the Europe-Asia

[10] Southern Finland has attracted some major data center investments, including the Google facility in Hamina, with recent new investment evaluated at €2 billion (Yle Uutiset, 2019, September 20).

connections via the USA and Indian Ocean. Such latency decrease would benefit financial markets, data centers located in Northern Europe and major internet companies. Originally, in Russia, the development company PolarNet had been studying the potential of the connection since 2011, making plans for a UK-to-Tokyo connector. Finnish policy-makers also place much emphasis on this project (Prime Minister's Office, 2017: 7; Lipponen & Svento, 2016). There were informal expressions of initial interest by Chinese investors in the project (personal communication, Interviewee 2, May 04, 2018). Moreover, China's 2018 Arctic policy White Paper clearly states that among "[c]oncrete cooperation steps" in the Arctic is "enhancing Arctic digital connectivity" (PRC State Council, 2018).

At present, the Finnish company Cinia is bringing together investors towards realizing the fiber broadband project. In 2019, it secured an agreement with Russian company MegaFon to establish a joint development company to prepare and implement the project, a major milestone towards project success (Cinia, 2019, June 6). Chinese companies are likely to be involved in the fiber optic cable projects as key clients rather than investors. Chinese investment banks could be potential sources of funding. However, at the moment, financial institutions across the globe are eager to invest in prospective infrastructure projects. Therefore, Cinia does not expect acquiring funding to be a challenge as long as agreements with potential clients are in place. While the Chinese financing is thus not crucial for the project, the agreements with Chinese companies may be of key importance for finding investors and the project's ultimate success. China Telecom (*Zhongguo Dianxin* 中国电信) has already declared its interest (Bannerman, 2019, August 30). Baidu or Alibaba may be other potential clients. At present, Cinia has a network of cables stretching from Frankfurt via the Baltic Sea to Lapland (3,000km of the 13,000km needed between Frankfurt and

Tokyo). The NSR cable project is expected to be implemented within three years from the commencement of seabed surveying (personal communication, Interviewee 7, June 26, 2018). While the project had been expected to encounter challenges related to Russia's security concerns (personal communication, Interviewee 2, May 04, 2018), the involvement of a major player such as MegaFon significantly raises the chances of success.

7.4. Finnish Arctic expertise: Finnish solutions for Chinese Arctic activities

Among China's goals in the Arctic is to "improve the capacity and capability in using applied Arctic technology, strengthen technological innovation, environmental protection, resource utilization, and development of shipping routes in the Arctic" (PRC State Council, 2018). The development of technical Arctic equipment is seen as particularly important:

> ...upgrade of equipment in the fields of deep sea exploration, ice zone prospecting, and atmosphere and biology observation, and [...] technology innovation in Arctic oil and gas drilling and exploitation, renewable energy development, navigation and monitoring in ice zones, and construction of new-type icebreakers (PRC State Council, 2018).

Finnish political and economic actors believe that Finland has much to offer in regard to practical Arctic technological solutions, Arctic shipping safety and services, and environmental technology. In principle, acquiring technologies developed in Finland

and cooperating with Finnish partners towards further innovative solutions should be seen as contributing to China's goals in the Arctic.

The Finnish government and businesses have long highlighted Finland's "Arctic expertise", meaning the set of products and skills developed in the country due to its geographical location (in the North and by the seasonally ice-covered Baltic Sea). Such know-how originates from the need for all actors to adjust their products, design, materials and services to cold temperature, challenging weather conditions, sparse population, and remoteness. The long list of areas identified as constituting Finland's Arctic expertise includes:

- Icebreaking
- Polar shipping technology
- Shipping safety (Search and Rescue, communication and construction technologies, weather and information services)
- Mechanical oil recovery in ice conditions
- Energy resources expertise (structural and materials engineering in Arctic conditions, risk assessment and risk prevention, icebreaking assistance, contingency planning, prevention of oil spills and oil cleanup)
- Arctic cleantech (water processing technologies, efficiency of production facilities and a low level of emissions)
- Renewable energy and energy efficiency solutions (including district heating systems/solutions)
- Digital infrastructure and e-services in peripheral areas
- Arctic construction (including wood construction)
- Cold-climate civil engineering

