Yamal case study design: Oil and Gas in Yamal

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1. Introduction

Map source: google maps and Stratfor Worldview

i. The Yamal-Nenets autonomous district or Okrug, is part of the Tyumen region and the Ural Federal District with a population of about 536,000 (2015) and encompassing 769,250 square kilometers,¹ which is roughly twice the size of Norway. The district became autonomous in 1930.²


ii. Most of the Yamal-Nenets district is located on the northern part of the West Siberian Plain, with a small part on the eastern side of the Ural Mountains. The north borders the Kara Sea. The district is considered the Far North with more than half of its territory located within the Arctic Circle.

iii. Yamal-Nenets is located in three climatic zones: arctic, subarctic and the West Siberian lowland. The climate is determined by the presence of permafrost, the Kara Sea, bays, marshes and lakes. The region is characterized by a long winter (up to 8 months) and a short summer, with strong winds. Most of the geography is flat, with extensive marshes and rolling tundra. In the Nenets language, Yamal means ‘the edge of the Earth.’

iv. The ethnic composition of the population according to the 2010 census is a Russian majority (61.7%), followed by Ukrainian (9.7%), indigenous Nenet (5.9%), Tatar (5.6%), and Khanty (1.9%). The indigenous population is estimated around 11,000 people of which 6,000 are nomadic. There is a substantial influx of industrial shift workers in the region, representing over 10 times the nomadic indigenous population.

v. Reindeer herding and fishing were the only occupations until the early 1970s, when exploitation of natural-gas deposits began. The oil and natural gas fields in the district are some of the world’s largest. The natural gas reserves in Yamal-Nenets account for 1/5 of Russia’s total reserves, and is equal to the reserves in the United States.

vi. Yamal-Nenets is essential to Russian energy and economic security. The region supplies approximately 90% of Russian domestic gas. In addition,
gas and oil represents 30% of Russia’s GDP and 50% of the state’s budget as of 2018. Russia’s economy is dependent on hydrocarbon production and GDP growth or decline is affected by prices on the world market.

vii. The Russian Federation has an ambitious plan for increased hydrocarbon development in Yamal. President Putin expects all the liquefied natural gas (LNG) plants to produce a combined 60 million tons each year by 2030. The projects involve substantial infrastructure on land and offshore to support the plants. The Northern Sea Route (NSR) is the preferred exportation route. Additional pipelines also transport gas to Europe from Yamal LNG.

viii. Arctic Committee chair and Deputy Prime Minister Yuri Trutnev is also the Arctic Committee chair. In December 2019, he introduced Russia’s new Law on the Arctic that will stimulate five categories of hydrocarbon projects with major tax cuts. The law extends to 2035 and replaces a state Arctic policy document from 2008. Among them are offshore petroleum projects, production of LNG, the petrochemical industry (to include plastics) and mineral extraction. According to state estimates, proposed tax incentives will lead to as much as 15 trillion rubles (€216 billion) of revenue from new investments in the Russian Arctic over the next 15 years.

1. The decision was made following a meeting in Murmansk with representatives from government ministries, oil and gas companies to find ways to boost investments in the Arctic through resource extraction.

2. The government incentives include a low 5 percent tax on offshore oil production in the first 15 years of new fields, a 50 percent tax deduction on shelf exploration, a zero percent tax rate on the production of LNG and petrochemical products, for the first 12 years. Additionally, a zero percent production tax rate for new onshore oil projects in the Russian east Arctic. To support construction and product export, the new legislation allows regions

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15 Staalesen.

