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## China and Arctic energy: drivers and limitations

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### ABSTRACT

China's growing demand for oil and gas is forcing the country to look abroad to secure new sources of imports. The Arctic region, rich in oil and gas resources, could function as such a source, and Chinese oil companies have already started to engage in oil and gas exploration and production there. The literature has tended to take this as evidence that China will become an increasingly active and important player in Arctic oil and gas resource developments, and the sanctions imposed on Russia's energy sector by the USA and the EU following the Russian annexation of Crimea are seen as further opening up possibilities for greater Chinese participation. This article, however, argues that China's Arctic oil and gas interests are in fact modest. Domestic views on Chinese involvement in Arctic gas and resource development have been mixed and cautious, indicating a wait-and-see approach. There have been few concrete Chinese investments further indicating limited interest. Only the onshore Yamal LNG project in the Russian Arctic can be characterised as substantial Chinese participation. Moreover, the challenges and high costs of oil and gas production in the Arctic, China's increased import options, the current economic slowdown in China and security developments in the Arctic region all impact China's motivations and possibilities for participation in the development of Arctic energy resources.

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## Introduction

In its widely cited 2008 report, the United States Geological Survey (USGS) estimated that the Arctic contains up to 30% of the world's undiscovered natural gas and 13% of its undiscovered oil.<sup>1</sup> These figures spurred interest among Arctic states, as well as among international oil companies which viewed the Arctic as a largely untapped source of energy. The Arctic region is one of few places where China does not yet have a significant energy presence.<sup>2</sup> However, recent years have seen several changes. China has evinced greater interest in Arctic energy resource development, as seen in the growing domestic debate on Arctic oil and gas resources, and not least in the range of Arctic commercial agreements

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<sup>1</sup>USGS 2008; for a discussion of the limitations of this analysis and its interpretation, see Claes and Moe, "Arctic Petroleum Resources."

<sup>2</sup>The Arctic region is here loosely defined as the Arctic Ocean and surrounding areas.

and investment projects of Chinese national oil companies (NOCs).<sup>3</sup> Further, the sanctions imposed on Russia by the USA and the EU due to Russia's annexation of Crimea and its support to separatists in Eastern Ukraine in 2014 have forced Moscow to build stronger partnerships with Asian partners, China in particular – indicating greater space for manoeuvre for Chinese NOCs to participate in Russian Arctic energy projects.

China's increased interest in Arctic oil and gas resources has created popular images, especially in Western media, of a resource-hungry state, fiercely bent on securing Arctic oil and gas resources to fuel the country's continued economic development.<sup>4</sup> The academic literature has largely avoided such alarmist overtones, but surprisingly few studies have dealt explicitly with China's Arctic oil and gas interests. Studies tend to mention these issues in connection with China's Arctic interests in general, giving a broader picture with little detail on actual investment projects of Chinese NOCs.<sup>5</sup> For instance, Jakobson and Peng noted that China views the Arctic primarily through economic motives, not least opportunities for natural resource exploration. While they give examples of commercial shipping planning and mining projects, oil and gas activities are only briefly mentioned.<sup>6</sup> In another study, Nong Hong claimed that China has invested "heavily across the Arctic" in terms of energy projects – but gave only a few concrete examples, and little detail.<sup>7</sup>

As for studies with a more energy-specific focus, Mamdouh G. Salameh argued that China, due to its vast population and economic development model, could very likely emerge as a key actor in oil and gas developments in the Arctic. However, he presents little direct data on how and to what extent China is actually participating, other than mentioning how Chinese think-tanks are urging the government to become more involved in the Arctic.<sup>8</sup> Xing and Bertelsen argue that it is mainly China's energy security concerns for disruptions in imports and disturbances in energy transport routes that will increasingly prompt China to look towards the North. Thus, they claim that in recent times, China has stepped up its Arctic energy activities (also in non-energy-related areas like scientific research, shipping, mining, etc.), but they offer little concrete evidence of actual energy investments made.<sup>9</sup> Similar arguments are found in a study by Marc Lanteigne, who holds that, although scientific research is currently the main motive for China, natural resources will inevitably comprise a larger share of Beijing's future Arctic thinking. While Lanteigne presents some specific instances of Chinese energy investments, his examples are nevertheless highly general.<sup>10</sup>

This article argues that China's Arctic oil and gas interests remain understudied, especially as regards actual activities. Drawing on primary and secondary documents (including Chinese), interview data and media reports, I aim to provide an in-depth investigation of the actual scope and extent of current Chinese Arctic investment projects, while also

<sup>3</sup>Referring here to mainly to China's three largest state-owned companies: China National Petroleum Company (CNPC), China Petroleum and Chemical Corporation (Sinopec), and National Offshore Oil Company (CNOOC).

<sup>4</sup>Seidler, "The Resource Race."

