Chinese investment in Greenland’s mining industry: Toward a new framework for foreign direct investment

Abstract
This paper examines the dynamics of Chinese investment in Greenland’s mining industry, drawing on findings from interviews with representatives from selected companies, organizations, and financial institutions. Support from the central government, along with political stability and an abundance of high-quality mineral resources, has facilitated Chinese investment in Greenland’s mining sector in recent years. Chinese mining companies now operating in Greenland have, however, faced a number of problems along the way. A dearth of international management skills and stringent social and environmental legislation in particular have proved to be major challenges for Chinese mining companies investing in Greenland.

1. Introduction
Since the end of the twentieth century, the pronounced summer melting of sea ice in the Arctic Ocean has triggered much speculation about the opening of much shorter sea routes linking Europe via the eastern coast of North America to Asia (Borgerson, 2008; Pelletier and Lasserre, 2012; Käpylä and Mikkola, 2013). Traditionally, there has been little interest from Asian, European, and North American shipping companies in developing regular shipping lines through the Arctic (Boergerson, 2008; Lasserre and Pelletier, 2011; Lasserre, 2014; Beveridge et al. 2016; Lasserre et al. 2016). With the recent surge of interest in the vast mineral potential of the Arctic, however, this view has changed (Arnarsson et al. 2014; Farré et al. 2014; Têtu et al. 2015a; Beveridge et al. 2016; Lasserre et al. 2016).

This bodes well for China, where demand for raw materials has increased significantly over the past 30 years (Zweig and Juianbai, 2005). To satisfy the country’s appetite for minerals and fuels, Chinese mining companies have financed a number of mining projects across the globe, including in new frontiers such as the Arctic and Greenland more specifically (Wilson and Stammler, 2016). China’s interest in the Arctic is not new (Ebinger and Zambetakis, 2009; Chen, 2012; Li and Bertelsen, 2013); it began to intensify in the early-1990s when Beijing launched its first 5-year scientific research program in the Arctic Ocean in cooperation with German universities in Kiel and Bremen (Huang et al. 2014: 36; Bertelsen et al. 2016). This, however, has not stopped Scandinavian media outlets from portraying the growing scientific, economic, and diplomatic interests of China in Greenland very negatively (Reynolds, 2005; Shoumatoff, 2008; Izundu, 2010; Breum and Chemnitz, 2013). Moreover, Western portrayals of Chinese companies serving as trojan horses for state interests have found their way into local media outlets (Alexeeva and Lasserre, 2012; Lajeunesse and Lackenbauer, 2016). Some commentators have condemned China’s geopolitical strategy in Greenland outright and the Arctic more generally, while others have speculated on the potential impacts of arriving Chinese workers (Anonymous,
2013) and Beijing’s efforts to facilitate long-term access to the region’s resources (Boersma and Foley, 2014).

In 2009, the Government of Denmark passed the Act on Greenland Self-Government (Act 473), the product of an agreement forged between it and the Government of Greenland. The act aims to provide more autonomy to Greenlanders, including freedom to manage the country’s mining industry (Bjørst, 2016). The intentions and uncertainty surrounding the strategies of Chinese companies investing in Greenland’s mining industry dominated discussions leading up to the passing of the act. Foremost among these was: given that Greenland’s self-government strategy aims ‘to maintain a high level of mineral exploration activity to increase benefits in the form of new jobs and increased income for Greenlanders’ (Government of Greenland, 2014), what plans do Chinese companies have to simulate local employment?

Despite the limited presence of Chinese companies in the Arctic (Têtu et al. 2015b; Têtu and Lasserre, 2017), there is a need to broaden understanding of the factors fuelling Beijing’s investment in the region, in particular, its growing interest in Greenland’s mining industry (Song, 2011; Li et al. 2012; Liang et al. 2012; Mortensen, 2013; Lu et al. 2014: 446). Drawing on findings from semi-structured interviews with representatives from Chinese companies, organizations, and financial bodies, this paper helps to bridge this gap. The next section of the paper reviews literature that examines the motives of Chinese Foreign Direct Investment (FDI) in the mining industry. The third section presents our theoretical framework and associated concepts, outlines the methodology, identifies the sources of data drawn upon in the analysis, and details the thematic content employed. We will then identify the factors driving Chinese FDI in Greenland specifically, and highlight the challenges Chinese mining companies face there. Finally, we will discuss the main findings and provide concluding remarks.

2. Motivations of, and strategies employed by, Chinese mining companies investing abroad: A critique

There is a growing body of literature which examines the motivations of Chinese firms investing abroad (Zheng and Williamson, 2003; Ralston et al. 2006; Larçon, 2009; Imparato and Corkin, 2010; Wei, 2010; Mlachila and Takebe, 2011; Amighini, 2012; Amighini et al. 2012; Dunning, 2012; Kolstad and Wiig, 2012; Deng, 2013; Hu, 2013; Huang and Wang, 2013; Reeves, 2013; Warmerdan and Van Dijk, 2013; Zhang et al. 2013; Xia et al. 2013; Lu et al. 2014; Moghaddam et al. 2014; Andreff, 2015). However, it mostly provides simplistic assessments of the drivers of Chinese FDI: in OECD countries versus non-OECD countries; according to the type of ownership, whether public or private; and according to various theoretical frameworks which mainly consider the internal factors of firms. On the former point, the literature (Haglund, 2008; Ramasamy and Yeung, 2010; Hurst, 2011; Kolstad and Wiig, 2012; Ramasamy et al. 2012) argues that Chinese companies target OECD countries to gain access to new markets, and non-OECD countries mostly to secure strategic resources for Beijing. It tends to draw these conclusions even though there is very little evidence at the operational level of this strategy even existing

(Li, 2013). Some papers (Amighini et al. 2012; Hu, 2013), however, argue that Chinese FDI in OECD countries is also driven by Beijing’s thirst for supplies of strategic resources.