16 Staalesen.
to establish free trade zones that include tax-free import of equipment as well as tax-free export of processed products.\textsuperscript{17}

3. Companies that want to benefit from the incentives must register in the Arctic region and invest a minimum of 10 million rubles in new projects.\textsuperscript{18}

4. Russia’s gas companies are already responding with project plans. For example, Gazprom is planning to build a plant for producing polyethylene and polypropylene plastics on Yamal peninsula.\textsuperscript{19}

5. The petrochemical plant will be located in Bovenenkovo, Gazprom’s headquarters on Yamal. Once in operation, it is expected to produce 3 million tons of plastic per year. Construction costs are estimated at $15 billion.\textsuperscript{20}

ix. The oil and LNG market in Russia is controlled by state oil companies.\textsuperscript{21} The three companies (Rosneft, Novatek, Gazprom) have a protected monopoly supported by legal requirements for companies to have at least five years of experience operating in the Arctic. Foreign firms are invited to invest in projects and can enter into partnerships with the Russian corporations, but holdings cannot exceed 50\% as stated in the 2008 Foreign Investment on Strategic Sectors Legislation.\textsuperscript{22}

x. The relationship between the major Russian oil companies and the government is mutually reinforcing. In 2013, Rosneft and Novatek secured Putin’s support for LNG export reforms to open offshore natural gas fields.\textsuperscript{23}

\textsuperscript{17} Staalesen.
\textsuperscript{18} Staalesen.
\textsuperscript{19} Staalesen.
\textsuperscript{22} Devyatkin.
2. Current projects:

i. Oil and natural gas fields and infrastructure in Yamal Peninsula

Map source: *New Europe*

ii. There are 32 oil and gas fields in the Yamal Peninsula holding an estimated 26.5 trillion cubic meters of gas, 1.6 billion tons of gas condensate, and 300 million tons of oil. The 2017 production total from Yamal was 82.8 billion cubic meters of gas.

iii. The Novoportovskoye oil, gas and condensate field is located in the southeastern part of the Yamal Peninsula, 250 kilometers north of Nadym and 30 kilometers from the Ob Bay coast. The loading terminal is

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located 3.5 kilometers offshore. Novoportovskoye is part of the southern production zone which includes nine fields: Novoportovskoye (the license is held by the Gazprom Group), Nurminskoye, Malo-Yamalskoye, Rostovtsevskoye, Arkticheskoye, Sredne-Yamalskoye, Kambateyskoye, Neytinskoye, and Kamennomysskoye. The zone is considered a priority oil production asset with a maximum annual output of 7 million tons.26 Year-round shipments from the Arctic Gate (Vorota Arktiki) started in 2016 when President Putin gave the command via video call.27 Gazprom is the responsible developer. Nory Port Oil Gazprom started regular shipments with shuttle tankers in 2016.28 The Southern Production Zone is the major oil production zone with an annual output potential of 7 million tons.29

iv. Bovanenkovo (LNG) is the first major project on the Yamal Peninsula.30 Bovanenkovo serves as the headquarters and production hub for Gazprom. It has the largest extraction potential and includes three fields, Bovanenkovskoye, Kharasaveyskoye, and Kruzenshternskoye (all licenses are held by the Gazprom Group). The overall production potential is projected to exceed 2 trillion cubic meters of gas and 4 million tons of stabilized condensate per year.31 The gas fields reserves were recently revalued after a geological exploration by Gazprom that discovered 360 billion cubic meters of commercially viable gas in the Kruzenshternskoye field located mostly offshore in the Kara Sea.32 The two Bovanenkovo pipelines became operational in 2017. They travel southwest to a hub in Ukhta in western Russia, where it supplies various pipelines servicing Europe and Turkey.33 The map below shows the pipeline infrastructure.

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26 Gazprom, “Projects.”
28 Claes, Arild, and Rottem, 27.
29 Gazprom, “Projects.”
31 Gazprom, “Projects.”
33 Gazprom, “Projects.”
There will be a total of three Yamal LNG plants owned and operated by Novatek and its foreign stakeholders (more to follow on foreign partners).

1. The first is located on the southwest side of Yamal. In 2018, Novatek finished building Yamal LNG in the northeast of Yamal next to Sabetta Port. Construction finished a year ahead of schedule with added infrastructure support from the Russian government. The Yamal plant shipped 7.5 million tons of LNG to five continents in 2018, according to Novatek.\textsuperscript{34}

2. Novatek is building a terminal (Sabetta port) in the east to liquefy gas and export it via tanker on the NSR. The port has the potential to become a major logistics hub along the NSR given the new state plans and incentives. The project involved building a 355-mile railroad to transport workers, a community for workers, a deep-water port, an airport and a power plant. In December 2018, Total announced the early completion of a third train from Bovenenkovo to export LNG.\textsuperscript{35} The fourth train is currently behind schedule. Whereas the last two trains were operationalized ahead of schedule, the fourth train was scheduled

\textsuperscript{34} Bourne, 2019.

