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ORIGINAL ARTICLE

The energy policy of the European Union and China toward the Arctic in view of falling oil and gas prices, climate change and low-carbon economies

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Abstract – Energy has become one of the most important fields of international policy since many countries are now aware that traditional (fossil) energy sources are finite. The European Union and China among the others try to ensure their sustainable energy supply and energy security. Both of them are net importers, their growing economy based on external energy sources. The Middle – East Africa and Eurasia have been the energy supplier regions in the world, but today the taut situation in those regions and the fierce competition between the EU and China force them to find new energy fields. The Arctic region is rich in hydrocarbon and other energy sources that have not been exploited yet. That is why the EU and China pay more attention to this region. This article attempts to reveal the different energy policies of the EU and China towards the substantial fossil energy resources of the Arctic taking into consideration the increasing need for renewable energy sources and the growing demand to phase out fossil fuels, particularly coal. First, a brief overview of the energy sources and institutions of the Arctic region illuminates the major role of the Arctic Council, then the European Union's and China's energy policy and their current energy situation are analyzed. The next paragraphs reveal the recent steps, future targets, and achievements of the European and Chinese energy policy towards the Arctic. These paragraphs describe the Neo-Liberal energy policy of the European Community and the Realist or Neo-Liberal ways of Chinese energy strategy, unfortunately, based mainly on fossil fuels. However, due to increasing political pressure because of climate change and environmental pollution, the development of renewable energy sources is imperative, often integrated into one "more sustainable" system with the traditional fossil energy sources. The central question is: Whose policy will win the battle for the Arctic region's energy sources? It means whose policy will be more effective to obtain energy sources, both fossil and renewable ones. Finally, it sums up and compares the differences between the two international actors' energy policy regarding their strategies for explorations of fossil fuels and renewables and highlights the different ways and tools of their energy diplomacy.

Keywords – energy sources, energy policy, Arctic, coal, oil, natural gas, renewable energy sources, sustainability

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INTRODUCTION

Energy has become one of the most important fields of international policy since many countries have become aware that energy sources are limited. We can classify the international actors into different groups by their energy reserves. The actor which has relevant energy sources can be called the "supplier" and the actor without any or not enough energy reserves can be called a "buyer." "Suppliers" realized their energy advantages and started using them as the new tools of international policy. They know that all countries need energy but only a few have it, so exporting countries have economic leverage according to their resources. "Buyers" are more and more dependent on "suppliers," as the value of energy on the international market increases. Considering the aforementioned principle, for this study the European Union and China have been selected as two main actors, still competing for the energy sources of the Arctic region, even if phasing out fossil energy sources has become an increasingly important strategic goal for many nations due to the realization of the adverse effects of climate change and the need to mitigate its consequences. The exploration of the natural resources of the Arctic has been going on since the beginning of the 20th century. Coal mining started in 1906 in Longyearbyen, Svalbard, Norway (Norum, 2016). Extraction of rich mineral resources such as gold, nickel, diamonds, coal, oil, and gas has been developing in Russia (then the Soviet Union), Canada, Alaska, Scandinavia, and Greenland for decades. The Soviet Union pioneered the Arctic oil and gas exploration already in the 1930s. In the US, after success in Prudhoe Bay, the first offshore exploratory well was drilled in 1976. Exploration drilling off Alaska peaked in 1984 - 1985, but with the oil price crash and high operation costs, no substantial production followed.

According to the definition above, both the European Union and China are "buyers" (Giber, 2010). How do the above mentioned two "buyers" come to the Arctic region? The Arctic region has several mineral sources such as oil, natural gas, coal, gold, silver, diamond and many other mineral deposits (Xin & Andrews-Speed, 2006). These sources have not been exploited yet. However, the Arctic region seems to be the next energy supplier region in the world. The present energy provider regions are the Middle- East, Africa and Eurasia. The European Union and China import energy sources from all the three regions. According to the U.S. Energy Information Administration, the Arctic region holds 22 percent of the world's undiscovered conventional oil and natural gas resources. This information can be attractive for both the European Union and China.

1.The Arctic Region

The territory of the Arctic can be divided into three areas. About one-third of the Arctic is occupied by land and the other one-third of the Arctic consists of offshore continental shelves located in less than 500 meters in the Arctic Ocean. The remaining one-third of the Arctic is in deeper than 500 meters in the Arctic Ocean (Fig. 1). The Arctic Ocean is the smallest of Earth's five oceans with a surface of 14.056 million km^2 including a deep-sea around the North Pole and the Baffin Bay, Barents Sea, Beaufort Sea, Chukchi Sea, East Siberian Sea, Greenland Sea, Hudson Bay, Hudson Strait, Kara Sea and Laptev Sea (Fig. 2).