To date, few studies have focused specifically on the experiences of Chinese mining companies in the Arctic (Woo and Zhang, 2006; Yao et al. 2010; Li et al. 2012; Li, 2013; Lu et al. 2014), and the factors driving their investment in Greenland in particular. To add nuance to the analysis presented above, on the one hand, investment from Chinese state-owned enterprises (SOEs) is driven solely by Beijing’s need to gain access to strategic resources. On the other hand, private Chinese companies (privately owned enterprises, POEs) are motivated by the prospect of gaining access to new markets (Liu, 2008; Deng, 2009; Li, 2013; Lu et al. 2014). This has been observed throughout Africa (Cheung et al. 2011; Li et al. 2012; Hu, 2013; Zhang et al. 2013), Latin America (Li, 2013) and the EU (Amighini et al. 2012). To our knowledge, no study has been undertaken to identify the drivers of Chinese investment in Greenland’s mining sector. Our framework for analyzing this phenomenon considers a Chinese mining company whose objective is to maximize profits and which seeks to operate sustainably, and the specific political environment in which it interacts with its competitors, foreigners or indigenous (Korinek and Kim, 2010). The success of Chinese companies in the mining industry of Greenland, therefore, is determined by a combination of political, economic and diplomatic factors. As has been the case for Western companies, Chinese mining firms will eventually benefit from diplomatic and financial support from Beijing. However, as Porter (1990: 3) correctly points out, “we must isolate the influence of the nation on the firm’s ability to compete in specific industries”. A Chinese mining company, state or privately-owned, will benefit from Beijing penetrating foreign markets (Morck et al. 2008; Deng, 2013; Hu, 2013; Lau, 2013; Li, 2013). This advantage may derive from ad hoc support or from a deliberate and articulated strategy: this is what is often referred to, in the case of the extractive industries, as a “Resource Diplomacy Strategy” (Jantzen, 1973), a rivalry between globalized economies to secure access to strategic materials to maintain levels of economic growth (Ozawa, 1992; Riordan, 2004; Skidmore, 2004; Zhao, 2008; Lu et al. 2014).

3. Methodology

3.1 A multilevel survey

The design of our survey design was informed by a geopolitics methodology used by Beveridge et al. (2016) and Lasserre et al. (2016). It sought to develop a more comprehensive understanding of the opportunities for, and the challenges faced by, Chinese companies operating in the mining “space” in Greenland. A sample of approximately 300 Chinese mining companies, organizations, financial institutions, and regulatory bodies was assembled, drawn from various sources. First, we selected the 21 Chinese mining SOEs operating directly under the supervision of the State-Owned Assets Supervision and Administration Commission of the State Council of the People’s Republic of China (RPC) (SASAC, 2011). Thereafter, 234 Chinese mining companies listed on world stock markets in Autumn 2013 were added to the sample. We also included another
19 Chinese mining companies selected from the China Beijing International Mining Exchange, an electronic transaction bourse and platform for mineral rights transactions in China. Finally, we included in our sample the Ministry of Foreign Affairs, the Ministry of Land and Resources, the Ministry of Commerce (MOFCOM), the China Mining Association, the Chinese Embassy in Denmark, the China Banking Regulatory Commission, the Industrial and Commercial Bank of China, the Export Import (EXIM) Bank of China, and the Chinese provincial governments.

We then contacted all parties on this list, first by email and then by phone. Interpretation service was required to engage some of the actors at the China Mining Congress & Expo 2015 in Tianjin and over the phone. First, they were asked whether they had investments, or not, in Greenland’s mining industry during the period 1999-2015. Second, the Chinese actors on the list were asked whether they were interested in Greenland for market and/or economic motives, or looking to bring ore back to China. Finally, we focused on the internal and external factors fueling their investment in Greenland, and each was asked about the challenges they face. The research sought to test four basic assumptions:

- H1. That in the context of natural resource extraction, Greenland is a priority area geographically for China and that therefore, it should expect to attract a significant number of Chinese investments in the coming years.
- H2. Decisions about Chinese overseas investment in natural resource extraction are governed by Beijing’s policies.
- H3. China’s institutional and commercial banks are reluctant to finance overseas projects carried by small- and medium-sized companies.
- H4. Chinese investors demand legislative concessions on factors such as environmental protection and low-wage labor imports in exchange for overseas investments.