\textsuperscript{35} Bourne, 2019.
to be finish in December 2019 and is still not complete. The reason for the delay is the servicing pipelines for the fourth plant cannot sustain the low temperatures. The other three plants used foreign technology delivery, whereas the fourth train is Russian designed with the company NIPIGAZ.  

3. Yamal LNG 2 is located on Gydan Peninsula, in the YNAO district, 70 kms east from Yamal LNG 1 across Ob bay. 49% of the project is financed by international partners Total, China National Petroleum Corporation (CNPC), and China National Offshore Oil Corporation (CNOOC), and Japan Arctic LNG. The project will have a production capacity of 19.8 million tons of gas per year. It is expected to start shipping LNG cargo by 2023, and the second and third trains will start up by 2024 and 2026 respectively. The map below shows the locations of Yamal LNG 1 and 2.

Map source: The Maritime Executive

4. The third Yamal plant named Ob LNG, will be located near the port of Sabetta and LNG 1. Novatek announced the plan in May 2019. The Ob LNG site will comprise three liquefaction trains, each producing around 1.6 million tons of gas annually. The first train is expected to come online in 2022 and the other two in 2023. It will utilize gas reserves from the Verkhnetiuteyskoye and Zapadno-Seyakhinskoye fields. According to the General Director of Ob LNG Ltd (Novatek), Vladimir Khurtin, the Ob LNG project

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will be based solely on Russian investments and technologies, including Novatek’s “Arctic Cascade” liquefaction technology.\textsuperscript{38}

vi. The Tambey production zone comprises of four fields: Tambeyskoye, Malyginskoye (licenses are held by Gazprom), Yuzhno-Tambeyskoye, and Syadorskoye.\textsuperscript{39} JRC Yamal LNG is a new joint project tapping into Tambey field reserves. It is half owned by Novatek and half by foreign investors from China and France. The plant will service Asian and European markets. Shipments will be through Sabetta port.\textsuperscript{40}

vii. In 2017, BP and Rosneft struck a joint venture to extract gas in the Yamal-Nenets region.\textsuperscript{41} The two companies agreed to jointly develop the reserves of two license blocks in Kharampursky and Festivalny, which have a combined 880 billion cubic meters of natural gas.\textsuperscript{42}

viii. The Russian Federation is investing in multiple hydrocarbon transport systems. Land based pipelines include Nord Stream and now Nord Stream 2 which can supply Europe directly from Yamal. The NSR is another viable route that can also supply Asian clients in the summer and western clients throughout the year. The map below shows searoute transportation routes.

Map source: https://www.eco-r.eu/2017/08/first-tanker-for-yamal-lng-starts.html?m=1


\textsuperscript{39} Gazprom, “Projects.”


\textsuperscript{41} Devyatkin

3. Effect of Sanctions:

i. US and EU economic sanctions limited opportunities for foreign investment and drilling technology transfer since 2014 following the annexation of Crimea. The sanctions halted Russian unconventional energy development plans. Russia needs western technology specifically for shale hydraulic fracturing in order to exploit that resource. Russia also needs foreign technology and capital to drill offshore in the Arctic, and sanctions imposed have temporarily shelved such projects specifically, the Exxon Mobile and Rosneft partnership. Energy sector sanctions were designed to impact future oil exploration and production without effecting current production. Russian energy minister warns that a decline of up to 40% in oil production is expected over the next 15 years if no efficient technological solutions are developed and applied.

ii. Just before the sanctions took effect, Exxon Mobil and Rosneft drilled the world’s northernmost well in the Kara Sea finding an estimated 700 million barrels. Since the partnership was suspended they have capped the well.

iii. Eastern investment in technologies cannot replace western because Chinese and other eastern companies do not have the necessary experience and competencies for remote, deep water drilling and are not willing to take the risk.

iv. EU energy sector sanctions came with the caveat that previous agreements made before 12 September 2014 would not be affected. For that reason, French Total still owns a 20% stake in Yamal LNG. Additionally, British Total and Norwegian Equinor (previously Statoil) continue to partner with Rosneft for Arctic projects. BP and Statoil have joint ventures to explore unconventional gas deposits not directly specified in the sanctions. Sanctions targeted exclusively shale deposits, while in Russia there are also other types of unconventional mineral resources. Limestone fracking likewise requires western technologies and are not explicitly included in EU and US sanctions.