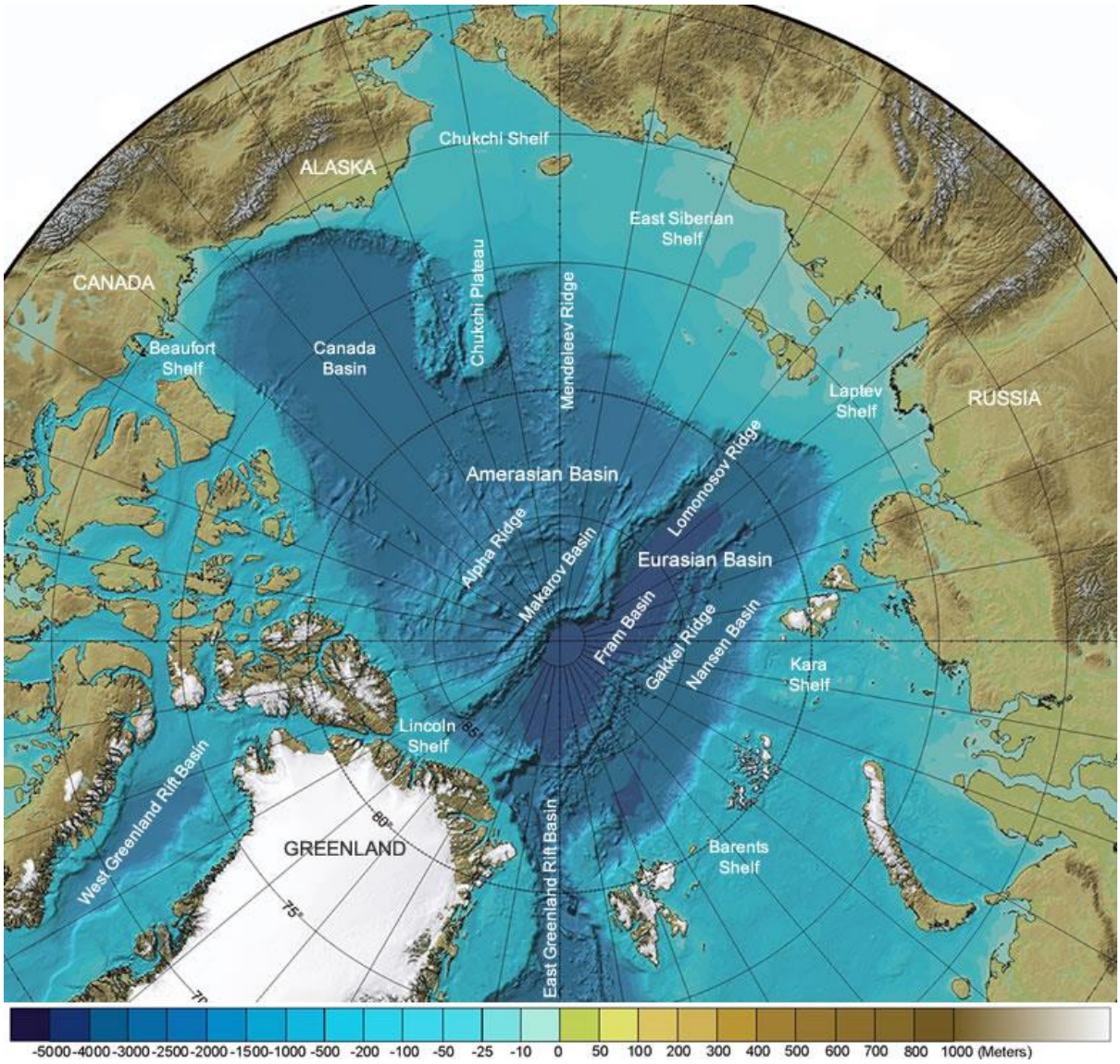

Figure 1. Arctic Ocean Seafloor Features Map. Major Basins, Ridges, Shelves and Bathymetry. Source: https://geology.com/Arcticles/arctic-ocean-features/

It is connected to the Pacific Ocean through the Bering Strait and to the Atlantic Ocean through the Labrador Sea and the Greenland Sea (Fig. 2).

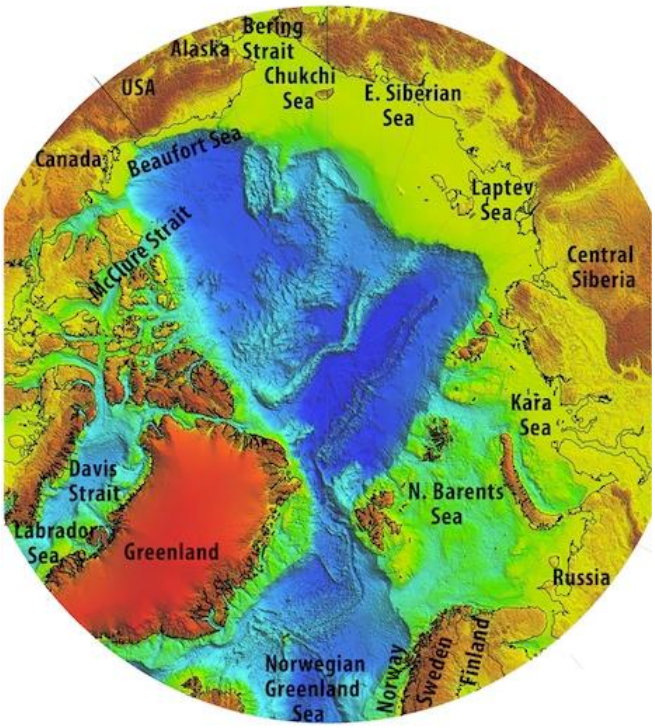

Figure 2. The peripherical parts (shelf-seas) and connections to the Atlantic and Pacific oceans of the Arctic Ocean. Source: https://www.geoexpro.com/Arcticles/2012/01/how-can-we-explore-the-russian-arctic-shelf

The quite poorly explored area of sedimentary basins and continental shelves above the Arctic Circle hold enormous oil and natural gas reserves, which are estimated to contain about 13 percent of the world's undiscovered conventional oil resources and about 30 percent of its undiscovered conventional natural gas resources. About 1/3 of the Arctic's area is land, which probably contains approximately 16% of the Arctic's remaining undiscovered oil and gas resource. The Arctic continental shelves constitute the other 1/3 of the arctic area with vast resources, that remain virtually unexplored. The remaining 1/3 of the Arctic is covered by over 500 meters deep ocean, and this area is unexplored.

The fossil energy sources of the Arctic region such as oil and natural gas are not equally shared among Eurasia and the North American continent. Eurasia holds about 63 percent of the total Arctic resources, while North America owns about 36 percent. The Eurasian resources are predominantly natural gas and natural gas liquids (NGL), which account for about 88 percent of the total Eurasian resource base. The North American side of the Arctic is more oil-prone, estimated to have about 65 percent of the undiscovered Arctic oil, but only 26 percent of the undiscovered Arctic natural gas. The exploration of energy sources is much harder in the Arctic than in the other energy supplier regions in the world. The extreme weather conditions of the Arctic make drilling and exploration more expensive. Harsh winters require specially designed equipment; icepacks can harm offshore facilities, and make the shipments of people, materials, equipment or oil more difficult. In addition, limited transportation access and long supply lines increase transportation costs (Budzik, P. 2009). In spite of the heavy conditions, because of the increasing value of energy, the Arctic will be in the focus of the EU and China in the future as long as their energy hunger is growing. The competition between them in Africa, the taut situation in the Middle-East and Eurasia results in the increasing price of oil, natural gas and coal. The Arctic could be a new energy supplier of fossil fuels region without such a fierce competition.

The difficulties of China and the European Union in gaining the Arctic energy sources come from their geographical location. The EU and China are not in the neighborhood of the Arctic Region, that is why they have no voice in the highest forum of the Arctic. The Arctic Council was established by the eight arctic countries with sovereignty over the territory of the Arctic. Namely, they are Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States (US Dept. of States, 2010). The establishing document of the Arctic Council, the Ottawa Declaration created for cooperation between the Arctic countries was signed in 1996. The above mentioned eight countries are the member states of the council. The Arctic Council is the only high-level intergovernmental forum that involves all the eight Arctic states. Besides the member states, the representatives of the Arctic indigenous people, communities and organizations gained Permanent Participant status also take part in all meetings and activities of the Arctic Council.

The biennial Arctic Council Ministerial Meeting is the main event where the Council sets its agenda and at the end of the meeting pass the chairmanship of the council from one permanent member to the other one. The Sixth Ministerial Meeting of the Arctic Council was taken place in Tromsø, Norway in 2009. The member states emphasized the necessity of technology and regulations in order to reduce the impact of oil and gas activities. *"They recognized that environmentally sound oil and gas activities may contribute to sustainable development of the Arctic region*[1]". Furthermore, they approved the findings and recommendations of the Assessment of Oil and Gas Activities in the Arctic: Effects and Potential Effects. The document was published under the Arctic Monitoring and Assessment Programme (AMAP).

The Arctic Council's decision about holding a meeting on the Deputy Minister level, with a representative of Permanent participants in order to discuss emerging issues between the Ministerial meetings shows their strengthening role. At the end of the meeting, Norway passed the chairmanship to Denmark (Tromsø Declaration, 2009). In addition to the member states and the permanent participants, there is a category of Permanent Observer which is open to Non-Arctic countries. The permanent observer states of the Arctic

[1] Tromsø Declaration On the occasion of the Sixth Ministerial Meeting of The Arctic Council, Tromso, Norway 29. April, 2009 p.6.

Council are the United Kingdom, France, the Netherlands, Poland and Spain (Figure 3.).

The European Union, China, Italy, and South Korea had applied for the permanent observer position in the Arctic Council but were rejected. The reasons for it can be the conflict on seal hunting between some of the Arctic states and the EU, or the fear of the economically developed China (Phillips, 2010). The EU and China managed to obtain only the ad-hoc observer status along with Italy and South Korea in the Arctic Council. Thus, their attendance must be approved by member states at each meeting (Arctic Council, 1998).