- Arctic circular economy
- Blue bioeconomy
- Climate resilience
- Arctic-relevant space technologies
- Wellbeing technologies
- Environmental technologies
- "Green mining" and "Arctic mining" technologies
- Arctic research (both natural and social sciences)
- Environmental monitoring
- Cold-climate expertise of security forces
- Arctic design

According to Finland's 2013 Arctic Strategy (Prime Minister's Office, 2013: 28), the competitive edge of Finnish companies "lies in environment-friendly solutions and the ability to carry out business operations with due regard to the limitations imposed by the natural environment". In order to commercially utilize their expertise, "Finnish companies need to be able to form alliances and offer a broad range of solution-type products and services". Experts (Paavola et al., 2017) advised that long-term development of commercializable Arctic expertise in Finland requires regional and sector-specific clusters to emerge, suggesting that ecosystem funding and performance-based funding instruments are needed. Activities of Team Finland and Business Finland are seen as an important component in the effort to promote Finnish Arctic expertise.

A recent report (Paavola et al., 2017) highlights challenges for commercializing Finnish Arctic expertise. Only a few everyday cold-climate competences are labeled by

companies as “Arctic expertise” and often businesses see little value in branding their services and products as “Arctic”. Partly this is due to the limited size of the markets that are considered specifically “Arctic”. Therefore, the “Arctic” label may be not only a “new name for old things” (a common criticism of the “Arctic expertise” concept), but one having limited actual commercial utility. This notwithstanding, the branding of products, solutions and services as “Arctic”, while not necessarily attractive for operators already present in the Arctic, may prove important in gaining the attention of actors taking their first steps in the northern regions of the globe, such as Chinese companies looking for partners in their new Arctic endeavors. In China, Finland’s brand is strongly associated with expertise in cold conditions. The experience of some Lappish companies shows that being located in Northern Finland and being able to present their products in Arctic conditions is of advantage in relations with Chinese customers (e.g., personal communication, Interviewee 11, September 03, 2018). However, a general “Arctic” or northern labeling of technologies and products coming from Finland may also be a barrier for Finnish companies that offer products not related to cold conditions, as clients may assume that such products are not suitable for warmer climates and an urban environment (personal communication, Interviewee 4, June 13, 2018). That is a concern that Finnish industry promotion agencies need to seriously take into consideration.

Areas of Finnish Arctic expertise with potential for Sino-Finnish cooperation

Finnish Arctic expertise can be an object of Sino-Finnish cooperation in various ways, including sales of Finnish technologies or designs, employment of Finnish experts or collaboration between institutions. From the perspective of Chinese Arctic activities, there may be interest in sectors such as mining, cleantech, winter sports, occupational

health and safety, renewables and cold-climate construction, and in particular icebreaking services, shipbuilding and polar maritime design. The latter are here of central importance and they are discussed separately in the following section. Currently, few Chinese companies are present in the Arctic and therefore the demand is limited and only some areas may be of direct interest for Chinese operators that are considering engaging in Arctic projects or activities.

The 2013 Arctic Strategy underlines that the further development of Finnish Arctic expertise is dependent on "international networks, contacts and mobility", among other factors (Prime Minister's Office, 2013: 13). In the future, Chinese institutions and companies may become important partners in research and training collaborations. In turn, the 2018 White Paper states that China "has spared no efforts to contribute its wisdom to the development of the Arctic region" (PRC State Council, 2018). In principle, Chinese companies and institutions should have a strong political incentive to be involved in activities, the aim of which is to provide technological solutions for Arctic developments. However, any such collaborations need to be economically feasible.