Responses were received from 15 companies, financial institutions, and regulating bodies. Although the sample is quite limited when compared to the initial list, representatives from all of the Chinese mining companies active in Greenland were consulted, with the exception of China’s Nonferrous Metal Industry’s Foreign Engineering and Construction Co. Ltd. (NFC), a subsidiary of China Nonferrous Metal Mining Group Co. Ltd. (CNMC), a Central SOE under SASAC supervision. In this regard, we also tried to contact them with the assistance of the Arctic Cluster of Raw Materials, a company that represents Danish industry and maintains regular contact with Chinese mining companies in Greenland, but NFC did not return their calls either.

Although very useful, this methodology is not without its flaws. It may be that a few companies were not entirely truthful, either because they did not want to disclose details about their strategy and competitive advantage, or that they simply did not feel like discussing the matter with us. However, the approach taken aligns perfectly with Porter (1991).

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1 See Annex 1

3.2 Text analysis: Categorizing, coding and filtering
We carried out qualitative analysis, focusing on thematic content (Paillé and Mucchielli, 2003; Beveridge et al. 2016; Lasserre et al. 2016). The first step, as already explained, was to assemble a database of the names and contact details of key stakeholders, in this case, Chinese mining companies, organizations and financial institutions. Recordings from semi-structured interviews were transcribed into text files and then integrated into NVIVO 11 Pro (QSR International, 2016) as a “source”. The keywords, groups of keywords and sentences were coded according to the main concepts provided by our theoretical framework, referred to as “nodes” in NVIVO. The subconcepts nodes were merged into three larger categories, each representing a group of external factors: 1) diplomatic (Dipl-), 2) economic (Ec-), and 3) related to the political environment (PolEnv-) of Greenland. Once finished categorizing and coding the responses, we exported the nodes into an EXCEEL document.

4. Results of the survey
4.1 Chinese mining projects in Greenland
According to the Greenland Bureau of Minerals and Petroleum, there are four Chinese-financed mining projects on the island (see Fig. 1). In South West Greenland, the Chinese private company General Nice Group is developing the Isua Iron ore project. On the East Coast, gold exploration is taking place close to Illoqortormiut, where various investors such as Jiangxi Copper, Jiangxi Union Mining, and China-Nordic Mining have made the headlines. In the north of the island, China Nonferrous Metal Industry’s Foreign Engineering and Construction Co. Ltd. (NFC), a subsidiary of China Nonferrous Metal Mining Group Co. Ltd. (CNMC), is exploring for gold at Citronen Fjord. Finally, NFC signed a nonbinding Memorandum of Understanding with Greenland Minerals and Energy Limited to develop the rare earth metals Kvanefjeld project in the south of the island. This project is under the supervision of the European Union, specifically, the Eurare project (Eurare, 2016).
4.2 Chinese companies in Greenland’s mining industry, 1999-2015

The Chinese actors were asked whether they had investment in Greenland’s mining industry between 1999 and 2015 (Table 1). The firms that responded “yes” were as follows: the provincial SOE Jiangxi Geology and Mineral Resource Exploration Bureau, the private Hong Kong-based company General Nice Group, and the large Central SASAC SOE China Minmetals Nonferrous Metals Holding Group Co. Ltd. The remaining companies (four large-scale SOEs and two private companies) did not invest in Greenland in the past 15 years. For banks and entities linked to the governments, this question does not apply.

The limited number of Chinese mining companies investing in Greenland is a reflection of the island not being viewed as a high-priority investment option for Chinese companies, a fact confirmed by interviewees. For Chinese companies, is not a particularly attractive investment option for different reasons, namely the local regulations in place for environmental protection, the lack of adequate infrastructure, and extreme weather.

Although, despite the current slump in global markets for natural resources, China’s overseas investments continue to grow. In 2013, Chinese overseas minerals and resources investments reached US$24.8 billion, up 83% from 2012, an estimated 23% of the country’s total foreign investment. Because of China’s continued desire for rapid development, the demand for natural resources remains huge and is constantly growing in various subsectors, a point emphasized by a senior official interviewed from the China Banking Regulatory Commission. This explains why China continues to have a presence in locations such as Greenland.

Table 1: Investment by category of actor in Greenland’s mining industry, 1999-2015

<table>
<thead>
<tr>
<th>Entities/Presence?</th>
<th>Yes</th>
<th>No</th>
<th>Does not apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Central SASAC SOE</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large-scale SOE</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Ministry and Government</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Private company</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Provincial SOE</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

4.3 Strategy employed by Chinese companies in Greenland’s mining industry

Surprisingly, the majority of entities (10) surveyed reported that their strategy was based on economic motives first (see Table 2 for a breakdown of respondents), which contrasts sharply with the literature on this topic. Those interviewed from banks and government entities further underscored this. They also drew attention to the pressure Chinese companies’ face in the areas of environmental protection and social responsibilities when investing abroad and the need to consider these elements and the significant reduction in subsidies awarded by the Chinese Government. Large-scale SOEs and Central SASAC SOE also highlighted the significantly reduced financial support from Beijing in recent years. As explained by a senior executive of a very large state-owned mining conglomerate, the Chinese Government now insists that overseas investments follows commercially viable objectives.

Table 2. Motivations for mining in Greenland

4.4 Factors driving Chinese investment in Greenland’s mining economy
As explained in the methodology, the factors driving Chinese investment in Greenland’s mining industry, obtained from semi-structured interviews, were divided into three categories: diplomatic, economic, or political. Although only six actors identified diplomatic factors as reasons driving their investments, nine Chinese actors, mainly private companies and entities linked to the government, identified the political environment of Greenland as a main factor driving investment. Finally, the economic motives were the most cited reasons behind Chinese companies’ decision to invest in Greenland’s mining industry (see Table 3 for a breakdown of factors).