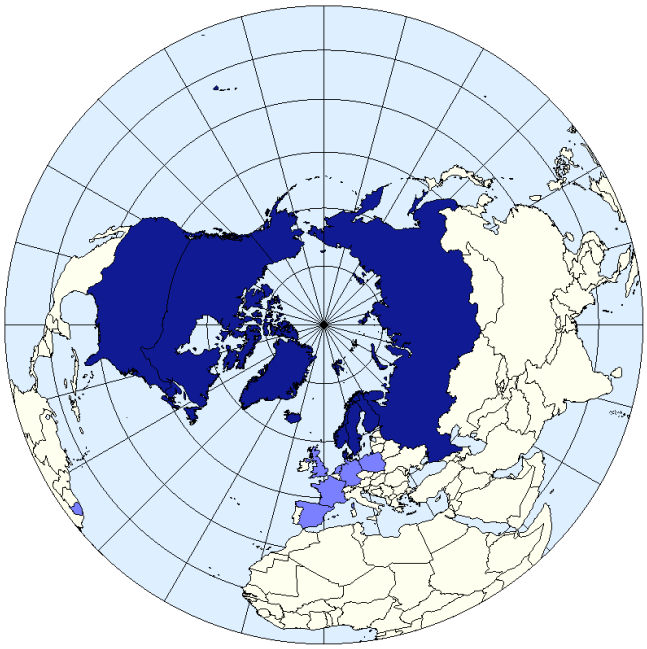

Figure 3. Arctic Council Map. Permanent members in dark blue; observers in light blue. Source: https://commons.wikimedia.org/wiki/File:Arctic_Council_map.png

The Arctic Council accepted the Arctic Offshore Oil and Gas Guidelines on 29 April 2009. "These Guidelines are intended to be used to the Arctic nations for offshore oil and gas activities during planning, exploration, development, production and decommissioning. The target group for the Guidelines is thus primarily the authorities, but the Guidelines may also be of help to the industry when planning for oil and gas activities and to the public in understanding environmental concerns and practices of Arctic offshore oil and gas activities." (Arctic Council, 2009). This document provides a comprehensive regulatory framework including several approaches to Arctic offshore oil and gas activities. The Guidelines offer a detailed description of what to do in case of emergencies, safety, and environmental management, environmental monitoring and operating practices. The document advises using the best available and the safest technologies for offshore oil and gas activities in order to minimize their impacts on the environment. Annex E provides an overview of offshore activities and potential environmental effects (Arctic Council, 2009). Therefore, the council clearly declared, that the International Maritime Organisation will have to develop new guidelines for ships operating in Arctic waters, as well as mandatory regulations on safety and environmental protection. Furthermore, guidelines on oil and gas exploration and a task force on how to reduce non-CO_2 drivers of climate change such as methane which, due to its high GWP[2], might play a key role in Arctic climate change, were also established. Generally, the Guidelines try to find the golden mean between the protection of the unique Arctic environment and the promotion of exploration of energy sources in the area. The elaboration of these Guidelines shows the growing attention of the Arctic nations to oil and gas activities. It seems to recognize that explorations can give economically sustainable development for the Arctic communities and indigenous people, but concerns were raised regarding the environmental risks of exploration and the long-term viability of fossil fuel production due to climate change. The most developed energy fields are situated in Russia because these fields were developed mostly under the Soviet command-and-control economy. Probably, they were not economically profitable at the time. The North American fields are less developed compared to Russia's because the development was governed by market-based economics there (Budzik, 2009).

Figure 4. shows how the oil and gas activities of the Arctic region have become more and more intensive from the pre-1960's until 2004. One of the main conditions which affect the production and activity in the Arctic is the infrastructure. The high costs of pipelines and transportation are tremendous for investors since lower energy prices cannot cover the expenses of drilling costs, infrastructures and transportation costs. The continuously rising prices of energy sources will make the explorations in the Arctic more intensive. Even if the relevant expenditures, for example, Alaska is going to build a gas pipeline in the near future, Canada is planning to build a pipeline through the Mackenzie Delta and Russia has carried out the Shtokman natural gas project (Budzik, 2009). Furthermore, Russia has planned to deliver oil from Arctic Russia to Europe since the beginning of the 2000s. However, even if exploration, development of production, and transport facilities for oil, gas, and mineral resources is increasing throughout the circumpolar region, receding sea ice cover and permafrost thaw will influence accessibility to mineral and energy resources both on land and in the Continental Shelf in the future (Turunen, 2019).

[2] GWP = Global Warming Potential - is a measure of how much heat a greenhouse gas traps in the atmosphere up to a specific time horizon, relative to carbon dioxide.

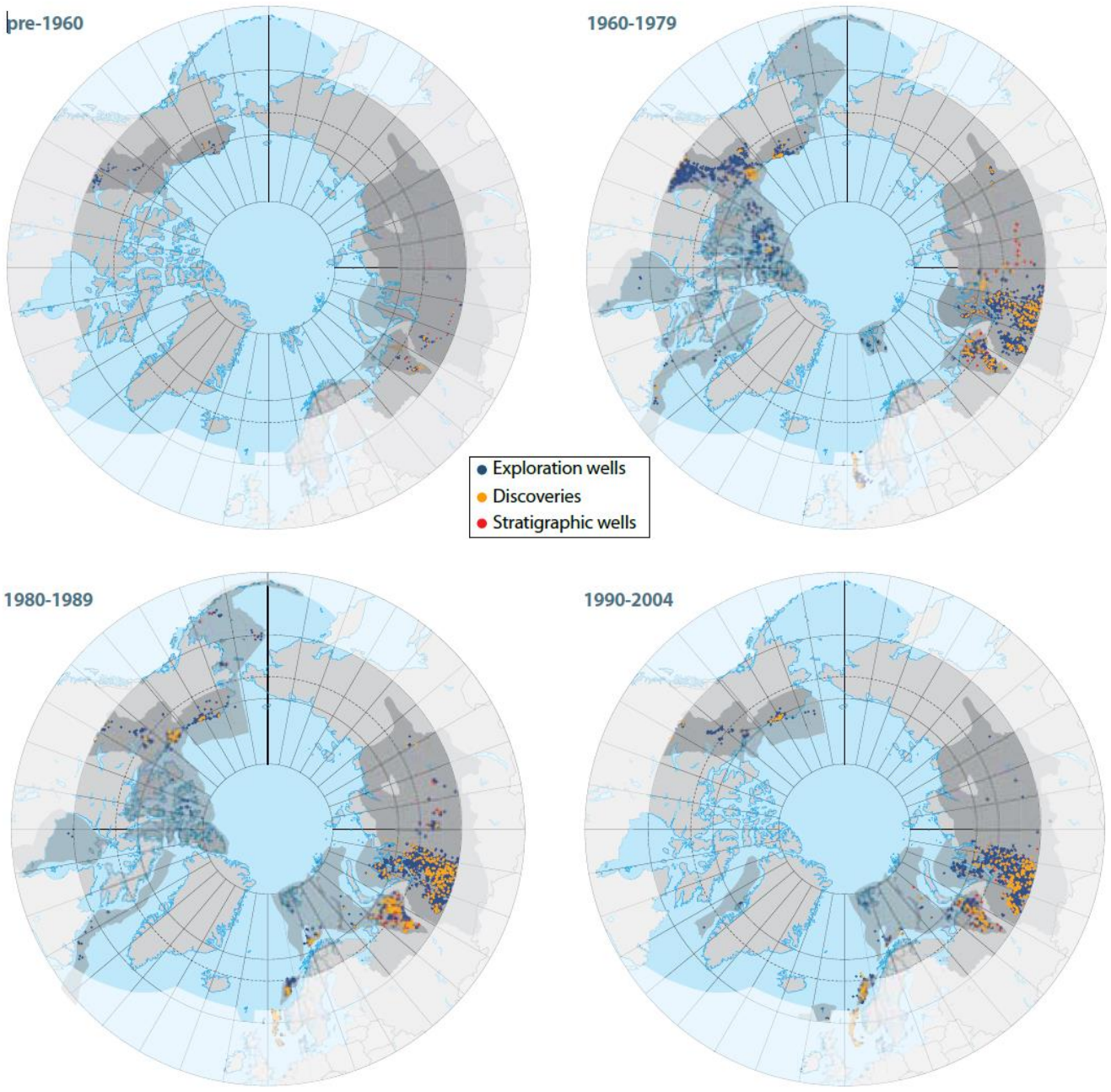

Figure 4. Expansion of exploration drilling activity in arctic oil and gas provinces. Location of drilling during different periods from the pre – 1960 to 2004. Source: Arctic Monitoring and Assessment Programme (AMAP), Arctic Oil and Gas 2007, Oslo, Norway, p. 8.