Finland promotes mobility of labor in the Arctic region (Prime Minister's Office, 2013: 23), not only to fill labor market demands within Finland's Arctic but also to facilitate contracts and employment possibilities across the region for Finnish companies and Finnish Arctic experts. Chinese Arctic activities can potentially contribute to the expansion of such a market for Finnish expertise-holders.
As discussed above, while there has been little interest among Chinese investors in northern Finland's mining projects, Finnish companies claim that they can offer not only investment opportunities but also technological solutions for carrying out operations in northern conditions (e.g. in Greenland or Canada) in a responsible

manner. The delivery of technologies and services for Chinese projects in Russia – which could be the most attractive opportunity – may be challenging.[11] The situation can, however, change in the future.

Similarly to mining technologies, Finnish cleantech (including mechanical oil recovery in ice conditions) could be offered to Chinese businesses operating in the Arctic. A report by Azure International and Cleantech Scandinavia (supported by Tekes – nowadays Business Finland) suggests that Nordic cleantech could be of particular interest for Chinese investors, due to increased focus on clean energy, renewables, and a general shift in China's outbound investment towards technology (Azure International and Cleantech Scandinavia, n.d.).

Finnish Arctic policy statements also highlight the experience and Finnish technological solutions in the field of renewable energy and low-carbon development, both in terms of business cooperation and the sharing of best practices. China's 2018 White Paper clearly emphasizes the value of such expertise for China and Chinese operators:

> The Arctic region boasts an abundance of geothermal, wind, and other clean energy resources. China will work with the Arctic States to strengthen clean energy cooperation, increase exchanges in respect of technology, personnel and experience in this field, explore the supply of clean energy and energy substitution, and pursue low-carbon development (PRC State Council, 2018).

[11] Among others, due to the ongoing EU sanctions targeting Russian Arctic hydrocarbon projects or due to Russian political/security considerations.

Furthermore, Sino-Finnish collaboration with regard to winter sports has recently commenced. This has been connected to the preparations for the Beijing 2022 Winter Olympic Games and the increasing interest in winter sports in China. Finland has high levels of expertise in winter sports training, technologies and facilities. In 2015, the Chinese vice-premier visited Rovaniemi with sport cooperation being among the focal points. An agreement between the Rovaniemi Santa Sport sports institute and the Sport University of Beijing, in effect since 2017, is one of the elements of this collaboration. A major cooperation program has been carried out by the Vuokatti-Ruka Sport Academy. For instance, 150 Chinese young sportsmen and sportswomen visited the school in the Summer of 2018. In 2019, China and Finland organized a joint thematic winter sports year. The collaboration in the field of sports could also facilitate further exports of Finnish products for the construction of Chinese skiing resorts, e.g., by Rovaniemi-based companies Lappset and Hirsitalot (personal communication, Esko Lotvonen, Rovaniemi, June 20, 2018).

Finland's 2013 Arctic Strategy also highlights Finnish expertise and research in occupational health in Arctic conditions and in creating a safe working environment. This may be of particular interest for new operators entering the Arctic region. Cooperation between institutions from northern Finland and their Chinese partners in the area of education is yet another dimension of Sino-Finnish relations. For instance, Rovaniemi is engaged in a number of school exchanges and experience-sharing programmes with Chinese schools. This is partly related to the reputation of the Finnish education system (personal communication, Esko Lotvonen, Rovaniemi, June 20, 2018). Markedly, sub-university education was among Finland's Arctic Council 2017-2019 chairmanship program priorities (Ministry of Foreign Affairs, 2017).

An area of particular interest for cooperation with Chinese institutions is Finnish Arctic shipping technology (construction and design, services) and Finnish icebreaking services, discussed in greater detail below.

Finnish Arctic maritime technology and services

Finland's Arctic Strategy (2013) identifies shipping and maritime technology as one of Finland's most important commercializable Arctic export sectors. Finnish strengths include: national Arctic shipbuilding, offshore and winter navigation operations, shipping safety solutions, as well as the overall low-temperature, winter, ice and weather research and expertise. Among the products that Finnish actors hope to commercialize are vessel traffic, reporting, monitoring, identification and communications systems (including satellite services), including weather and ice information services (Prime Minister's Office, 2013: 30, 53; Prime Minister's Office, 2017). One of the strategy's objectives is maintaining "Finland's position as a leading expert in the Arctic maritime industry", which to a great extent arises from the tradition of operating in the Baltic Sea. The Strategy stresses that "the best practices developed in the Baltic Sea region offer highly suitable export products for the Arctic market".