<sup>5</sup>There is growing academic literature on China's Arctic interests. See Chen, "China's Emerging"; Jakobson and Peng, "China's Arctic Aspirations"; Sun, "Beyond the Dragon and the Panda"; Tonami, "The Arctic Policy of China and Japan"; Røseth, "Russia's China Policy"; Hong, "Emerging Interests of non-Arctic Countries"; Jakobson, "China's Security"; Lundestad and Tunsjo, "The United States and China"; Wegge and Peng, "China and the Law of the Sea."

<sup>6</sup>Jakobson and Peng, "China's Arctic Aspirations."

<sup>7</sup>Hong, "Emerging Interests of non-Arctic Countries."

<sup>8</sup>Salameh, "China Eyes Arctic."

<sup>9</sup>Xing and Bertelsen, "The Drivers of Chinese Arctic Interests."

<sup>10</sup>Lanteigne, "China's Emerging Arctic Strategies."

offering explanations as to China's limited participation. The main finding is that China's Arctic oil and gas interests up to date are few and limited in scope and extent with only the onshore Yamal LNG project in Russia's Arctic as a substantial Chinese Arctic energy project. Challenging high-cost oil and gas production in the Arctic, China's increased import options resulting from an oversupplied global oil and gas market related due the low oil price, economic slowdown in China, and security developments in the Arctic region are important factors explaining China's limited participation in Arctic energy resources developments.

## Eyeing Arctic oil and gas resources

China's global energy presence has grown dramatically, as decades of high and sustained economic growth have substantially increased the demand for energy. In 2011, China became the world's largest energy consumer. Today it ranks as the world's largest importer of oil and the third-largest importer of natural gas, as own production has not kept pace with growing consumption. Whereas, China was long self-sufficient and indeed a net exporter of oil; it became a net oil importer in 1993, and, from 2007, a net importer of natural gas.<sup>11</sup> Beijing has looked abroad to diversify its energy import sources, an important element of the "going abroad strategy".<sup>12</sup> Its diversification strategy aimed at importing oil and natural gas from a range of different countries and regions and along different transport routes, not least pipeline imports from neighbouring countries. China still gets more than half of its oil from the Middle East, but is now also importing from Africa, Latin America and Central Asia and increasingly from Russia.<sup>13</sup> Chinese NOCs have expanded their international operations, with overseas investments in more than 40 countries around the globe. China's NOCs have also invested billions in global upstream M&A deals, mainly in unconventional oil and gas, deep-water and LNG assets, looking to amass new know-how and internationalise their operations.<sup>14</sup> Could the Arctic region become the next investment region for Chinese oil companies?

The "narrative" of China's Arctic energy interests often holds that there exists a "single view" representing Arctic oil and gas interests and that China has embarked on an Arctic quest that indicates an assertive approach.<sup>15</sup> For instance, one of China's most vocal Arctic scholars, a figure familiar to Western audiences, Li Zhenfu of Dalian Maritime University, has frequently called for China to protect and promote its "rights and interests in the Arctic". He argues that China has a legitimate place and role to play in the Arctic – without defining what those rights are.<sup>16</sup> Others have cited Rear Admiral Yin Zhou, who in 2010 claimed that the "the Arctic belongs to all the people around the world as no nation has sovereignty over it" as indicative of Chinese revisionism and the coming fierce hunt for energy resources in the Arctic.<sup>17</sup> However, careful investigation of wider Chinese sources and data, coupled with

<sup>11</sup>Figures from U.S. Energy Information Administration 2015.

<sup>12</sup>China's "going abroad" strategy was initiated in the early 1990s by Chinese NOCs themselves as domestic oilfields began to deplete and the companies started to venture abroad for new oil sources and profits. However, the Chinese government soon became an active supporter, and even driver, for increasing overseas operations by the NOCs. See for instance Tunsjø, *Security and Profit in China's Energy Policy*.

<sup>13</sup>U.S. Energy Information Administration 2015.

<sup>14</sup>Jiang and Ding, "Update on Investments by China's," 13.

<sup>15</sup>Rainwater, "Race to the North."

<sup>16</sup>Wright, "The Dragon Eyes the Top of the World," 8.

<sup>17</sup>Chang, "China's Arctic Play." Actually, Yin Zhou has been misinterpreted. What he actually said was that "According to UNCLOS, the North Pole and its surrounding areas do not belong to any single country and the common riches in the area belong to all the people in the world." (Luo, "Haijun shaojiang;" my translation.)

interview data, yields a more nuanced and modest picture. We may divide the “Chinese view” into three: the official position, the industry and Arctic scholars.