Table 3. Factors driving Chinese investment in Greenland’s mining industry

<table>
<thead>
<tr>
<th>Entities/Strategies</th>
<th>Diplomatic</th>
<th>Economic</th>
<th>Political Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central SASAC SOE</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Large-scale SOE</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ministry and Government</td>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Private company</td>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Provincial SOE</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

4.4.1 From a diplomatic point of view, the financial support from the Chinese government is an important factor driving Chinese companies decision to operate in Greenland.

Representatives from three Chinese entities emphasized that their decision to invest in Greenland was heavily influenced by Beijing’s financial commitment to the exercise. The General Manager of China National Gold Group Corp. (CGG), a medium-sized state-owned minerals company, explained: “We have support from a major shareholder (China Gold International) and this unique partnership facilitated CGG to increase local and state government support and access the preferential rights to acquisition targets”. A senior official from Jiangxi Geology and Mineral Resources Exploration bureau, a unit under the Jiangxi provincial government, highlighted similar points, stating, “You need to have a strong relationship with key decision-makers to get funding. In the case of Jiangxi Copper’s investment in Greenland, a high-ranking official from the central government personally endorsed our project, which made it much easier for the company to secure funding via our local administration. That’s how it works”. However, despite the close relations Jiangxi Geology and Mineral Resources have with high-ranking officials of the Chinese Government, the company considers Greenland as a relatively costly area to operate.

A senior executive of a very large state-owned mining conglomerate also identified the Chinese laws on deregulation of FDI as an important factor driving their investments. The official pointed out that “the government is emphasizing that overseas should be driven according to commercially viable objectives”. On this topic, a senior official from the Ministry of Commerce reported that “In December 2013, China’s central government issued a new circular that changes its role in regulating overseas investments. The majority of overseas investments by Chinese companies, private and state-owned, will now be subject to autonomous decision-making, and they will be responsible for profits and losses at their own risk. Furthermore, we believe that a higher level of deregulation will make it easier for our companies to invest overseas. Under the new rules, 99% of overseas investments which previously required approval at the central level (excluding some sensitive countries and industries) will now simply require filing with local authorities”.

Table 4: Breakdown of diplomatic factors driving Chinese groups to invest in Greenland’s mining industry

<table>
<thead>
<tr>
<th>Ministry and Government</th>
<th>2</th>
<th>2</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private company</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Provincial SOE</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>

4.4.2 Drivers of Investment

The stable geopolitical environment of Greenland and the stability of the political system (laws and governance) are a competitive advantage of this territory from a Chinese point of view. Because many Chinese investments have failed in politically-unstable regions, Greenland’s stable political environment is very attractive. As pointed out by a special advisor from China Mining Association, “the political risk is relatively low. Greenland is part of Denmark, which has a stable political system and always operates within the law”. The stable political situation of Greenland remains its main advantage in the view of a senior official from the Ministry of Land and Resources. The official explained, in an interview, that the laws in Greenland ensure that “all mining deposits belong to the Greenland state, not to indigenous people, makes it a much more interesting investment option than those countries/regions where we have to deal with many different layers of stakeholders”. Similar sentiments were expressed by a senior representative of a very large private Chinese mining company during an interview.

The quality of physical resources and Greenland’s long-term potential are significant factors driving their investments regardless of circumstances, as underlined by a number actors. This is particularly the case for General Nice group, a Chinese energy conglomerate that bought London Mining’s stake in the Isua Project in Western Greenland in late-2014.

According to a senior representative of the company, “we chose to invest in Greenland because we believe this region has vast future potential. Perhaps it will take several years before the potential can be realized but for us it makes good sense to get in early and learn how to operate under such different conditions”. In the same way, a special advisor from the China Mining Association considered that “there are presumably great untouched ore deposits in the region. Greenland’s current level of mineral exploration is low since the registered exploration area is less than two square kilometers. Hence, the prospecting potential is very large”. Finally, while transport was identified by the vast majority of interviewees as a major challenge, as one senior advisor from the China Mining Association explained, “regarding the fact that due to global warming, the Arctic Channel could become a new shipping route, which mean that it may no longer be a big challenge for Chinese investors to ship mining extract back to China”. From this senior advisor’s point of view, logistics and transportation options in Greenland could reach an acceptable level in the near future.

Table 5. Factors driving Chinese entities to invest in Greenland’s mining industry

<table>
<thead>
<tr>
<th>Entities/Factors</th>
<th>Presence of skilled labour forces</th>
<th>Aboriginals, community approval</th>
<th>Quality of the infrastructure</th>
<th>Possibility of hiring Chinese workforces</th>
<th>Laws in Greenland</th>
<th>Physical Resources</th>
<th>Geopolitical Context: secure business practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Central SASAC SOE</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Large-scale SOE</td>
<td></td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Ministry and Government</td>
<td></td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Private company</td>
<td></td>
<td>0</td>
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<tr>
<td>Provincial SOE</td>
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4.4.3 Market-based motives

The Chinese Government emphasizes that overseas investments by Chinese companies, both private and public, should be oriented according to commercially-viable objectives because they will be responsible for profits and losses at their own risk. This explains, in part, why Chinese interviewees underlined that the economic opportunities in Greenland were one of the most important reasons behind their investment decision. An interesting point here is the fact that both private and large-scale SOEs are driven by the prices of raw materials on world markets and consider in terms of economic opportunities.