China is identified as one of the main markets for the export of Finnish Arctic shipping technology (Prime Minister's Office, 2013: 9, 29). This is, in fact, the only context in which cooperation with China is mentioned specifically in Finland's 2013 strategic Arctic statement. It is believed that countries such as China will "need new equipment and fleets capable of operating offshore oil and gas fields as well as mining under Arctic conditions" (Prime Minister's Office, 2013: 29). Moreover, Chinese operators new to Arctic areas may find Finnish experience with international rescue

operations and the management of maritime accidents a useful theme for collaboration. In turn, China's 2018 White Paper clearly states that China will strive "for the upgrade of equipment in the fields of deep sea exploration, ice zone prospecting, and atmosphere and biology observation, and promotes technology innovation in Arctic oil and gas drilling and exploitation, renewable energy development, navigation and monitoring in ice zones, and construction of new-type icebreakers". Currently, in addition to operating two research icebreakers (Xue Long I and II, the second entering service in 2019), China is in the process of planning for a nuclear-powered icebreaker. China General Nuclear Power Group leads the project (Sun, 2018; Nilsen, 2019, March 21). Moreover, the 2018 White Paper states that "[i]n order to effectively protect the marine environment of the Arctic, China works with other States to enhance control of the sources of marine pollution such as ship discharge, offshore dumping, and air pollution" (PRC State Council, 2018). Such statements can be seen as the political encouragement for Chinese operators to utilize foreign Arctic shipping technology and shipping services, and thus, an opening for the commercialization of Finnish expertise in the sector.

In terms of providing icebreaking services for Chinese Arctic operations, there has been no concrete cooperation thus far. However, some discussions on future joint projects have taken place, in particular regarding the support for Chinese research operations in the Arctic Ocean. For Arctia, a Finnish state-owned ice-breaking company, the latter area appears the most prospective at the moment (personal communication, Interviewee 9, August 01, 2018). It appears unlikely that enhanced Chinese icebreaking capacities – e.g. the potential nuclear icebreaker – would create competition for Finnish service providers in the near future (personal communication,

Interviewee 9, August 01, 2018). However, acquiring increased icebreaking capacities may limit the future Chinese demand for icebreaking services.

There seems to be little interest among Finnish shipbuilding and shipping companies in acquiring Chinese investors. Finnish companies at the moment see East Asia as a prospective market for their products and technologies rather than a source of investment capital. There is a more general concern related to foreign investment in this sector in Finland (personal communication, Interviewee 10, Zhu Bin, August 20, 2018). Some space for joint ventures between Finnish and Chinese companies regarding particular Arctic shipbuilding projects likely exists. However, the general approach is to keep technological development in Finland itself. Therefore, there is little space for Chinese direct investment in the Finnish Arctic shipping design industry (personal communication, Interviewee 13, November 13, 2018).

At this stage, the companies Aker Arctic and Wärtsilä have had the most visible presence of all Finnish shipping and shipbuilding actors in the Chinese market. In 2012, Aker Arctic was contracted by the Polar Research Institute of China (PRIC) to provide the concept and basic design for a Polar research vessel. The construction work was carried out in the Jiangnan Shipyard (*Jiangnan Zaochuan (Jituan) Youxian Zeren Gongsi* 江南造船 (集团) 有限责任公司) in Shanghai and the 122m-long Polar Class 3 icebreaker was completed in 2019. Aker Arctic advertizes the icebreaker it designed as "the world's most advanced polar research vessel" (Aker Arctic, n.d.). In 2014, Aker Arctic produced the concept and basic design for two Arctic module carriers, *Audax* and *Pugnax* (Polar Class 3, length of 206.3m with an icebreaking capability of 3 knots in 1.5m level ice), which were built at Guangzhou Shipyard (*Guangchuan Guoji Youxiangongsi* 广船国际有限公司) in 2016. In 2016, Aker Arctic delivered the concept and basic design for an Arctic condensate tanker to the same Guangzhou Shipyard.