### **The official position**

China now describes itself as a “near-Arctic state”.<sup>18</sup> It lacks an official Arctic strategy, let alone an energy strategy. This is due in part to China’s fragmented policy process<sup>19</sup> but also to the fact that the Arctic is simply not a major foreign policy priority for the Chinese Government.<sup>20</sup> Overall, the Chinese Government’s Arctic approach is multi-layered and cooperative, centred on scientific research pertaining to climate change.<sup>21</sup> Few official statements refer specifically to Arctic oil and gas resources; if they are mentioned, they are usually downplayed. For instance, Xu Shijie, Director of the Chinese Arctic and Antarctic Policy Administration Policy Division, stated in 2012:

since there is no proven data on oil and gas deposits in the Arctic, China is only interested in climate change in this region. Before formulating a policy on this topic, we first need to gather information on mineral and hydrocarbon potential.<sup>22</sup>

Such statements reflect the recognition in Beijing that a more active China in the Arctic region has given rise to concern among Arctic states, especially regarding greater interest in resource extraction. To avoid backlash, China has pursued a diplomatic approach by building closer bilateral ties with the Arctic states and stepping up its engagement in multilateral venues such as the Arctic Council, where China has had permanent observer status since 2013, while also downplaying the energy issues.

However, the lack of any clear official “energy interest” is also due to the absence of an Arctic-specific energy strategy. Instead, Chinese officials have emphasised that oil and gas exploration should be pursued by Chinese companies themselves on a commercial basis in accordance with international market trends and mechanisms. As noted by China’s vice foreign minister Zhang Ming in his keynote speech at the Third Arctic Circle Assembly in 2015: “Regarding the development of Arctic resources, China started rather late in this area with only a few Chinese businesses joining relevant programs through partnership with foreign companies. China supports proper and orderly development of the Arctic”.<sup>23</sup>

### **China’s Arctic scholars**

While Beijing has been cautious about directly linking Arctic oil and gas to China’s Arctic interests, the growing Chinese Arctic academic community has been more openly debating and promoting China’s interests in the Arctic, including oil and gas.<sup>24</sup> In general, there is a cautiously optimistic view on Arctic oil and gas exploration and production for China,

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<sup>18</sup>Chinese scholars have for some time used this term. However, it was first used officially by Vice Minister Zhang Ming in his keynote speech at the Third Arctic Circle in Reykjavik, 2015, who stated: “Geographically speaking, China is a near Arctic-state” (Zhang, “Keynote Speech”).

<sup>19</sup>Chen, “China’s Emerging.”

<sup>20</sup>Jakobson, “China’s Security.”

<sup>21</sup>Wang, “Keynote Speech.”

<sup>22</sup>Xu Shijie, quoted in Huang et al., “Is China’s interest for the Arctic,” 62.

<sup>23</sup>Zhang, “Keynote Speech.”

<sup>24</sup>See for instance Wright, “The Dragon Eyes the Top of the World.”

framed in a long-term perspective. The Arctic region is often claimed to represent a “second Middle East”, generally citing the 2008 USGS report uncritically.<sup>25</sup>

In writing about energy, China’s Arctic scholars frequently claim that their country’s main motivation for participating in Arctic energy resource development is related to energy security concerns. Crucially, the Arctic region could offer an additional source of energy imports and an alternative to China’s traditional supply regions in the Middle East and North Africa. These regions are prone to instability, entailing high risks of import disruption.<sup>26</sup> China’s experiences with problematic investments, for instance in Sudan, are often cited as warning examples.<sup>27</sup> In addition, most of China’s oil imports are transported along global sea-lanes: data from China’s custom authorities show that between 2002 and 2012 over 85% of China’s oil imports came by sea.<sup>28</sup> The global sea-lanes are under US naval dominance. Beijing worries that, in the event of a major military conflict with the USA, China would lack the sufficient military capacity to protect its sea lines of communications (SLOCs) or could be subjected to a blockade – for instance in the Malacca Strait, through which over 80% of China’s oil imports pass. Moreover, piracy, terrorism or environmental challenges (for instance, natural disasters like typhoons) also pose a threat to sea-borne imports, emplacing additional stress.<sup>29</sup> Finally, it is argued that, since China has certain advantages to offer Arctic states – mainly in terms of capital, human resources and a huge market – there exists a potential for energy cooperation between the Arctic states and China. Thus, China should participate in Arctic resource development where possible, in order to achieve an advantageous strategic long-term position.<sup>30</sup>

China’s Arctic scholars remain largely silent, however, on the actual projects or investments plans that Chinese oil companies are engaged in. Writing tends to focus on the underlying drivers of China’s Arctic energy interest: when it comes to more detailed assessments, studies are vague. Energy projects are frequently presented as part of general bilateral cooperation, especially with key Arctic resource states like Russia and Canada, without specifying what that energy component concretely implies.<sup>31</sup> Moreover, in private conversations Chinese scholars may admit that their country’s current Arctic energy activity is more limited than the impression given by Chinese academic journals.<sup>32</sup>

### **Industry and energy experts**

Detailed assessments made by NOCs are not easily publicly available, which makes it hard for outside observers to fully understand Chinese NOCs assessments and plans for the Arctic. However, from open sources and interview data, some assessments can be offered.

<sup>25</sup>For good overview of Chinese scholars working on Arctic energy issues see Yang et al., “Beiji nengyuan anquan.”

<sup>26</sup>Pan, “Jiyou yu fengxian.”