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43 Sidortsov, 132.
44 Bourne, 2016.
46 Bourne, 2016.
47 Claes, Moe and Rottem, 31.
49 Slav, 2017.
v. Equinor amended the wording in its contract after sanctions were imposed in 2014. Sanctions specified shale drilling and did not mention limestone. The company amended all the releases on its website to replace “shale” with “limestone” to continue its partnership with Rosneft without contradicting international sanctions in place.\(^{50}\)

vi. Japan also participated in sanctions against Russia, although not to the same extent as the US. Tokyo refrained from imposing sanctions on the Russian energy sector. Like the EU, Japan avoided escalating sanctions against Russia beyond “the Ukraine package.”\(^{51}\)

vii. Following the meeting between Japanese Prime Minister Shinzo Abe and Russian president Vladimir Putin, on the margin of the Group of Twenty (G20) summit in Osaka, Japan 28-29 June Russian and Japanese companies Mitsui & Co. and Japan Oil, Gas and Metals National Corporation (JOGMEC) agreed to invest $3 billion in the Arctic 2 LNG Project by Novatek of Russia and 2 million metric tons per year (mtpa) of LNG supply.\(^{52}\)

viii. The Japanese companies join Total of France, China’s CNPC, and CNOOC, each of the three having a 10 percent stake.\(^{53}\)

ix. Novatek’s $20 billion LNG project is expected to come online in 2022-2023 with a capacity of 19.8 mtpa if Novatek reaches the final investment decision, which is expected by the end of this year.\(^{54}\)


\(^{53}\) Nakano.

\(^{54}\) Nakano.
4. Foreign investors:
   i. The Russian government amended the tax code to encourage foreign investment. Russia has a zero percent mineral extraction tax for Arctic offshore fields in development and low rates for undiscovered fields, export-duty exemptions for some offshore assets and lower tax rates on corporate assets on the Arctic shelf as incentives.55
   ii. Yamal LNG foreign investors: Total (France) 20%, Chinese National Petroleum Company (CNPC) 20%, British Petroleum, Road Fund (China) 10%.
   iii. BP is a 20% shareholder of Rosneft. BP and Rosneft’s joint venture will explore unconventional gas deposits in Yamal.56
   iv. Norway’s Statoil is working in cooperation with Rosneft to explore unconventional gas deposits.57
   v. Total will again partner with Russian company Novatek for LNG 2. The Arctic LNG 2 project includes three LNG trains transporting 6.6 million tons each per year. Final investment decisions are expected during the second half of 2019, with plans to start up the first liquefaction train in 2023.58
   vi. Japan invested $400 million in Yamal LNG with Novatek. There is also the potential for an investment of $170 million in Transneft.59
   vii. In 2016, China became Russia’s biggest investor.60 A pipeline will connect to the Power of Siberia Pipeline to transport an initial 5 bcm per year to China and increasing to 38 bcm over the thirty-year contract.61 Gazprom is negotiating with Chinese companies to develop the Chona project in eastern Siberia. For the technical aspect, Russia signed an agreement with China National Petroleum Corporation (CNPC) for techniques to improve oil recovery.62
   viii. India is another noteworthy investor in Russian energy owning half of Vankor, an important production asset for Rosneft.63