The main regions in the Arctic with vast oil and natural gas exploitation are the Beaufort Sea (North Slope, Alaska and Mackenzie Delta, Canada), and the northwest part of the Russian Arctic (the Barents Sea and West-Siberia). Oil and gas are also found in the Canadian Arctic Archipelago (Nunavut). These three regions are also targeted for future exploitation. According to recent estimates from the US Geological Survey (Turunen, 2019), the area north of the Arctic Circle is expected to store recoverable reserves of 90 billion barrels of oil, 473 trillion cubic meters of natural gas, and 44 billion barrels of natural gas liquids (blue/purple areas on the map, Fig. 5). These resources account for 22% of undiscovered,

technically recoverable resources in the world. About 84% of the estimated resources are expected to occur offshore, which makes exploitation substantially more expensive. The exploitation and development of the Arctic resources are dependent on the global supply and demand, global market prices, political agreements, and technical capacities and environmental challenges, which lead to higher extraction costs.

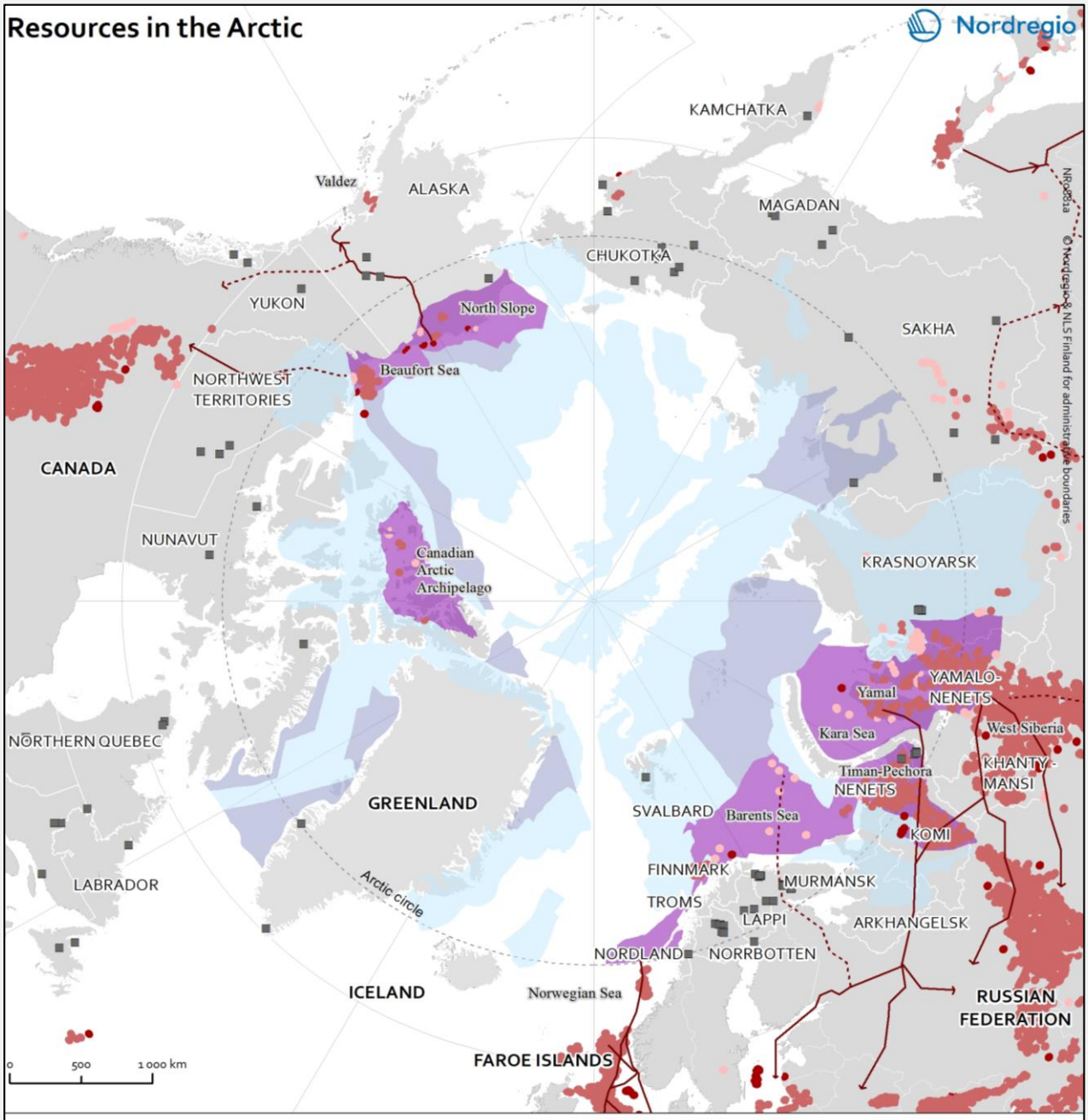

Figure 5. Main oil and gas resources in the Arctic. Source: https://www.nordregio.org/maps/resources-in-the-arctic-2019/

2. The energy policy of the European Union

The direction of the external energy and security policy of the European Union has changed drastically in the last 14 years. One of the reasons for this was the Russia-Ukraine crisis in January 2006 (Sapir, 2007). This crisis showed that the EU has to pay more attention to the security of its energy supply and be well prepared for unexpected situations. For a long time, Russia has been the primary energy provider for large parts of the EU. When, in 2006, it cut off the gas supply for political reasons, the dangers of such heavy dependency on one provider became clear (Mártoni & Kacsó, 2004). The EU revealed the degree of its vulnerability because of its significant energy demand. It became clear that a new energy security strategy would be necessary for the prosperity of the EU. The Green Paper was published in 2006 to give directions and suggestions for the member states and help them to form the Common Energy Policy. At the same time, it opened up new challenges. The Green Paper brought up the question of whether the EU, in fact, needed the Common European Strategy for Energy or not.