<sup>27</sup>Sudan was one of the first countries for CNCPs overseas investments, and provided China with large supplies of oil. In 2011, Sudan and South Sudan accounted for almost 5% of China’s total oil imports. However, the political conflict between Sudan and South Sudan over oil their resources erupted in early 2012, and oil exports to China dropped to almost zero by April that year. Although imports have now resumed, at a reduced level, China’s government has faced mounting pressure from the international community to play a constructive role in seeking a solution to the conflict, while also being pressured by Chinese NOCs to protect investments. See Moreira, “Learning from Failure.”

<sup>28</sup>Li et al., “Beiji tongdao kaifa yu.”

<sup>29</sup>Chen, “China’s Self-extrication.”

<sup>30</sup>Yang et al., “Beiji nengyuan anquan.”

<sup>31</sup>Xiao, “Beibingyang hangxian kaifa.”

<sup>32</sup>Author’s email interview with Chinese Arctic scholar, December 2015.



As noted, China's NOCs are today more risk-averse and cost-conscious than just a decade ago, having learned lessons from projects in volatile and political unstable regions. While strategic considerations are central in China's overseas investment strategy, the costs and profits for Chinese NOCs are equally important.<sup>33</sup> Chinese oil companies are looking to invest in regions and to partner with companies where the political risks are modest. The Arctic countries are considered politically stable and with mature economies, making investments less risky and more secure.<sup>34</sup> However, there are high start-up costs. Chinese companies face technological challenges, and they lack experience with local regulations. Understanding how civil society works and how to deal with local environmental activism are significant issues.<sup>35</sup> Oil-spill or other environmental accidents are also seen as one of the most challenging aspects of Arctic drilling, where one serious episode can jeopardise confidence in the industry's capacity for Arctic oil and gas exploration.<sup>36</sup> With regard to technological competence, Bai Li, a Chinese scholar at China University of Petroleum, has estimated that China's NOCs are at least 14–15 years behind their Western counterparts in research and development for deep-water oil exploration.<sup>37</sup> Additionally, as explained by an industrial insider within CNOOC, because of the extreme low temperatures and ice in the Arctic, extraction equipment differs from what is used in deep-water operations elsewhere, entailing high operational costs and long payback time for companies.<sup>38</sup> The industry has expressed caution, emphasising the technical limitations of China's NOCs as regards participation in Arctic resource development.

## Going north

We see that the Chinese view of Arctic oil and gas resources is more mixed than normally held in the West. Nevertheless, Chinese NOCs have concluded several commercial agreements and participate in investment projects in the Arctic. But what type of projects are Chinese NOCs engaged in? Examination of this will give a more precise indication of China's Arctic oil and gas interest.

### *Arctic investment projects*

Currently it is mainly CNOOC and CNPC, often through subsidiaries, that have specific plans and investments in the Arctic region. An early move by CNOOC came in 2008 when a subsidiary of the company, China Oilfield Services Limited (COSL), bought the Norwegian drilling company Awilco Offshore for approximately USD 2.5 billion. With that purchase, CNOOC gained advanced technology and know-how.<sup>39</sup> In September 2015, COSL, Rosneft and Statoil signed a deal on drilling two exploration wells in the Sea of Okhotsk, reportedly to start in 2016.<sup>40</sup> There are also reports that a seismic vessel belonging to COSL will conduct seismic operations in the Russian part of the Barents Sea for Rosneft.<sup>41</sup> The deal builds on

<sup>33</sup> Author's interview with former senior lead researcher at a large Chinese NOC, June 2015, Beijing.

<sup>34</sup> Pan, "Jiyou yu fengxian."

<sup>35</sup> Li, "Beiji diqu youqi ziyuan," 92–4.

<sup>36</sup> Yang et al., "Beiji nengyuan anquan."

<sup>37</sup> Wu, "Zhongguo youqi yu pobing beiji."

<sup>38</sup> Du, "CNOOC licensed to seek Arctic oil."

<sup>39</sup> Dyer, "China Oilfield to buy Awilco."

<sup>40</sup> Staalesen, "Rosneft, Statoil Discuss."

<sup>41</sup> Staalesen, "Russians choose Chinese Explorers."

a larger Rosneft–Statoil comprehensive agreement from 2012 which includes drilling on the Russian side of the maritime boundary in the Barents Sea.<sup>42</sup>

CNOOC has partnered with Icelandic Eykon Energy and Norwegian Petoro for oil and gas exploration in the Dreki area off the coast of Iceland. CNOOC holds a 60% stake, Eykon Energy 15% and Petoro 25%.<sup>43</sup> However, the potential for oil and gas in the Dreki area seems uncertain, and other major international oil companies have pulled out since new data have been disappointing.<sup>44</sup> According to media reports, Eykon approached the Chinese company because the Icelandic company needed an international partner to bid for exploration around the island of Jan Mayen, which is Norwegian territory.<sup>45</sup> Nevertheless, CNOOC has remained optimistic and plans for exploration are underway as survey work for oil in the area began in 2014.<sup>46</sup>