This Arc7 ice class vessel – *Boris Sokolov* – built for Novatek with a deadweight of 43,400 tons with an icebreaking capability of 2 knots in 1.8m level ice was delivered in 2018. Wärtsilä produced, within its Chinese joint ventures, four engines for *Boris Sokolov. Boris Sokolov's* construction is based on Aker's Double Acting Ship (DAS™) principle that allows tankers and cargo ships to operate independently without icebreaker assistance in challenging ice conditions (Aker Arctic, 2018, December 4). Aker Arctic management evaluates the engagement with Chinese partners as a positive experience (personal communication, Interviewee 13, November 13, 2018). Arctic maritime design is a highly specialized area of the shipping industry, with technological edge and purpose-built vessels dominating the landscape. Compared to general shipbuilding, where cost-cutting and serial production models dominate, polar ship design and shipbuilding constitutes a market niche in which Finnish and European actors have a competitive advantage. Nevertheless, China is a major player in global shipbuilding, and thus, it will likely be able to develop its own polar shipping design capabilities in the future (Ibid.).[12]

The current Aker Arctic portfolio is very broad, including the design of port icebreakers operating in Siberia and the LNG icebreaker *Polaris* delivered to Arctia (in Finland). Future Chinese contracts depend on the demand of Chinese shipyards and companies for polar class vessels, which is difficult to evaluate due to ever-changing

[12] Recently, Finnish companies have developed increasing interest in high-tech advances in Arctic shipping and shipping in general, including autonomous vessels (Prime Minister's Office, 2017: 4). Such developments take place at the Meyer Turku shipyard, where autonomous ship technology using artificial intelligence is being developed (Business Finland, 2017, December 6). Technological advancement could generally allow Finnish actors to maintain a competitive edge. However, all companies in the sector attempt to strike an economic balance between the use of the most advanced technologies and the minimum needed by operators to conduct their activities in polar waters. Not every technological application necessarily translates to a market advantage if expensive advancements go beyond the needs of clients.

predictions for Arctic shipping development. However, considering China Ocean Shipping Company's (COSCO, *Zhongyuan Haiyun Jizhuangxiang Yunshu Youxiangongsi* 中远海运集装箱运输有限公司) emphasis on engaging in Arctic shipping and the overall Chinese interest in utilizing the NSR, at least a modest level of future demand can be expected.

In addition to design, Finnish manufacturers have broad experience with Arctic maritime construction. Wärtsilä, a Finnish company specialized in power generation technology and other equipment in the marine and energy markets, formed a joint venture with China State Shipbuilding Corporation (CSSC *Zhongguo Chuanbo Gongye Jituan Youxiangongsi* 中国船舶工业集团有限公司) called CSSC Wärtsilä Engine Co Ltd (CWEC). The CWEC built a production facility in Lingang, Shanghai. The company, which produces medium-sized and large engines, had over 70 orders for various types of engines at the time of the opening of the production facility in January 2017. Wärtsilä has another production facility in China – Wärtsilä Qiyao Diesel Company (WQDC) – for small engines. Engines manufactured in both factories are fully suitable for polar waters and some are used in these environments. The company also promotes its products as suitable for operations in polar waters (personal communication, Interviewee 12, October 22, 2018). Wärtsilä itself has a significant portfolio of engine design and construction for polar class vessels, especially for Russian clients. These include icebreakers (e.g. engines as well as integrated power and automation systems) and platform supply vessels. The company provided power generating sets for power plants operating in the Russian Arctic. Wärtsilä also builds engines for port icebreakers used at the Sabetta LNG terminal.

7.5. Hopes and concerns

Chinese-Finnish economic relations

While the attitude towards Chinese investments in Finland and in Lapland has been generally positive, there are various noticeable concerns. These range from the apprehension that China and Chinese actors may gain too great an influence on national and local economy and politics to doubts about the environmental and social performance of Chinese companies. Many such questions could refer to any foreign investments. However, the concerns are exacerbated by reports of problems related to Chinese activities in other parts of the world and the fact that China is a new actor in the North. Nonetheless, the debate in Finland is characterized by divergent voices, where on the one hand there is a degree of anxiety and a perception of major presence, and on the other hand a notion of disappointment that Chinese investments are, in fact, very limited.