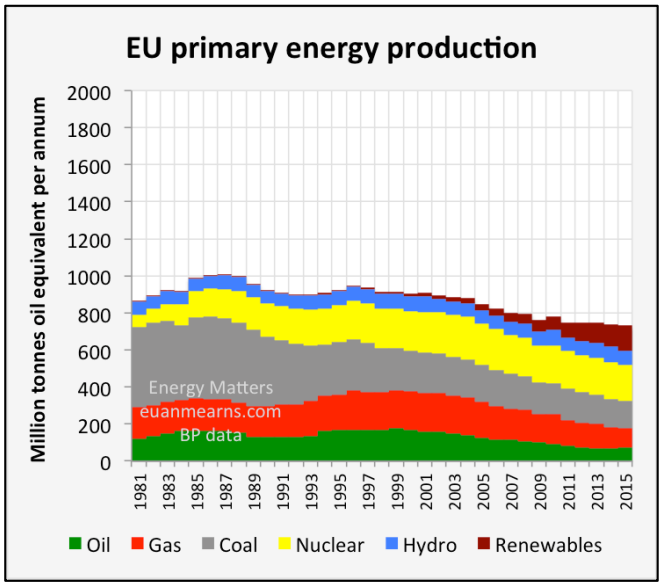

Figure 6. The EU primary energy production shows the changes in the mix of oil, gas, solid fuels, nuclear, hydro and other renewables between 1981 and 2015. Source: http://euanmearns.com/

The six issues of the 2006 Green Paper were concerned with competitiveness and internal energy markets, diversification of energy mix, solidarity, sustainable development, innovation and technology, and external policy. I would like to emphasize the importance of external policy. The fundamental principles of external energy strategy stated: "A coherent external energy policy is essential to deliver sustainable, competitive and secure energy (European Commission, 2006). The EU will not be able to speak on one voice without such a policy. In the external energy paragraph, five sub-points described the possible methods for implementing external energy policy. The first point emphasized the importance of a clear policy on securing and diversifying energy supplies. The second point, one of particular relevance in this project, described the importance of energy partnership with producers, transit countries and other international actors. This point declared that "energy issues are growing features of the EU's political dialogues with other major energy consumers (such as the US, China, and India), including through multilateral cooperation, like the G8 (European Commission, 2006). The third point in the paragraph of the Green Paper in question was the imperative effective reaction to external crisis situations. The fourth point outlined the integration of energy with other policies in foreign policy. The fifth point was a declaration about how energy can promote development. Finally, Article 194 of the Treaty of Lisbon created the common energy policy which came into force on 1 December 2009. Looking at the long period without a common energy policy, it is evident that huge economic power cannot be used or grown effectively without forming a common voice. The treaty mentioned four points defining the aims of the Common Energy Policy (EUR-Lex 2008). The first point is to ensure the functionality of the energy market. The second aim is to ensure the security of energy supply in the European Union. The third point includes the necessity of energy efficiency and energy saving. Furthermore, the development of renewable energy sources is also included. The fourth point is the promotion of the interconnections of energy networks. Additionally, it does not affect a Member States' right to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply (EUR-Lex, 2008). Interesting, that the EU's primary energy production has been constantly reduced from the peak period between 1986 and 1988 from more than 1000 million tonnes of oil equivalent per annum to about 750 million tonnes by 2015 (Fig. 6). From 2005 the production of renewables increased due to harder environmental legislation and phasing out the coal industry for environmental, economic and political reasons (Mearns, 2016).

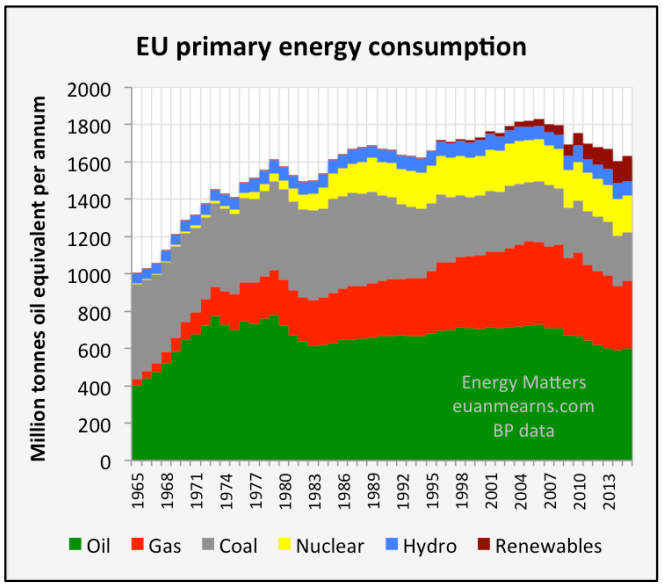

Figure 7. EU primary energy consumption has been in decline since 2005 due to higher energy prices, economic recession, and environmental policies. Source: http://euanmearns.com/

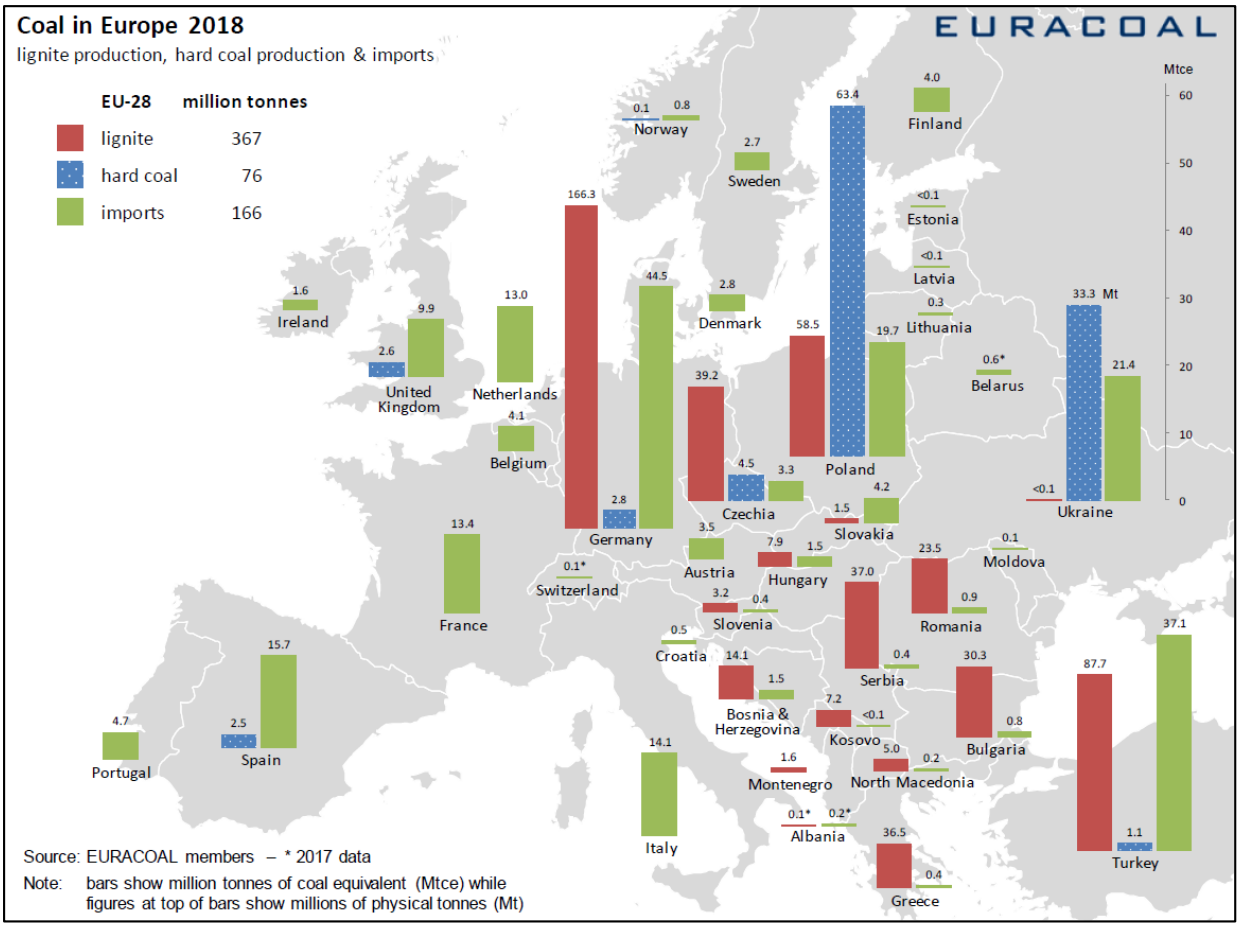

Figure 8. Coal (lignite and hard coal) production and import in Europe in 2018. Source: https://euracoal.eu/info/euracoal-eu-statistics/