CNOOC (and other Chinese oil companies as well) has also invested heavily in Canadian oil sands, although such investments have had low returns as yet.<sup>47</sup> A concrete example is Northern Cross, a local firm under CNOOC, which has been exploring for natural gas in Canada's northern Yukon.<sup>48</sup> The most notable example was perhaps the massive CNOOC takeover of Canadian's Nexen in 2013 for USD 15.1 billion. CNOOC reportedly planned to buy seismic data on an area in the Barents Sea that could give it an entry into Arctic offshore oil and gas.<sup>49</sup> However, in early 2016, when the Norwegian Ministry of Petroleum and Energy awarded 56 licences to oil companies on the Norwegian continental shelf, it seems that CNOOC did not apply.<sup>50</sup>

The other major Chinese oil company to participate in Arctic oil and gas projects is CNPC. In a larger Rosneft–CNPC deal concluded in May 2013, CNPC was invited by Rosneft to explore three offshore fields in the Barents and Pechora Seas.<sup>51</sup> These offshore fields hold large deposits of oil and gas but are challenging to develop. Since the 2013 deal, Rosneft has carried out geophysical exploration, but there has been no mention of Chinese involvement.<sup>52</sup> Negotiations over a Chinese stake in the huge onshore Vankor oil field in Eastern Siberia (which already supplies China via pipe and rail) came to naught, and Indian companies became investors instead.<sup>53</sup>

Although these projects indicate growing Chinese Arctic energy participation, they are relatively modest. This is especially the case when compared to the Chinese engagement with the onshore Yamal LNG project in the Russian Arctic.

### *Yamal LNG – the most ambitious project so far*

Undoubtedly, the most far-reaching project to date involving Chinese investments is the Yamal LNG project, which will produce gas from the South Tambey fields, on the eastern

<sup>42</sup>Statoil, Press Release, May 5, 2012.

<sup>43</sup>Offshore Energy, "CNOOC Awarded Licence."

<sup>44</sup>For instance, in a field adjacent to where CNOOC and Eykon are set to explore, another oil company, Faroe Petroleum, has handed back its license.

<sup>45</sup>Milne, "CNOOC Teams up with Icelandic Group."

<sup>46</sup>Yao, "CNOOC Headed for Arctic."

<sup>47</sup>Snyder, "After a Decade of Canadian Investment."

<sup>48</sup>Holyroyd, "The Business of Arctic Development."

<sup>49</sup>Holter, "China's CNOOC Considers."

<sup>50</sup>Norwegian Ministry of Petroleum and Energy, Press Release.

<sup>51</sup>Pototsky, "Russia Lets China."

<sup>52</sup>Rosneft, "Rosneft Finished Geologic Exploration."

<sup>53</sup>Reuters, "India Signs Energy Deals."



side of the Yamal Peninsula in Russia's north-western Siberia. The Yamal LNG plant will have capacity for exporting 16.5 million tons of LNG per year, planned to supply customers in both Europe and Asia, by sailing the Northern Sea Route (NSR), along the Russian Arctic coast. Yamal LNG gas is set to commence exports in 2017. The Yamal LNG project includes the development of the Sabetta seaport and an international airport. Estimated cost for the project as of 2015 was USD 27 billion.<sup>54</sup>

The project is operated by Yamal LNG, dominated by the Russian company Novatek. CNPC became involved already in 2013, after initiatives taken by Novatek. Within less than a year, from February 2013 to January 2014, CNPC agreed to take a 20% share and also held negotiations on developing the gas fields, LNG shipping, fund pooling and responsibilities for construction within the set timeframe.<sup>55</sup> China's Silk Road Fund (SRF) obtained a 9.9% equity stake in September 2015 with an announced payment amounting to EUR 11 billion.<sup>56</sup> SRF will also provide a 15-year loan of approximately EUR 730 million to finance the project.<sup>57</sup> The SRF is a USD 40 billion fund initiated by the Chinese Government in 2014, for assisting the realisation of President Xi Jinping's ambition of creating greater connectivity between China and the outside world through his One Belt, One Road (OBOR) initiative.<sup>58</sup> Commenting on the purchase, Wang Yangzhi, president of the SRF, said: "We [China] consider Yamal LNG to be one of the most prospective and competitive LNG projects in the world".<sup>59</sup> The investment made by the SRF was the first investment project in Russia and first investment in the natural gas industry.<sup>60</sup> Additionally, Chinese financing is provided by the Export-Import Bank of China and China Development Bank, which have signed a 15-year loan agreement with Novatek worth more than USD 12 billion to finance the Yamal Project.<sup>61</sup>

As of early 2016, Yamal LNG was owned by Novatek (50.1%), French Total (20%), CNPC (20%) and the SRF (9.9%).<sup>62</sup> In addition, China Insurance Investment Ltd, made up of Chinese insurance companies and asset managers, has pledged to fund the Yamal LNG project, without revealing any specifics as to the exact amount.<sup>63</sup> Several other Chinese commercial actors, among them CNOOC and Baosteel, are involved in the LNG terminal project, not least with manufacture of Arctic modules.<sup>64</sup> For instance, CNOOC's Offshore Oil Engineering Co (COOEC) is building equipment to build up to 51 core modules for the liquefaction process on the LNG terminal (there is a need for more than 240 in total).<sup>65</sup> That contract was worth USD 1.6 billion – COOEC's largest overseas contract – and deliveries are to be completed in 2017.<sup>66</sup>

CNPC has signed a long-term contract committing to import 3 million tons of natural gas annually for a 20-year period.<sup>67</sup> Other contracts are with Total (4 million/year), Gas

<sup>54</sup>Novatek, "Yamal LNG."