As pointed out in Section 3.3, despite a constantly-growing and huge demand for natural resources in China, representatives from most of the companies surveyed explained that they had an interest in the vast potential of the region mainly for economic purposes, and not particularly to bring back ore to China: securing the supply of natural resources is not among their main concerns. However, according to the individual interviewed from the Jiangxi Geology and Mineral Resource and Exploration Bureau, “most of Chinese overseas mining investment will look to sell their products back to China”. But as a senior official from China Banking Regulatory Commission, China’s central-level bank regulator, explained, an important factor driving Chinese investments in Greenland is the country’s (China) rapid development.

Table 6. Breakdown of economic (Ec-) drivers fueling Chinese investment in Greenland’s mining industry

<table>
<thead>
<tr>
<th>Entities/Factors</th>
<th>Competition</th>
<th>Production cost</th>
<th>Strength of Transportation Shipping Companies</th>
<th>Capital Access</th>
<th>Local Refinery capacities</th>
<th>China’s rapid Development</th>
<th>China’s resource demand</th>
<th>Market prices conditions</th>
<th>Economic opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank</td>
<td></td>
<td></td>
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<td>Central SASAC SOE</td>
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<td>Large-scale SOE</td>
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<tr>
<td>Ministry and Government</td>
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<tr>
<td>Private company</td>
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</table>

4.5 What are the main challenges with investing in Greenland’s mining industry?

Chinese companies interested in investing in Greenland face a number of challenges. This section of the paper draws on findings from the surveys to better articulate the main obstacles they face.

<table>
<thead>
<tr>
<th>Provincial SOE</th>
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<th></th>
<th></th>
<th></th>
<th>1</th>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>
Table 7. Challenges faced by Chinese companies investing Greenland’s mining industry

| Entities/Challenges | Barrier to entry | China’s Slow growth | Government changing attitude | High Prices (commodities) | Law Superposition/confusion | Difficult to find partners | World supply shortage | China’s own limited resources | Competitors | Impacts on communities | Reliance on imports | Localization of deposits | Lack of government financial support | Cost/lack of labor forces | Corporate social responsibility issues | Cost of doing business in Greenland | Lack of information | Environmental Issues | Lack of infrastructures | Climatic conditions/extreme weather | Lack of international skills |
|---------------------|------------------|---------------------|----------------------------|---------------------------|----------------------------|---------------------------|-------------------------|---------------------------|-------------|----------------------|----------------------|--------------------------|----------------------------|--------------------------|----------------------------|-----------------------------|----------------------|-----------------------|-----------------------------|
| Bank                |                  |                     |                            |                           |                            |                           |                         |                           |             |                      |                      |                          |                            |                          |                            |                              |                    |                       |                             |                      |                      |
| Central SASAC SOE   |                  |                     |                            |                           |                            |                           |                         |                           |             |                      |                      |                          |                            |                          |                            |                              |                    |                       |                             |                      |                      |
| Large-scale SOE     |                  |                     |                            |                           |                            |                           |                         |                           |             |                      |                      |                          |                            |                          |                            |                              |                    |                       |                             |                      |                      |
| Ministry and Government |              |                     |                            |                           |                            |                           |                         |                           |             |                      |                      |                          |                            |                          |                            |                              |                    |                       |                             |                      |                      |
| Private company     |                  |                     |                            |                           |                            |                           |                         |                           |             |                      |                      |                          |                            |                          |                            |                              |                    |                       |                             |                      |                      |
| Provincial SOE      |                  |                     |                            |                           |                            |                           |                         |                           |             |                      |                      |                          |                            |                          |                            |                              |                    |                       |                             |                      |                      |
| Total               | 0                 | 0                   | 0                          | 0                         | 0                          | 0                         | 0                       | 0                          | 0            | 0                    | 0                    | 0                        | 0                          | 0                        | 0                          |                              | 0                   | 0                     | 0                          | 0                        | 0                     | 0                        |
4.5.1 A lack of skills and shortage of information on investment opportunities

The lack of international skills was the most-cited challenge facing Chinese actors, and in the view of many interviewed, underscores further the poor record of accomplishment for Chinese overseas investments in natural resources. According to the General Manager of China Gold Corp., a medium-sized state-owned mining company, Chinese companies have made “many mistakes” overseas, but they have implemented a systemic process for investment decisions, rather than continuing to use the former arbitrary approach. A senior executive of a very large state-owned mining conglomerate elaborated on this point in an interview:

we have been involved in many overseas projects but too many investments have failed due to our own poor preparations. We were probably also over-confident and too eager to engage in politically driven projects. But now even the government is emphasizing that overseas investment should be driven according to commercially viable objectives.

According to a senior official interviewed from the Ministry of Land and Resources, “there are many reasons for this but usually the Chinese companies didn’t do efficient due diligence, or they were cheated by foreign companies and foreign governments”.