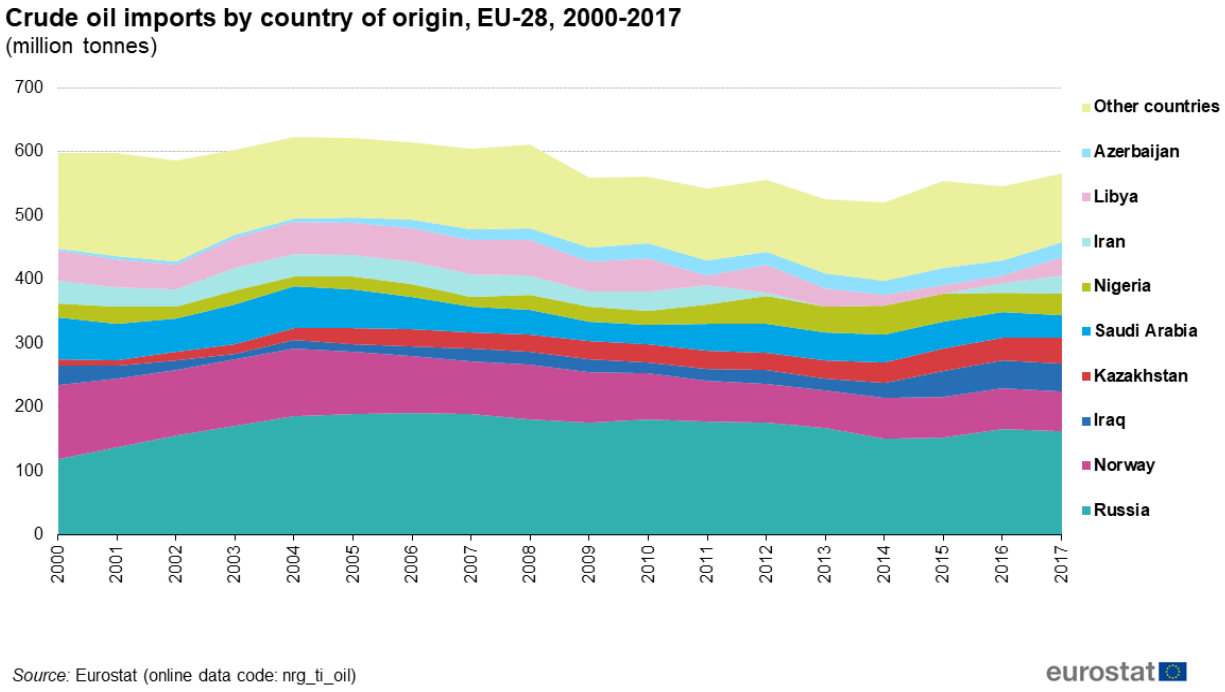

Figure 9. Crude oil import to the EU 2000 – 2017.

The energy consumption of the European Union was constantly rising until 2005 then continuously declined (Fig. 7). The relevant rates of fossil fuel usage and the renewables are changing, renewables are constantly growing, but the total energy consumption is declining. The primary reason is the increase in energy prices that began in 2002. The secondary reason is the economic recession, particularly strong in 2008, which can be the cause of the big drop in EU consumption in 2009. The third reason for the declining consumption is energy policy where positive measures of energy conservation may be supplemented by the subversive influence of an expensive and unreliable electricity system on economic performance (Mearns, 2016). The use of coal for energy production and heat is still dominant in the European Union (Fig. 8). The main hard coal provider to the European Union is Russia with 26 percent. The rate of Russian imports has been increasing drastically. South Africa and Australia follow it with 21.5 and 13.6 percent of the whole amount of their import. Colombia, the United States, and Indonesia have 13.5, 9.7 and 8.2 percent. All other countries supply only 7.3 percent. The rate of hard coal usage is not the highest compared with the rate of oil and gas in the European Union. It is 18.3 percent of the total energy consumption. The import of cured oil is more divided among importers (Fig. 9). According to this figure Russia supplies 34 percent, twice as much as the next supplier, Norway, which supplies only 15 percent. Libya, Saudi Arabia and other countries from the Middle East provide 10.2, 7.2 and 6.3 percent, respectively.

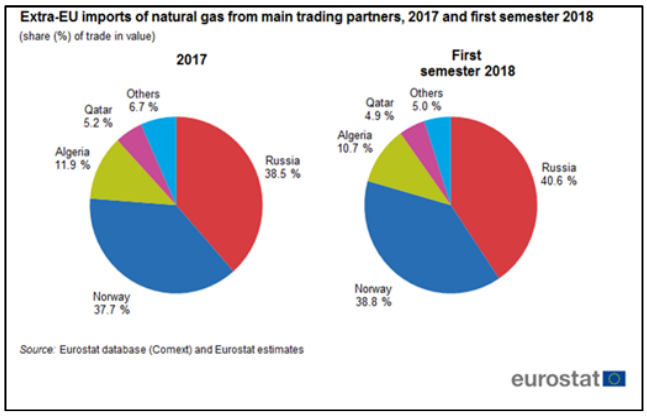

Figure 10. Extra-EU imports of natural gas 2017. Source: Eurostat 2017.

Russia is by far the leading provider of gas, with 40.8 percent as figure 10. shows. For the EU, it is a scary number, clearly signifying that the EU has a serious dependence on Russia. Northern, Central, and Eastern Europe import natural gas from Yamburg. Norway is the second biggest importer of gas with 26.7 percent. Algeria, Nigeria, and Libya together do not provide even as much as that. They provide 25.3 percent. Qatar, Egypt, Trinidad and Tobago, and other countries represent only the remaining 7.1 percent of the EU 's gas imports. Additionally, Northern Europe complements its gas demand with liquid gas.

It is worth to compare the trends of energy consumption of the world and the European Union. In contrast to the declining trend in the EU, world consumption is continuously growing, particularly when fossil fuels, oil, natural gas, and coal are concerned (Fig. 11). The decline in fossil energy consumption cannot be expected before 2025 according to Li (2017). World historical oil, natural gas, and coal consumption presented in figure 11. from 1950 to 1964 is estimated from carbon dioxide emissions (Boden, Marland, and Andres 2017); data for world primary energy consumption and its composition from 1965 to 2016 has been provided by BP (2017); while world primary energy consumption and its composition from 2017 to 2050 is based on the projections of Li (2017).