<sup>55</sup>Guo et al. "Yama'er LNG xianmu."

<sup>56</sup>Novatek, "NOVATEK and China's Silk Road Fund Conclude Selling," March 15, 2016.

<sup>57</sup>Novatek, "NOVATEK and China's Silk Road Fund Sign," December 17, 2015.

<sup>58</sup>Silk Road Fund Homepage, "Overview."

<sup>59</sup>Wang, quoted in *World Oil*, September 3, 2015.

<sup>60</sup>Chen, "Silk Road Fund to Expand Ties with Lenders."

<sup>61</sup>Farchy, "Chinese Lend \$12bn."

<sup>62</sup>Novatek Homepage, "Yamal LNG."

<sup>63</sup>*Reuters*, "China Insurance Fund," January 5, 2016.

<sup>64</sup>Zhongguo shiyoubao, "Zhongguo shiyou bao."

<sup>65</sup>Author's telephone interview with analyst at DNV GL, December 2014.

<sup>66</sup>*Moscow Times*, "China, Russia Sign \$1.6Bln Deal."

<sup>67</sup>Novatek, "Binding Contract on LNG Supply Concluded with CNPC," May 20, 2014.

Natural (Spain) 2.5 million/year), Gazprom (3 million/year) and Novatek Gas & Power (2.86 million/year).<sup>68</sup> Except for the gas to Spain, most is slated for Asia, including Chinese markets where it will not compete with Russian pipeline gas. In the summer season, when ice conditions allow for eastward passage along the NSR, LNG vessels will take the shorter route to East Asia. During winter, LNG ships can travel westwards, using Europe for trans-shipment to China. The price for which CNPC has contracted LNG gas has not been made public, making it difficult to evaluate the commercial gain in Yamal LNG imports.<sup>69</sup> Price setting has probably followed Asian LNG market practice where the prices of long-term LNG contracts are determined on the basis of the Japan Crude Cocktail index.

LNG export of gas from the Yamal plant requires specialised LNG tankers. Fifteen Arctic LNG carriers have been ordered from the South Korean shipyard Daewoo Shipbuilding & Marine Engineering Co. (DSME), expected to be delivered between 2016 and 2020.<sup>70</sup> Yamal LNG selected the shipping companies the ships have been sold to<sup>71</sup> – and 14 of them involve Chinese companies. The US-listed LNG tanker company Teekay LNG has, together with China LNG Shipping (Holdings) Ltd., contracted six carriers at a total cost of USD 2.1 billion.<sup>72</sup> Three LNG carriers have been contracted with Japan's Mitsui OSK Lines and its Chinese partner China Shipping (Group) Company,<sup>73</sup> at a total cost reportedly worth USD 932 million.<sup>74</sup> Greece-based Dynagas Ltd has joined forces with China LNG and Sinotrans Shipping Ltd to form a consortium for five LNG carriers. The total cost for the ships is USD 1.6 billion.<sup>75</sup> Finally, the Russian state-owned Sovcomflot Group has taken one carrier, completed early in 2016.<sup>76</sup>

As of 2016, the Yamal project is the only Arctic project involving significant Chinese participation and investments. The question is why, given the more limited progress in the other projects described above. Three possible explanations might be at hand. First of all, since the Yamal project early on included high technical expertise with the participation of Novatek, and in particular Total, the necessary technical competence was put in place. Second, the Russian state has, through subsidies, tax reductions and other support, given the project a certain level of economic and political guarantee.<sup>77</sup> These two conditions have made Chinese involvement a relatively low-risk commitment. Thirdly, the Chinese leadership has recognised the importance of the Yamal project to Russia. For China, maintaining stable and positive bilateral relations with Russia is a strategic priority. Through its concrete engagement in the Yamal project, China signals to Russia that it is willing to be a constructive partner, in line with Moscow's ambition of bringing the project forward.

## How attractive is the Arctic energy for China?

Despite China's increased demand for oil and natural gas imports, Chinese investments in the Arctic thus far have been limited, and only the Yamal LNG project has seen concrete

<sup>68</sup>Staalesen, "Gas Giants with Yamal Deal."

<sup>69</sup>Author's telephone interview with analyst at DNV GL, December 2014.

<sup>70</sup>The ice-class will have the ice classification Arc 7. These carriers can operate down to  $-50^{\circ}$  and 2.1 m of ice.

<sup>71</sup>Moe, "The Northern Sea Route," 792.