55 Sidortsov, 127.
56 Slav.
57 Slav.
59 Timofeev.
61 Coote, 2018, 4.
63 Astrasheuskaya, 2.
5. Yamal gas and oil clients:
   i. In 2014, India made a deal with Russia for 10 million tons of oil per year starting from 2015, and 2.5 million tons/year of natural gas from 2017.\textsuperscript{64}
   
   ii. There is formal cooperation in place since 2010 between Russia and the CNPC for use of the NSR for gas transport. In 2014, the plan broadened to include new icebreakers to supply Russian gas from Yamal to Asian customers. Six vessels are specifically for LNG shipping to China.\textsuperscript{65}
   
   iii. Poland is dependent on Russian gas. It has a long-term contract in place since 1996 for natural gas and a pipeline to service supply. In October 2010, Russia and Poland renegotiated the third contact this time with the European Commission involved, which weighed in on the issue of third-party access to the jointly owned pipeline.\textsuperscript{66} Poland is committed to purchase a set amount of gas based on previous estimates regardless of consumption. Poland is not authorized to resell or return excess LNG.\textsuperscript{67} Recently, in November 2019, Poland’s gas firm announced to Gazprom that it would not be renewing its contract after 2022. Poland instead plans to get its natural gas supply from gas deposits in the North Sea after the current contract expires.\textsuperscript{68}
   
   iv. In 2018, Gazprom sent 200 billion cubic meters of gas to Europe and Turkey, while its gas market share in the region rose to more than a third. The expectation is that European production will continue to decrease and Russian gas production will increase to fill the void.\textsuperscript{69}


\textsuperscript{65} P. Whitney Lackenbauer, Adam Lajeunesse, James Manicom, and Frédéric Lasserre, *China’s Arctic Ambitions and What They Mean for Canada*, University of Calgary Press: Calgary, 2018.


\textsuperscript{67} Zeniewski.


6. Climate Change and Environmental Impact

i. The Arctic experiences climate change at a more than twice the rate of global average temperatures.\textsuperscript{70} In the Yamal-Nenets District, air temperatures warmed between 1 and 2 degrees Celsius from 1980 to 2009.\textsuperscript{71} Another transformation is the terrain. The foliage ground cover has changed from shrub to a graminoid (tall grasses) majority.\textsuperscript{72}

ii. Arctic infrastructure is unstable because of melting permafrost. The melting causes gases to release and holes to open up unexpectedly. The hydrocarbon plants are built on pilings over permafrost. Pipelines and ice roads that currently support thousand-ton oil rigs, are all at risk as permafrost melts and the ground becomes more instable.\textsuperscript{73}

iii. Methane gas released from melting permafrost has the potential to erupt into craters. One of the largest formations is within 4 kilometers of the Bovanenkovo field with a diameter of over 60 meters and a depth of about 200 meters. Researchers concluded after an expedition in 2017 that the quick changes in the formations were triggered by the abnormally warm summer in 2016.\textsuperscript{74}

iv. Shuttle tankers used for the Prirazlomnaya oil site greatly increase the risk of oil spills. According to local environmental groups, Russian companies spilt more than three and a half million barrels of oil on the tundra.\textsuperscript{75} Environmental conservation NGOs are encouraging Russia’s shift to natural gas production over oil because spills result in less environmental damage.

v. Constructing the Yamal LNG plant resulted in removing 70 million tons of ground for dredging a channel to Sabetta port between 2014 and 2017, which had an impact on the marine wildlife.\textsuperscript{76} The loss of fish populations is also due to plant construction that has either blocked fish migration or pollution that degraded freshwater sources.\textsuperscript{77} According to a

\textsuperscript{70} NOAA, Osborne E., J. Richter-Menge, and M. Jeffries,”Executive Summary [in NOAA Arctic Report Card 2018], p.2-3.

\textsuperscript{71} Forbes et al.

\textsuperscript{72} Forbes et al.

\textsuperscript{73} Bourne, 2016.


\textsuperscript{75} Bourne, 2019.