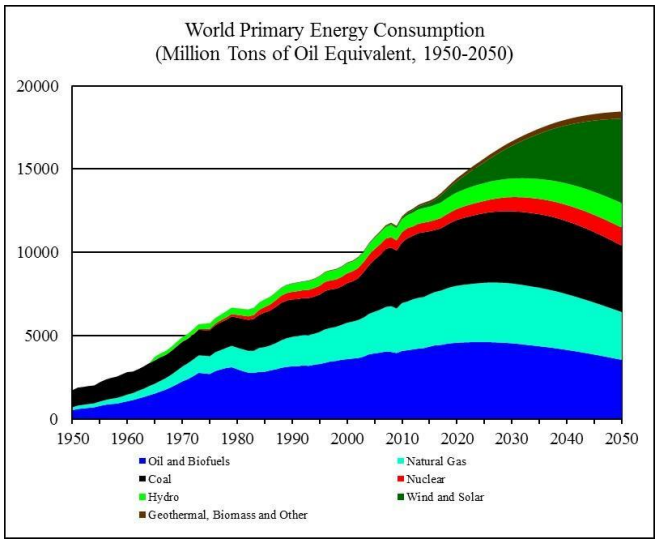

Figure 11. World historical oil, natural gas, and coal consumption from 1950 projected until 2050. Source: https://seekingalpha.com/Arcticle/4083393-world-energy-2017minus-2050-annual-report

The abovementioned importers of the European Union make us understand the relevance of the Arctic region. The two most important fossil energy importers of the EU are Russia and Norway. They are both Arctic states. The European energy policy tries to find a way to be less dependent on Russia. The diversification of energy suppliers is an important aim of the European energy policy. The Arctic region would be an appropriate energy supplier region for the EU due to its geographical location. As long as fossil energy is used and accepted, the EU has to find a way to get more energy import from the Arctic.

2.1. The EU policy toward the Arctic

The European Union has three member states with territories in the Arctic. Namely, they are Denmark, Finland, and Sweden. The other link between the EU and the Arctic is the European Economic Area. This cooperation includes Iceland and Norway. The other remaining members of the Arctic Council are Russia, Canada and USA have a strategic partnership with the EU.

The foreign policy of the EU is based on international co-operations, agreements, and common operations. EU's performance on the international stage is characterized by

Neo-Liberalism. The EU tries to achieve its aims through international negotiations. The Northern Dimension establishment is clear proof of the Neo-Liberal policy. The Northern Dimension policy was elaborated by Norway, Iceland, the EU member states and Russia in 1999. This is an EU-led initiative which determined the key priority themes- among other things, economy, business, infrastructure, environment, natural sources, cross-border cooperation, and regional development- to be discussed. The Second Northern Dimension Action Plan, 2004-2006 lists the Energy issue in the Specific Priorities and Objectives. The document stresses that the Northern Dimension area is rich in natural resources and offers significant opportunities for energy production and supply. One of the main objectives of the Northern energy sector is the development of the electricity and natural gas transportation network in the Northern Dimension region. Furthermore, the Northern Dimension partners are going to improve the co-ordination of their energy production and supply. The development of energy efficiency and environmentally friendly utilization are important aims, too. However, the Northern Dimension policy is not the only way how the EU tries to get near to the energy sources of the Arctic. "The European Union and the Arctic Region Communication" was published by the Commission in 2008. The document proposes actions and cooperation in three main areas: protecting and preserving the Arctic in unison with its population, promoting sustainable use of resources and contributing to enhancing multilateral governance. Communication particularly focuses on hydrocarbons. Arctic resources could contribute to enhancing the EU's security of supply concerning energy and raw materials in general. It proposes actions to strengthen the foundations of long-term cooperation, particularly with Norway and Russia (Johnston, 2010).

An additional proposal is facilitating the sustainable and environmentally friendly exploration, extraction and transportation of the Arctic fossil fuel energy sources. A further proposal is the promotion of the researches and development in offshore technology and infrastructure based on the European experiences in the offshore oil and gas exploration industry. However, in view of the environmental, economic and political issues raised by the scientific community and civil organizations (often supported by scientists) due to climate change and pollution, offshore oil and gas drilling in the Arctic presents both opportunities and challenges. Although the oil and gas industry is one of the key economic drivers across the Arctic (AMAP, 2007:1) and sustainable economic development is desirable, but the energy sector must not have unacceptable cultural or ecological impacts (Kuusama, 2019). The Arctic Council Working Groups see hydrocarbon extraction as a climatic and contaminant issue as well as a challenge to biodiversity and marine safety (Arctic Council, 2017). In the oil and gas industry, the risks of pollution cannot be completely eliminated or prevented even with the best available technology. Furthermore, global warming has made Arctic waters generally more accessible for modern extraction industries. In a political environment increasingly aware of climate change, the fossil fuel-based energy sector produces a lion's share of global carbon dioxide emissions.

The key element of the EU's new Arctic policy is to gain permanent observer status in the Arctic Council. However, the EU's recent debate on seal hunting with Canada sets back its strategy. Canada plainly stands against the EU's permanent observer status. The Canadian foreign minister Mr. Lawrence Cannon stressed after the meeting that "Canada does not feel that the European Union, at this stage, has the required sensitivity to be able to acknowledge the Arctic Council, as well as its membership, and so, therefore, I am opposed to it…I see no reason why…they should be a permanent member of the Arctic Council " Eva Aariak the minister of Nunavut state that "the Arctic Council…was formed to promote co-operation and coordination and interaction in regards to member states in the Arctic. What the European Union is trying to do is not those."

Denmark also disagrees with the EU in the case of seal hunting. Greenland is the part of the Kingdom of Denmark but not the part of the European Union. The seal hunting is a relevant part of the Inuit economy in Greenland. It can be the reason why Denmark does not support the permanent observer membership of the European Union nonetheless it is also an EU member state. As for Norway's opinion, on the one side, it also agrees with seal hunting so it should disapprove of the EU's requirements, on the other side, as a relevant energy importer of the EU could make a commanding profit from their closer corporation.

Basically, the EU was not in the best situation to reach its aims until recently, because some of the influential member states object to its permanent observer status. The problem is if the EU wants to get the energy sources of the Arctic through the Neo-Liberal policy it will not be possible without the permanent members' support. Even though the relationship between the EU and Canada softened, the EU's candidacy for permanent observer status was again blocked in 2015, this time by Russia (Cáp, 2019). Still, the absence of permanent observer status does not prevent the EU from participating in working group meetings within the Arctic Council itself. In order to increase the involvement in the Arctic policy, in October 2018, the European Commission, Finland, and Germany organized the "Second Arctic Science Ministerial" conference in Berlin. Although not directly on the Arctic Council's agenda, the conference provided the opportunity for stakeholders (including all members of the Arctic Council), leaders and media representatives to debate societal and environmental issues (Cáp, 2019). In view of environmental hazards caused by extensive oil and gas exploration, the role of the European Union might grow to counterbalance these risks: if the Arctic region becomes the major oil and gas province within the next decades, then Norway and Russia will be the main providers of fossil energy. Russia has by far the largest resource base but lacks the experience and technology to develop it alone while Norway has already started developing infrastructure in the Barents Sea. In the recent energy situation, both countries are highly motivated to find new oil (and gas) resources to ensure

stable economic growth in the long term. Although Russia is facing substantial geopolitical difficulties recently, all these factors might provide the catalyst for the development of the Arctic as an oil- and natural gas-producing region by the beginning of the 2030s, if this development will not be altered or blocked by legal, environmental and economic constraints caused by legislative measures, falling oil and gas prices and international political interventions (Arctic Council, 2017).