<sup>72</sup>Teekay LNG Partners L.P., "Teekay LNG Partners Finalizes Contracts."

<sup>73</sup>Mitsui O.S.K. Lines, Ltd., "MOL signs Ship Building Contracts."

<sup>74</sup>Iwata and Ma, "Shipping Firms."

<sup>75</sup>Paris and Williams, "Tanker Order Boosts Confidence."

<sup>76</sup>LNG World News, "DSME: SCF Yamal."

<sup>77</sup>Lunden and Fjærtøft, "Government Support to Upstream Oil & Gas in Russia."

Chinese involvement. The question thus arises: How attractive, in fact, are Arctic oil and natural gas for China? We can note four factors that determine present and future Chinese motivations for seeking participation in Arctic energy resource developments.

### **Arctic conditions**

Although technological advances are steadily being made within the oil industry, Arctic-specific challenges – including harsh climate with severe ice conditions, limited infrastructure and environmental concerns – make the Arctic a high-risk area for oil and natural gas production compared to other petroleum-rich regions. With the current low oil price, many on-going or planned Arctic projects appear too costly. In 2015, several Arctic projects involving major international oil companies were cancelled or postponed, such as Shell's drilling off the Alaska coast.<sup>78</sup>

The risks and high costs are evident to Chinese actors as well, and Chinese NOCs have become much more risk-averse and cost-aware. In fact, questions have even been raised concerning the venture that is by far the most advanced, the Yamal LNG project. At least four issues have been pointed out: (1) the specific environmental conditions in the Arctic for development of gas fields and operation of the LNG factory, (2) high ice levels in Arctic waters complicate LNG transport by sea, (3) the development of a US LNG export capacity means increased supplies to the global LNG market, impacting the price of LNG and thus the profits of various LNG projects around the world and (4) the US and European sanctions against Russia due to Moscow's policies in Ukraine will influence the smooth development of the Yamal project.<sup>79</sup> The Yamal LNG project is commercially vulnerable, and can be profitable only with strong Russian governmental support, tax reductions or other state subsidies.<sup>80</sup> Additionally, as noted, Chinese oil companies today lack the technological skills needed for Arctic operations. Ironically, precisely technology and know-how might be among Chinese oil companies' main objectives with the Yamal LNG project, as this would allow CNPC to gain advanced technological expertise and know-how.<sup>81</sup>

### **China's increased import options**

China has today greater options for oil and natural gas imports than only a few years ago, due in part to its diversification strategy, mentioned above. With the oil and gas markets currently characterised by oversupply and low prices, China has taken advantage by further ramping up and diversifying its oil import sources. For instance, since 2012 China has increased its imports from Saudi Arabia by 700,000 b/d, while oil imports from Iraq have increased by 70%. Imports from Latin America have also grown, from 500,000 b/d in 2013 to a record high of 760,000 b/d in September 2014.<sup>82</sup> Oil imports from Russia have doubled since 2010, almost 930,000 b/d in April 2015.<sup>83</sup> Iranian oil exports to China are also set to increase after the lifting of sanctions against Iran in 2015.<sup>84</sup>

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<sup>78</sup>Myers and Crauss, "Melting Ice isn't opening up."

<sup>79</sup>Guo et al., "Yama'er LNG xiangmu."

<sup>80</sup>Author's interview with former senior lead researcher at a large Chinese NOC, Beijing, June 2015.

<sup>81</sup>Author's Interview, Office Head Representative of a major IOC, Beijing, May 2015.

<sup>82</sup>Daojiong and Meidan, "China and the Middle East."

<sup>83</sup>Raval, "Russia Takes over as Top Oil Supplier."

<sup>84</sup>Spegele, "Oil-Thirsty China a Winner."

China has also increased its natural gas imports. It already has major pipeline imports arranged with Central Asian states, Russia and Myanmar, and in 2012, pipeline gas imports exceeded LNG imports.<sup>85</sup> Moreover, there are plans to further expand pipeline imports, such as the Central Asia–China pipeline. With the completion of Line C in 2015, and construction of Line D underway, the China–Central Asia pipeline system will have a capacity of 85 bcm.<sup>86</sup> Besides the already announced Power of Siberia pipeline, China and Russia are currently negotiating the Altai pipeline, from Russia’s Western Siberia and into China’s western provinces. If plans for the Altai line can be completed, this could provide China with an additionally 30 bcm per year.<sup>87</sup> Pipeline imports are the preferred strategic option for China.<sup>88</sup> Given the relatively small volumes of LNG now contracted from Yamal in China’s overall LNG imports, and also in light of the pipelines gas deals, Arctic LNG does not play any significant role. In other words, with other options available, the Arctic plays only a minor role in Chinese oil and gas imports – at least in the short to medium term.