This lack of available skills also highlights how Chinese companies are not fully aware of overseas investments possibilities. Specifically, the fact is that a greater awareness about Greenland’s resource potential could lead to more investment opportunities because there are not many Chinese companies which possess knowledge about the potential development prospects in Greenland. As pointed out by a senior executive from a very large state-owned mining conglomerate in an interview, “these companies need to be better informed about factors such as investment policies, local culture, opportunities and risks, etc., before they will consider to do more”. A researcher from the Ministry of Land and Resources, the ministry which publishes an annual guideline for overseas mining investments that is widely distributed in China’s mining industry, declared that it was considering publishing a guideline with special focus on investment opportunities in Greenland. As the individual pointed out, it had focused on Sweden in 2014, but indicated that in China’s official 2016 investment guidelines, little can be found about Greenland. However, Chinese government institutions and other public stakeholders are actively working to increase awareness of Greenland’s investment potential. For example, a special advisor from China Mining Association recalled in an interview about having made a speech in 2011 at the China Mining conference in Tianjin:

…I was focused on presenting facts about natural resources in Greenland. The global mining market was then in much better shape than today. Many companies were very interested in Greenland’s opportunities, and after my speech I was approached by lots of potential investors who wanted detailed information about Greenland… [This interest for Greenland’s opportunities can be explained by the fact
that] Chinese companies are normally interested in new mining destinations because new means big potential (according to a senior official from the Ministry of Land and Resources), but they want to hear about some successful cases first.

In this context, explained an expert on Chinese investment based at the Danish law firm, Bech-Bruun, in an interview:

even though many of China’s largest mining companies may be unwilling to invest in Greenland in the moment, many smaller companies could be interested. They are more willing to take risks because they cannot compete with the big players in the most attractive markets. So one of the key priorities right now should be to make certain the smaller Chinese investment prospects know about the potential in Greenland.

The researcher interviewed from the Ministry of Land and Resources told us that he would appreciate support from the Danish/Greenland government in preparing such investment guidelines.

4.5.2 Social responsibilities and environmental concerns

Many Chinese companies engaged in investment abroad have struggled because of a lack of attention paid to environmental concerns. With the greater autonomy Chinese companies are gaining, Chinese banks are also reluctant to fund overseas project unless a proper environmental mitigation has been prepared. During the loan evaluation process, a senior executive from the China Development Bank, one of three central-level institutional banks in China, underscored the importance of needing to pay closer attention to an investment project’s considerations in the areas of environmental protection and Corporate Social Responsibility (CSR), and more generally, the project’s impact on local communities. To this effect, the senior executive told us that it never funds projects unless an environmental impact assessment has been undertaken. A senior executive from the China EXIM Bank also highlighted the importance of environmental considerations in an interview:

My bank has been criticized because we didn’t pay enough attention to environmental issues, and it had negative impact on our business. In fact, we are not the only bank who has encountered this kind of problem. It seems that environmental concerns are becoming a major challenge for Chinese overseas investments across the board. It has negative impact not only on individual companies and organizations, but also on the image of China as a nation. Environmental crisis situations can also inflict serious commercial losses for investors.

The China Banking Regulatory Commission, China’s banking regulator, issued a Green Credit Policy in 2012, demanding banks to pay more attention to environmental issues in their lending policies. Indeed, the local regulations for environmental protection present a significant challenge for Chinese companies. However, this is not unique to Greenland. Chinese companies are facing stricter environmental standards in most of their overseas projects.
4.5.3 A lack of infrastructure and extreme weather

Greenland is not a preferred option for large Chinese investors. Its port infrastructure and difficult working conditions inevitably present major barriers to Chinese companies investing in its mining industry.

Although the quality of physical resources influences decisions regarding Chinese investment abroad, in Greenland, the infrastructure is very poor, according to a senior official from the Ministry of Land and Resources, and the weather is difficult for Chinese workers. According to a senior executive interviewed from a very large state-owned mining conglomerate, Greenland is not a very attractive investment option from his perspective for these reasons:

Firstly, the weather and seasonal differences are a big concern. The mines are several hundreds of meters underground so it takes a lot of time to reach the mineral deposits. When we finally drill through the ice, winter comes again. Secondly, the cost of pre-extraction construction is huge. They do not have adequate infrastructure in Greenland so we have to build roads, ports, power plants, etc. It is very costly and takes too much time.

In addition to these challenges, Chinese companies are not used to working in climatic conditions similar to those of Greenland. This is notably the case for Jiangxi Copper and its first project in Greenland. As a senior official from the Jiangxi Geology and Mineral Resources Exploration Bureau explained in an interview:

the project site is very close to a cliff and it’s very windy and cold so our workers can’t get used to the weather. In addition, there are no roads or other transportation ways so they need helicopters to ship everything. It’s very expensive.

The Deputy Investment and General Manager from China Mineral’s Nonferrous Metals Holding Co., a very large Chinese mining conglomerate, also weighed in on the issue in an interview, explaining that their analysis “has determined that it is currently unsound to invest in natural resources in Greenland…[and that] The infrastructure is too weak and we also worry about environmental standards, cultural gaps, and labour shortages”.