There are anxieties that Chinese investors and operators – and therefore the Chinese government – might gain an excessive long-term influence on the regional economy in Lapland and the national economy in Finland. Major land purchases or partial control over strategic infrastructure such as the Arctic Ocean railroad would be met with anxiety among many actors in Finland. There are doubts regarding the environmental and social performance of Chinese businesses operating in the North and the reliability and feasibility of many investments plans. Concerns related to Chinese projects in Finland and in the Arctic stem, to some extent, from experiences with some Chinese investors and operators in other parts of the world. Articles published by notable English-language media outlets exacerbate these fears (see, e.g., Mourdoukoutas, 2018; Cannon, 2019, February 8; see also Marsh, 2015). Direct investments in Finnish companies have sparked speculations over the protection of intellectual property rights, industrial espionage and, in the long-term future, Finnish companies losing their competitive advantage in certain Arctic-related industries such

as ice management and ship design. In addition, Chinese companies' corporate social responsibility practices have been a source of unease in Finnish public debate. Some analysts underline, however, that Chinese operators are capable of adjusting to local conditions and regulatory frameworks, and that the performance of Chinese investors has overall significantly improved over the last decade (Rosen and Thuringen, 2017). Being aware of and critically assessing these concerns is key for long-term Sino-Finnish collaboration in Arctic affairs.

Current Chinese investments in Finland can be seen as paving the way for other Chinese investments in the Nordic states, in the European Union and across the circumpolar Arctic. For this reason, it may be expected that Chinese companies – striving to strengthen their international reputation – are willing to apply high standards and benefit Finnish northern regions. Some Finnish private actors believe that Chinese investors are driven by long-term goals and long investment perspectives. That, in principle, makes Chinese companies attractive business partners (personal communication, Interviewee 8, June 27, 2018).

Some types of Chinese economic presence may adversely affect the current, generally positive attitude towards Chinese investors in Northern Finland. These include: major land purchases, especially in areas of high environmental, biodiversity or landscape value; bringing in Chinese workforce in significant numbers; and the involvement of Chinese construction companies on terms that would be perceived by local actors as unfair competition (personal communication, Mika Riipi, June 27, 2018). Furthermore, if small Arctic economies become heavily dependent on Chinese capital, they may become highly vulnerable to fluctuations in China. This is a concern, as the country's economy undergoes ongoing structural changes.

Regarding the currently planned investments in Lapland, such as the construction of biorefineries and hotels, no significant inflow of Chinese workers is planned with the exception of engineering and managerial staff. In principle, incoming highly skilled staff can contribute to mitigating skills mismatch in sparsely populated areas. One hotel that has been constructed by Chinese investors employs both Finnish and international staff, similarly to any other accommodation venue in Lapland (personal communication, Jaakko Ylinampa, Lapin ELY-keskus, Rovaniemi, June 12, 2018).

Any major land acquisition could trigger a high level of anxiety as has been the case in Iceland, Greenland, North Norway or Svalbard (Higgins, 2014, September 27; Staalesen, 2014, October 21). However, thus far no such proposal has been made, and considering the aforementioned past experiences in other Nordic countries, it appears not very likely that a major Chinese investment project of that sort would be proposed for northern Finland. Local officials in Lapland believe that such projects would actually be harmful to the overall long-term Chinese investment potential in Lapland (personal communication, Mika Riipi, Rovaniemi, June 27, 2018; Esko Lotvonen, Rovaniemi, June 20, 2018).