### **China’s new economic growth model**

As China seeks to restructure its current growth model away from heavy manufacture and export-economy towards a domestic-led consumption and service economy, lower GDP growth rates are becoming the new norm. Official data indicate that China’s GDP growth in 2015 was 6.9%, the lowest figure in a quarter of a century.<sup>89</sup> Moreover, ever-increasing air pollution from the extensive use of fossil fuels has prompted President Xi Jinping to call for an “energy revolution” which seeks not only to improve China’s energy intensity, but also to directly combat China’s fossil fuel consumption. Natural gas is set to replace coal and oil in China’s total energy mix, which would entail strong growth in long-term natural gas demand. However, with the restructuring of China’s economy, short-term demand for natural gas has been slowing. In 2014, demand grew by only 8–9% compared with an average of 15% over previous years.<sup>90</sup> Moreover, for the first time since China began importing natural gas in 2006, it noted the first decline in demand year-on-year by 2015. Data indicate that China is currently facing an oversupply of gas, and Chinese oil companies have been selling contracted LNG on the global market.<sup>91</sup> In other words, as China’s new economic model implies reduced growth in consumption of fossil fuel for its economic development, the Arctic region, with its high-cost and high-risk environment, will have to compete with other, less costly and less risky regions, even though overall oil and gas imports are set to continue to grow.

### **Security developments**

Security developments affecting the Arctic region also impact China’s Arctic oil and gas investment possibilities. While the Arctic region is characterised by a stable security

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<sup>85</sup>EIA, “China: International Energy Data and Analysis,” 21.

<sup>86</sup>CNPC, “Flow of Natural Gas from Central Asia.”

<sup>87</sup>Paik, “Sino–Russian Oil and Gas Cooperation.”

<sup>88</sup>Telephone interview with London-based energy expert, December 2015.

<sup>89</sup>BBC, “China Economic Growth Slowest.”

<sup>90</sup>EIA, “China: International Energy Data and Analysis.”

<sup>91</sup>Vukmanovic and Gloystein, “LNG Boom Over as China.”

environment, the Arctic cannot be isolated from global geopolitical developments. The Ukraine crisis has affected relations between Russia and Western states – including the Arctic, as US and EU sanctions have targeted Russia's oil industry. With current or planned Arctic projects involving Russian and Western oil companies put on hold or cancelled, Russia has increasingly turned to China for closer bilateral energy ties, including Arctic cooperation. For instance, the topic was discussed at the 12th Meeting of the China–Russia Energy Cooperation committee in November 2015, where China's vice premier Zhang Gaoli stated that China and Russia are pushing ahead on the Yamal project.<sup>92</sup> The Russians are keen to include more Chinese presence, and Sergei Donskoy, Russia's Minister for Natural Resources and Environmental Protection, has expressed his support for Chinese investments in Russia's Arctic oil and gas projects.<sup>93</sup>

Despite this, Sino–Russian Arctic energy cooperation has remained limited. Russia is still in need of advanced know-how and equipment to develop its energy resources, and that is found among Western oil companies, not Chinese ones. A concrete example is the CNPC–Rosneft deal on exploration in the Pechora Sea, which has not taken off. Rosneft needs Western partners to conduct offshore Arctic oil production, as these operations require specialised technological competence which CNPC currently lacks. Moreover, Russia's primary interest lies in Chinese investments and manufacturing.<sup>94</sup> As much as 68% of the technical equipment for Russian offshore oil and gas is subject to Western sanctions. Russia has invited China to contribute to the manufacture of equipment, but has stressed that this must be produced in Russia.<sup>95</sup> In fact, however, Chinese financial institutions have been less engaged in Russian projects than often claimed by official rhetoric on both sides. The US and European markets are more important, and Chinese banks are reluctant to engage in Russia markets, which they see as being overly regulated and risky.<sup>96</sup>

## Conclusions

China's Arctic oil and gas interests are currently more limited in scope and extent than commonly held. Inside China, there is recognition of the potential for Arctic oil and gas resources, but views and positions differ among Chinese Arctic scholars, the government and industry on the possibilities for more active Chinese participation in Arctic resource development. In general, the scholarly community tends to be more optimistic and pro-active than industry, which is more cautious, recognising the limitations of increased Chinese participation, at least in the short to medium term. The official governmental position is to downplay China's Arctic energy interest, to avoid being perceived by the Arctic states as interested in the Arctic solely for natural resource exploration. Moreover, although China is involved in several oil and gas investment projects, only the Yamal LNG project entails substantial Chinese participation. This project has seen an incremental increase in Chinese investors and actors, notably CNPC, but also Chinese shipping companies and manufacturers. Moreover, the equity stake purchase by the Silk Road Fund and the loans by Chinese

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<sup>92</sup>Lyu, "China and Russia Cooperate."

<sup>93</sup>*Moscow Journal*, "China is Ready to Participate."

<sup>94</sup>Author's email interview with Chinese Arctic scholar, December, 2015.

<sup>95</sup>Staalesen, "Offshore Oil Feels Pain."

<sup>96</sup>Gabuev, "Did Western Sanctions?"

bank indicate a certain degree of governmental backing, implying commitment from key Chinese actors to see this particular project materialise, in contrast to many other Chinese Arctic oil and gas projects mentioned in this article.

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