\textsuperscript{77} Forbes et al.
local YNAO article, the laying of the pipeline on the bottom of the Gulf of Ob threatens to destroy the fish stocks in the Yamal reservoir endangering the communities that rely on fishing. The pipeline is over sixty kilometers and involves a fifty-meter passage channel on both sides of the pipeline.  

vi. Experts brought by Gazprom to a hearing with the local population informed them that the damage occurs when the water is disturbed, so at the onset of underwater construction. The fish stocks would eventually replenish but locals fear they will lose their income and food source for a season. Indigenous leaders considered their objections ignored and appealed to the UN, writing an appeal to UN Secretary-General Antonio Guterres.  

vii. Arctic conditions make oil spills more likely. The U.S. Department of the Interior report predicted a 75% chance for a major oil spill which was a deterrent to drilling in Alaska. Spills are also more difficult to clean up. Only 7 percent of oil spilled was recovered after the Exxon Valdez oil spill in the Prince William Sound off Alaska’s coast in 1989.  

viii. The Figure shows what to expect following an Arctic oil spill.  

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76 Stanislav Gurbin, “Will foreign countries help us!? Natives of Yamal Tundra accuse oil companies of genocide,” *YamalPRO News Service*, 19 February 2019, translated from Russian to English by Alexander Gurman at the GCMC.  
79 Gurbin.  
81 Bourne, 2016.
7. **Russian environmental regulatory framework for the Arctic**
   
i. Russian environmental regulations cover the general Arctic environment, land use planning, waste management, aquatic habitats, air quality, wildlife, emergency/gas spill response, industrial safety and health.

   ii. The “Yamal LNG: Environmental and Social Impact Assessment” includes environmental risk assessments and planned protections by the gas companies. The report includes maps of Yamal LNG processing and disposal sites, waterway, map of communities and migratory herding routes, summary table from consultations with impacted communities, coastal vulnerability map (2014).

   iii. In addition, there is the Yamal-Nenets Autonomous Okrug (YNAO) Regional Legislation.

   iv. International Conventions and Regulations that Russia agreed to demand: an environmental impact assessment covering biodiversity, air quality and climate change, and waste management. Social impact requirements include stakeholder engagement, cultural heritage, community and workforce inclusion, human rights and shipping regulations.

   v. Although the legal framework is in place to mitigate environmental damage in accordance with international protocols formal institutions for implementation are weak due to the minimal enforcement of existing laws.\(^{82}\)

8. **Social Impact**

   i. Industrial development in Yamal-Nenets disrupts traditional reindeer herd migratory routes. Nomadic Nenets reindeer herders have been impacted physically and socially by the Bovanenkovo gas field development since the 1980s,\(^{83}\) and new projects continue to be built on the peninsula perpetuating the problem.

   ii. Reindeer herding is organized into large enterprises termed brigades. Formerly state run, each reindeer herding enterprise is composed of several brigades according to the number of the herds. Herders migrate with their families all year around.\(^{84}\)

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\(^{82}\) Forbes et al.

\(^{83}\) Degteva and Nellemann, 1.

\(^{84}\) Degteva and Nellemann, 2.
iii. According to official statistics from 2010, the Yamal peninsula has approximately 270,000 reindeer and about 1,000 fully nomadic households, comprising of about 5,000 people.  

iv. In the seemingly flat landscape of the Yamal peninsula, even slight differences in terrain can greatly influence drainage, vegetation and snow in winter, both herders and industrial developers look for dryer slightly raised land. Well-drained ground is suitable for construction purposes and is also important to the herders as a travel route and for the availability of dry camp sites. The primary problem for herders from the hydrocarbon plants in Yamal is the loss of territory necessary for grazing and camping.

v. Additional concerns are the decrease of the fish population which the Nenets rely on for food in the summer months, the increase in feral dogs left behind by migrant workers (which attack reindeer), and pollution from petrochemicals and discarded trash from industrial sites.

vi. The map below shows 21 migratory herding routes for 36 brigades and the location of industrial infrastructure.