This lack of infrastructure makes Greenland a comparatively expensive destination for Chinese investments, a point reiterated by a senior official from the Jiangxi Geology and Mineral Resources Exploration Bureau in an interview. Although China is the biggest natural resources market, the current transportation costs are so high between China and Greenland that it is reportedly impossible to make a profit. Therefore, if we only look at an individual project, explained the official, “it’s not good value for money but it’s our first step in Greenland so at least we get an opportunity to know more about working in Greenland, which will be helpful for investment in the future”. In terms of transportation costs, previous studies showed that the transportation costs are lower from Australia’s or from China’s regional environment itself. No bulk vessels are able to dock in Greenland because of poor maritime infrastructure. Transportation costs will remain higher until this is addressed (Têtu et al. 2015b; Têtu and Lasserre, 2017). However, according to a special
advisor interviewed from the China Mining Association, current high logistics costs could decrease in the future:

…logistics and transportation options could reach an acceptable level in the nearby future. The latitude of the southern tip of Greenland is only 59, not very high. The exploration area is in a narrow coastal belt so the basic model of transportation is a mine with short distance transportation to the nearest port.

This special advisor from the China Mining Association also stressed how, due to global warming, the Arctic Channel could soon become a new shipping route, which means that it may no longer be a big challenge for Chinese investors to ship minerals and ores back to China. However, this assumption does not consider recent academic studies that show the Arctic sea lanes would not become Arctic highways because of a wide range of logistical and climatic constraints (Lasserre and Pelletier, 2011; Lee and Kim, 2015; Beveridge et al. 2016; Lasserre et al. 2016; Ørts Hansen et al. 2016).

4.5.4 Greenland’s labour shortages: A challenge and an opportunity for Chinese companies

The individuals interviewed from Chinese companies identified cost and the perceived lack of labour in Greenland as major challenges. However, the changes in Greenland’s legislation on foreign workers present an opportunity for Chinese companies to bring their own workers. From this perspective, they also could avoid the fact that due to Greenland’s strict Labour Protection Act, it would therefore be difficult for Chinese companies to lay off workers, a big problem if they had to adjust operations over time, a point raised during an interview with a senior executive from a very large state-owned mining conglomerate. Greenland’s labour shortages represent not only a challenge for mining companies but also an opportunity for Chinese companies to bring their own workers, in light of changes made to legislation. According to a special advisor interviewed from the China Mining Association:

…the possibility of importing Chinese labour has improved considerably. Because Greenland’s population is only 57,000, the country is unable to provide enough domestic labour supply for mining development. If they employ labour from North America or Europe, workers need to go home every 2 to 3 weeks. Since flying to and from Greenland is very expensive, total costs will be excessively high.

As noted until recently, there was strict legislation imposed on foreign workers in Greenland. But the government has recently approved a law (Greenland Parliament, 2012) that allows the use of Chinese workers, which means that the labor costs for Chinese companies would be lower than in many other countries. The impact, as pointed out by a special advisor from the China Mining Association, is “that could be a very strong selling point for Chinese companies”.

4.5.5 A lack of governmental financial support increases the cost of doing business in Greenland
The lack of governmental financial support when investing in Greenland is a concern for at least one Chinese private company and for another provincial state-owned (POE) company interviewed. The CEO of the private company General Nice Group told us in an interview that in addition to a slump in commodity prices, it is assessing the possibility of a potential acquisition or merger with a SOE that would put it in a better position to raise funds (Wee, 2015). He expressed in an interview with FinanceAsia (Wee, 2015) concerns about the difficulty moving forward:

We are seeking some opportunity to cooperate or merge with SOEs to reach a higher platform. [The] Chinese government is willing to support SOEs. Chinese local banks are willing to support SOEs but not private enterprises.

A similar view was expressed by a senior representative from Zhongnan Holding Group, a very large private Chinese mining company, during an interview. The official explained that “in the past, Chinese exploration companies could get up to RMB 30-50 million in risk exploration subsidies from the Chinese government but now this type of support has been cut significantly so exploration companies are more cautious about which overseas markets they should prioritize”. Chinese investment in natural resource extraction overseas was until recently controlled by policy considerations. But it is now very difficult for Chinese companies to secure financial support from central sources. As discussed earlier, however, closer relationship between the government and business executives could help to resolve this problem.

5. Discussion
This study aimed to broaden understanding of the factors that drive Chinese companies to invest in Greenland’s mining industry and to solicit their views on the challenges with operating in the Arctic. In this regard, we were interested in knowing more about how Greenland fits into Chinese companies’ global investment strategy, particularly if they were interested in Greenland’s mining sector for market/economic motives, or to bring ore back to China as part of a broader strategy to secure supply. On the basis of a theoretical framework that brings together concepts from Porter’s previous studies and other variables found in the literature, the results of our survey show that there are multiple challenges with operating in Greenland, and that the factors driving Chinese investment in here and the Arctic more broadly are numerous.

The first assumption, that Greenland is a priority location for Chinese investment on the area of natural resource extraction and that the newly-independent country could expect to attract a significant number of Chinese investments in coming years, is not entirely correct. Our results confirm, in line with findings from previous studies that have examined the global supply strategies of Chinese mining companies in both the iron and steel industry, and the nickel industry, that Greenland is not a priority area for Chinese investment. Although Greenland attracts a certain degree of interest from the Chinese government, it is obvious that it is not viewed by government officials as a priority area for investment. Greenland is rather viewed by the Chinese Government as more as of an intriguing long-term business partner. But until Chinese companies have successfully
implemented a number of individual projects, it is doubtful that Greenland will receive top priority as an investment option.