Finns may also need to consider the views of their Western partners – the EU and USA – in making decisions on Arctic economic cooperation with China. The engagement with China at different levels (e.g. member states or regions like the Nordic region or Central and Eastern Europe) may raise concerns in EU institutions or other EU member states, because China is currently considered the EU's "systemic rival" (BDI 2019). In an extreme situation, this could adversely affect the position of Finland within the EU. Relations with the US could also be at stake as intensifying global competition with China is considered a major international challenge in

Washington. There appears to be a bipartisan agreement in that regard, making this a long term concern. The strong utterances about China in the speech by the US Secretary of State Pompeo before the Arctic Council Ministerial Meeting in Rovaniemi in May 2019 may be interpreted as a warning signal to other Arctic states about China's growing presence in the region, including Chinese investments (Department of State, 2019, May 6). Finnish decision-makers must therefore apply particular scrutiny in the case of investments that would give Chinese companies influence over the construction and use of critical infrastructure such as railways, airports and perhaps also digital infrastructure. The cautious approach to foreign investments appears to be prevalent in regards to shipbuilding and ship design companies.

Another set of challenges related to working with Chinese companies or the presence in China are questions related to intellectual property rights (IPRs). Both Finnish companies operating in China and those collaborating with Chinese partners and investors in Finland should be aware of such risks. However, the protection of IPRs in China has evolved over the past few decades. Most notably, the IPRs regime has undergone a significant improvement since the beginning of the reform era, when practically no regulatory mechanism protected intellectual property rights in China. At the moment, the country conforms to the most important international conventions on IPRs. Furthermore, it has developed a national legal framework that entails laws on trademark and copyright protection and patents. What is more, the issue has been handled on the level of the highest political leadership, as illustrated by President Xi Jinping's speech in 2017 (Xinhua Agency, 2017, July 17). However, despite these advances, IPRs violations continue to constitute an unsolved problem for Sino-foreign business interactions both in China and abroad (see Global Innovation Policy Centre, 2018). Tackling this challenge is a slow process, as the "culture of copying" is a deep-

rooted tradition in both the Chinese education system and the corporate world. For this reason, IPRs violations cannot be ruled out as a potential risk factor in Sino-Finnish Arctic business collaboration. In the case of Arctic ship design, for instance, in which the level of sensitivity to IPRs issues is high, so far there have not been any known cases of IPRs violations (personal communication, Interviewee 13, November 16, 2018).

Just as other investors, Lappish companies face problems related to differences between Finnish and Chinese business culture or the aforementioned IPRs issues. For instance, Lapland-based companies exporting wooden constructions to China are aware of the risk of their designs being copied (personal communication, Interviewee 4, June 12, 2018). Lappish companies underline the importance of strong personal relationships in order to develop their activities in China. Moreover, political support not only at the intergovernmental level but also at the level of region-to-region cooperation and city-to-city contacts can be sometimes needed for smooth investment processes. A good example is the Regional Council of Lapland. The Council approaches the collaboration with Chinese provinces strategically, cooperating with Heilongjiang, Hubei and Sichuan provinces where Lappish businesses have investment or market presence and where Lappish towns have ties with Chinese cities (Rovaniemi with Harbin and Chengdu, and Kemi with Wuhan, where the biofuels company Kaidi has its headquarters) (personal communication, Mika Riipi, Rovaniemi, June 27, 2018).

For Lappish companies active in China, the so-called "social credit system" (*shehui xinyong tixi* 社会信用体系) could also become an issue of relevance. The constantly expanded and developed system evaluates the behavior of individuals and companies against standards defined by the Chinese government (National Enterprise Credit Information Publicity System). Sanctions or blocking the possibility to operate further

in the country may result in a low social credit score. The system (potentially) makes it more necessary for any private actors operating in China to comply with Chinese rules and triggers concerns that it may further influence the behavior of companies not only inside but also outside of China (Creemers, 2018; Hoffman, 2018, June 28; Munro, 2018, June 27).

The risks discussed above are highlighted by those who have misgivings about the Chinese economic presence in Finland. However, many actors, especially in Lapland, look at Chinese investments with a hope for economic development and job creation. For them, the main concern is that planned investments and partnerships will not actually materialize. And indeed, in Lapland, high expectations related to Chinese investments are mixed with the perception that little concrete developments actually take place (personal communication, Interviewee 2, May 04, 2018).