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85 Degteva and Nellemann, 2.
86 Degteva and Nellemann, 6.
87 Forbes et al.
88 Degteva and Nellemann, 6.
vii. Narrow corridors or ‘bottlenecks’ can be up to 20 kms long and make the herders particularly sensitive to infrastructure blocking elevated terrain in the otherwise flat wet tundra.89

viii. Around the Bovanenkovo industrial complex the two northernmost migration routes were physically blocked. On the actual Bovanenkovo gas field, several critical passages on elevated land through wet marshes were blocked by pipelines, roads and buildings placed directly on the only possible passages for migration across stretches as long as 21 km. Altogether, 18 camping sites were lost and a Nenets sacred place had been physically made into a quarry pit. 90

ix. The map below shows where there is interference of migratory routes and Nenets sites by industrial infrastructure.

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89 Degteva and Nellemann, 8.
90 Degteva and Nellemann, 9.
9. Social concerns for migratory workers
i. A regional level concern for YNAO is the lack of sustainability. Although YNAO is relatively wealthy due to the oil and gas industry, it is also the most sensitive to price fluctuations. Gazprom suffered a financial setback (likely due to the effects of sanctions on projects) production fell by nine percent and Gazprom has still not recovered. Gazprom is losing its hiring incentive and can no longer offer high wages, resulting in emigration of workers from the YNAO.91

ii. A second stress on workers is the still ongoing transition of the economy’s organization. There are still elements of Soviet social policies such as subsidizing, co-financing, housing and public utilities. Now, they are slowly reorganizing and the transition causes some discomfort. The former Soviet influences also have a social element, there are no independent public organizations, neither academic organizations nor free press. 92

iii. Migrant workers who work at the industrial sites make up the majority of the population. Migrants to YNAO are first and second generation implying weak social ties within the population. A lot of income is sent out of the YNAO as remittances.93

iv. There is very little political turnover in the YNAO. Mr. Neelov’s administration was compared to a Soviet party management asset. Komsomol members and former oil and gas corporation managers would come and go to work in the administration in a ‘revolving door’ scenario.94

10. Russia’s Energy Diplomacy
i. There is a narrative that predicts Russia will exacerbate political tensions by using energy as leverage. Russia’s historical use of natural gas policies to influence its neighbors and the close ties between the Kremlin and the Russian energy sector.95 The disruption of gas to Ukraine during times of political tension provide some evidence for the claims.


92 Zubarevich and Kynev.


94 Zubarevich and Kynev.

95 Devyatkin, 2018.
ii. Poland’s gas contract with Russia presents a security dilemma. Poland is dependent on Russia for energy, yet they have a contract guaranteeing its supply. The arrangement is a source of insecurity for Polish politicians.\textsuperscript{96}

iii. Using Nord Stream to supply the EU is another source of controversy. Although the EU is diversifying energy supply, Russian gas is still a necessity as domestic production is decreasing. Nord Stream 2 could further politicize energy and have a greater impact on Western Europe. There is political opposition from Poland, the Baltic States, and the European Commission.\textsuperscript{97}

11. Conclusions

i. Russia is the strongest Arctic state (by way of capabilities), with the most at stake in the region economically. There are theories that Russia’s domestic focus on the Arctic is to resurrect its image and posture as a great power.

ii. Yamal is where Russia is investing in Arctic hydrocarbons for economic growth, betting on oil and gas remaining the fuel of industry and commodity of dependence. The low market price of oil, the high cost for extraction, and existing sanctions, make natural gas the preferred alternative. Additionally, European demand for gas has been increasing since 2016.

iii. In Yamal, Russia has the world’s largest gas reserve, and while it is a finite resource, Russia continues economic development plans using hydrocarbons by also exploiting unconventional methods and tapping into offshore reserves.

iv. Yamal projects are also making use of the NSR which can open up new potential for commercial shipping to bring in revenue. Destination shipping allows a supplemental supply route to Asian and European clients, while additional pipelines are also adding to transportation infrastructure.

v. Russian economic ventures in Yamal and the region offer an opportunity for Asian partners and China primarily to increase their presence and expand business opportunities for energy and eventually international shipping.

vi. The strategic importance of Yamal is why Russia builds security infrastructure to support growing activity in the region for SAR and crisis response. It also enhances its defense posture and military capabilities perceived by some to be counter to its otherwise peaceful and cooperative approach in the Arctic.

\textsuperscript{96} Zeniewski, 2011.

\textsuperscript{97} Koranyi, 2018