Despite the limited interest, however, Greenland could attract a significant number of Chinese investments in the coming years. Although neither the Chinese Government or most of China’s major players engaged in natural resource extraction, are not prioritizing investment in Greenland, there is still potential for projects to emerge. Many smaller mineral exploration and mining companies may be willing to pursue activities in Greenland if they were more aware of the opportunities. Companies controlled by China’s provincial governments are of particular relevance in this respect. Specifically, because local resource deposits are rapidly depleting, the provincial governments are strongly encouraging overseas sourcing. Infrastructure projects also present attractive investment opportunities, and Chinese companies and financial institutions have great experience from large-scale investments in transportation networks, ports and airports.

The second assumption – that decisions about Chinese overseas investments in natural resource extraction are determined solely by the policies and considerations of the central government, and not determined by the potential to earn profits—also seems to baseless. Although the central government may play a more important role in overseas investments decisions than what respondents in this survey are willing to admit, it seems that Chinese investors enjoy a large degree of autonomy. This is partly explained by the policy-driven investments over the past decade that has spurred deregulation and greater commercialization of China’s foreign investment in general, and for natural resources projects in particular. However, because the data obtained in this survey focus only on Greenland, these findings cannot be generalized to all investment destinations targeted by Chinese companies.

The third assumption, that Chinese institutional and commercial banks are reluctant to finance overseas projects undertaken by small- and medium-sized companies, is partly true. China’s financial sector has is geared toward supporting the country’s largest and most influential SOEs. Although conglomerates managed by the central government have direct access to capital for overseas investments in the form of soft loans, the situation is much different for smaller and private companies, even if these companies are also government-owned. This has always been the case, but many recent examples of failed overseas investments have made the banks even more risk averse. Consequently, many Chinese companies engaged in overseas natural resources projects rely on funding from local sources. In some cases, however, personal relationships with influential administrators may facilitate companies securing funding from key financial institutions.

Finally, the fourth assumption, that Chinese investors demand legislative concessions on factors such as environmental protection and low-wage labor imports in exchange for overseas investments, is untrue. Contrary to what is often believed, the surveyed Chinese investors recognized that compliance with local regulations is an essential dimension of overseas investments and particularly for projects in developed regions such as Greenland. China’s own stipulations on funding for overseas projects also prescribe that social and
environmental considerations are addressed. Regulatory factors influence China’s overseas investments. Chinese companies are worried that overseas regulations may impede projects to an extent such that investments cannot be viable. They are used to thwart domestic competition where cuts on labor conditions and concessions from local governments prove to be decisive competitive factors. As a result, the willingness of overseas regulators to ensure a stable and productive business environment often proves to be an important investment criterion.

6. Conclusion
Climate change in the Arctic has accelerated the rate sea ice melting. The resulting increase in accessibility via sea routes enables companies to enter the Artic mining market much more easily, including Chinese actors. In Greenland, however, recent Chinese takeovers of, and new investments in, mines has sparked a flurry of discussion in local media outlets, which have portrayed these interventions negatively. The broad consensus is that this is the latest action being taken by a resource-hungry China, a nation with an insatiable appetite for mineral resources.

Findings from our survey tell a very different story. According to Chinese interviewees, Greenland is not a high-priority area for Chinese companies because it continues to be seen as an extreme and remote environment. However, Chinese companies may be thinking about the long term. Time will tell whether the melting of ice in the Arctic, which makes mineral deposits more accessible, will catalyze greater interest in China in mining industry in this region. In the short term, given the recent drop in commodity prices and the high costs to operate a mine in the extreme environments of the Arctic, a booming Chinese-led mining sector in Greenland is unlikely. Despite all the discussion about the mining potential of the Arctic and the many business opportunities it provides, the fact is that its mining industry remains highly-niche, navigable to only a small group of companies that possess important financial resources and staff armed with specialized skills. There is little possibility, therefore, that Greenland will become the next Africa for Chinese mining companies that are looking to diversify their assets.

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Annex 1
Chinese firms that responded to the questionnaire

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<tr>
<th>China Banking Regulatory Commission</th>
<th>China Ministry of Commerce (MOFCOM)</th>
<th>Jiangxi Geology and Mineral Resources Exploration Bureau (Jiangxi Copper)</th>
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<tr>
<td>China Communications Construction Co. (CCCC)</td>
<td>China Minmetals Non-Ferrous Metals Holding Co. (China Minmetals Corp.)</td>
<td>Jiangxi provincial government</td>
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<tr>
<td>China Development Bank (CDB)</td>
<td>China National Gold Group Corporation</td>
<td>Ministry of Land and Resources of China</td>
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<tr>
<td>China Metallurgical Group Corporation (MCC)</td>
<td>Export-Import Bank of China (China Exim Bank)</td>
<td>Sinosteel Corporation</td>
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<tr>
<td>China Mining Association</td>
<td>General Nice Group</td>
<td>Zhongnan Holding Group</td>
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