There is a perception that Chinese companies too often initially announce very ambitious plans but quit when more detailed business assessment is carried out. Also in the Arctic context, Lim (2018) asks whether "China's risk-taking approach in investing in mega Arctic projects that were previously deemed unrealistic raises questions about the sustainability and vulnerability of its investments". This is also a part of the Finnish experience. In 2017, Chinese investors pulled out from two biofuel projects in southern Finland, a decision supposedly related to the status of bioenergy within the EU regulatory framework. The current standstill in biorefinery projects in Lapland (Kemi and Kemijärvi) would appear to confirm concerns over such dynamics. These and similar events increase the level of local uncertainty related to the current and future project proposals and plans. Chinese investors and companies do not appear to stand out in that respect, but as they are new actors in northern regions, they seem to be subject to relatively greater public scrutiny.

7.6. Conclusion

In general, Sino-Finnish economic cooperation is growing and it received a political boost with the visit of President Xi Jinping in 2017. This chapter shows that there is also modest activity regarding Arctic questions, and there is notable potential for enhancing Sino-Finnish collaboration in Arctic sectors. Finnish companies are operating in China, and Chinese investments are also starting to come to Finland, including the northern regions of the country. There are possibilities for Finnish Arctic expertise to bring commercial benefits for Finland by supporting China's expanding Arctic activities. However, at present, there are only a few instances of realized investments and implemented contracts, one outstanding example being tourism accommodation projects in Lapland. Most activities remain at the stage of planning or initial ideas, with high levels of uncertainty. The unclear future of the biorefinery investments in Kemijärvi and Kemi is a case in point. Also the project to extend the Finnish rail network to the Arctic Ocean faces many question marks regarding its feasibility and there are also challenges related to financing, with the new private initiative hoping for strong involvement from Chinese investors. Other potential investments in Finnish Lapland are yet to be realized. In Lapland and northern Finland, there remains potential for further winter tourism and sports investments, cold-climate testing, or data centers. The marine fiber-optic cable connecting Asia (including China) to Finland (Europe) has taken a step closer to the implementation stage in 2019. The role of Chinese partners may be limited to being clients, although there is space for Chinese investment.

There is, in principle, also some potential in commercializing Finnish Arctic expertise in China. However, currently the most prospective area of business is the design and construction of polar class vessels and components. It is in this field that examples of implemented projects can be found, including the role of Aker Arctic in designing China's second polar icebreaker (*Xuelong* II) or the construction of engines capable of operation in polar conditions by Wärtsilä and its joint ventures located in China. Interviewed experts note some potential in Finnish clean technology or the delivery of future icebreaking services. However, no concrete activities and plans have been put forth so far. Furthermore, while in some areas the "Arctic" labeling of Finnish products and expertise is of marketing advantage, that is not necessarily the case for all sectors.

Chinese activities in Finland and in its northernmost regions are characterized by dissonant voices. On the one hand, there is a perception and concern among commentators that China has too great an influence in the North. On the other hand, there is a sense of disappointment among many actors who hoped that Chinese investments would provide a needed economic boost for sparsely-populated and remote regions. The Chinese investment boom has not, so far, materialized. Many investments discussed in this chapter are indeed only in the planning phase, and the likelihood of their implementation is low. The Arctic Ocean railway may never materialize, and biorefinery projects are at a standstill. Many sectors have potential for Chinese investment, Chinese clients and the involvement of Chinese companies, but very little actual presence and activity is currently registered. Finland both believes in Sino-Finnish cooperation opportunities and is concerned about the risks of these opportunities materializing.

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Interviewee 4, 12 June 2018

Interviewee 5, 13 June 2018

Interviewee 6, 20 June 2018

Esko Lotvonen, Mayor of the City of Rovaniemi, Rovaniemi, 20 June 2018

Interviewee 7, 26 June 2018

Mika Riipi, Governor of Lapland, Rovaniemi, 27 June 2018

Interviewee 8, 28 June 2018

Interviewee 9, 1 August 2018

Interviewee 10, 20 August 2018

Interviewee 11, 3 September 2018

Interviewee 12, 22 October 2018

Interviewee 13, 13 November 2018

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