3. The energy strategy of China

Chinese energy policy has a much different historical background than its European counterpart. In contrast with the EU, China even does not have an energy minister and ministry. According to Hongtu Zhao, China has an energy strategy rather than an energy policy. The National Development and Reform Commission (NDRC) is the main policy-making and regulatory authority in the Chinese energy sector. Additionally, four ministries control the various elements of the country's oil policy. The National Energy Administration (NEA) was established by the government in July 2008 to be the key energy regulator in the country. The NEA is linked with the NDRC and it is responsible for approving the new energy projects in China and setting the domestic wholesale energy prices. Also, it is responsible for implementing the central government's policy of energy issues and other duties. The NDRC is a department of the Chinese highest executive power, China's State Council. Evidently, what constitutes energy policy in China and its place in the political system is quite different than in the rest of the world. The Chinese energy strategy can be divided into four areas according to the study on China's Energy Policy and its Contribution to International stability written by Philip Andrews-Speed (2006).

1. The first is the diversification and security of oil imports. Figure 8. shows the main routes of oil import. In Figure 1, can see clearly the sources of oil imports to China. To find new energy supplier regions is part of this point. The Arctic region would be appropriate for China. The second area of energy strategy has a tight connection with the first one.

2. The second is to secure energy transport routes. A significant quantity of fuel is imported through the shipping industry (figure 12. and 13. show the routes). To avoid the risks inherent in that means of transport, China plans to build pipelines from Russia. The pipelines would reduce the Chinese dependency on oil-tankers, but their existence might damage the relations with those who benefit from Chinese sea transports. The second area covers event Liquefied Natural Gas (LNG) transport and other raw materials.

3. The third area of the Chinese energy strategy is overseas investments. At the government's instigation in 1993, "China's National Oil Companies (NOCs) began going abroad to acquire stakes in oil field…" This program was called "Going Global". At the beginning of the program it was a slow process and not as public as nowadays. In 2006 China started a sub-program of "Going Global" aiming to produce 60-80 national big multinational enterprises, which would be able to compete with the biggest existing international companies. They have become the "national champions" of China. PetroChina was the biggest multinational company in the world in August 2007 and seven out of the top thirty companies in the world are Chinese firms and with parts of them owned by the Chinese government. The Chinese dominance is even more notable in the banking sector; among the top five banks listed, three are Chinese.

The leaders of the overseas investments come from the Chinese government and from NOCs (Xin Ma and Andrews-Speed, 2006). The government promotes the idea that the Chinese enterprises hold the production right of overseas oil sources as a back-up plan for when their mainland supplies run out. At such a time, "national champion" oil companies will be able to expand overseas. NOCs can be used by the government to support wider diplomatic and strategic goals all over the world. The Chinese government can discover the needs of the host governments. Additionally, some of the host countries need help from NOCs in order to fulfill their own political goals. China is ready to offer its help in exchange to secure its energy supply from these countries. We can classify the "problematic" countries from an investment point of view into 5 classes. One of the 5 groups includes the governments that wish to get back the control over their resources. Kazakhstan and Russia are good examples of this type (Andrews-Speed, 2006). The China National Offshore Oil Corporation CNOOC and PetroChina are the most active in energy investments. The aims of these investments to increase Chinese national security through a safe energy supply (Inotai, 2007). China National Petroleum Corporation (CNPC) alone has responsibility for 60 percent of the total oil and 80 percent of the total gas output of China. PetroChina is the publicly listed arm of CNPC. The China National Offshore Oil Company (CNOOC), which has responsibility for offshore oil exploration and production, are in charge of the internal energy market. However, as a result of growing attention to offshore zones, CNOOC's role has become more important. The company is now a keystone of the Chinese External Energy Strategy.

4. The fourth part of the external energy strategy is the role of oil and gas diplomacy. The connection between the Chinese government and NOCs is getting closer and closer both at home and abroad. The government uses NOCs as part of external energy diplomacy. In countries strategically important for China, the government operates and plays the lead role in negotiations. The strategically important countries are Kazakhstan, Iran, Saudi Arabia, Sudan, and, most importantly, Russia. Other countries are less important from a strategic point of view, but the government's role can be significant in the cases of Angola and Venezuela. In less important countries, the role of the government is only that of a supporter, it puts NOCs forward in the negotiation process.

Oil represents 20 percent of the total consumption and it is the most significant challenge to the external energy strategy (figure 11.). The government and NOCs pay special attention to this energy source. Oil usage has been constantly increasing since 1965 (Fig. 14).

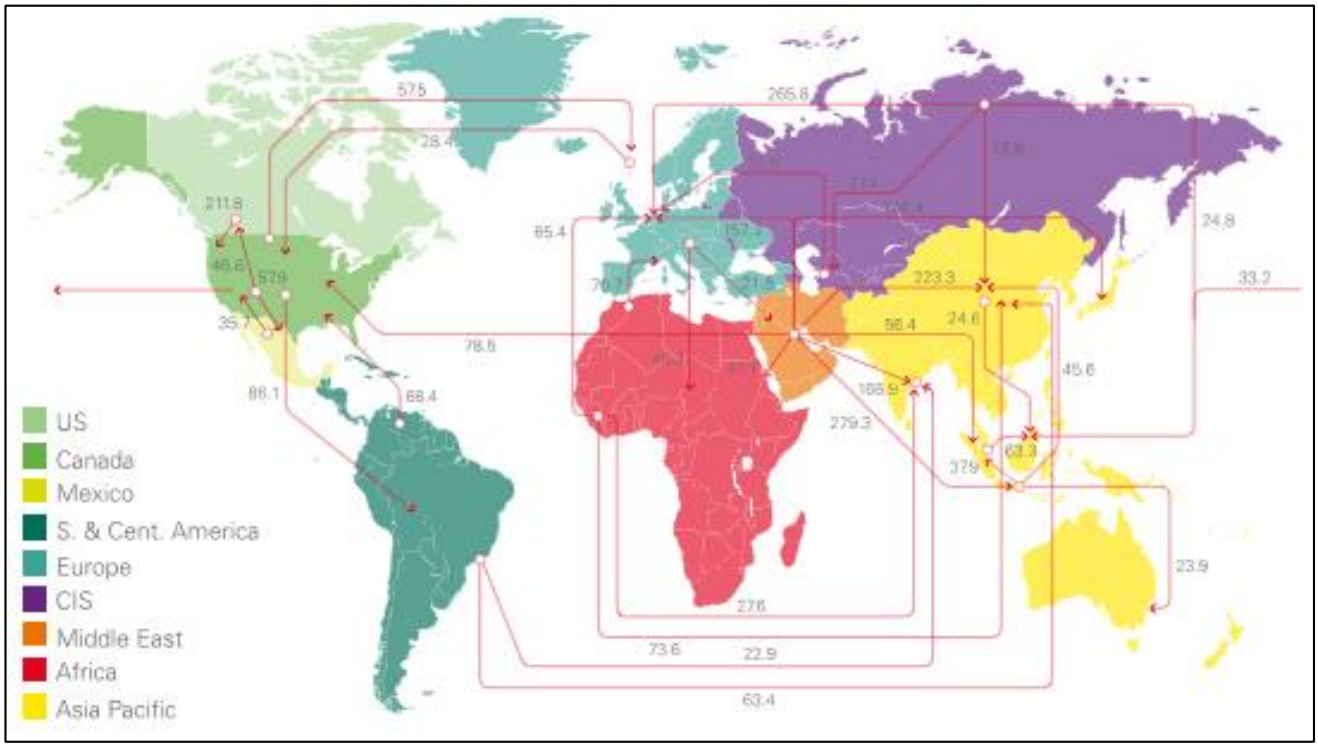

Figure 12. Major oil major trade movements 2018 – trade flows worldwide (million tonnes). Source: BP Annual Statistical Review of the World, 2019.

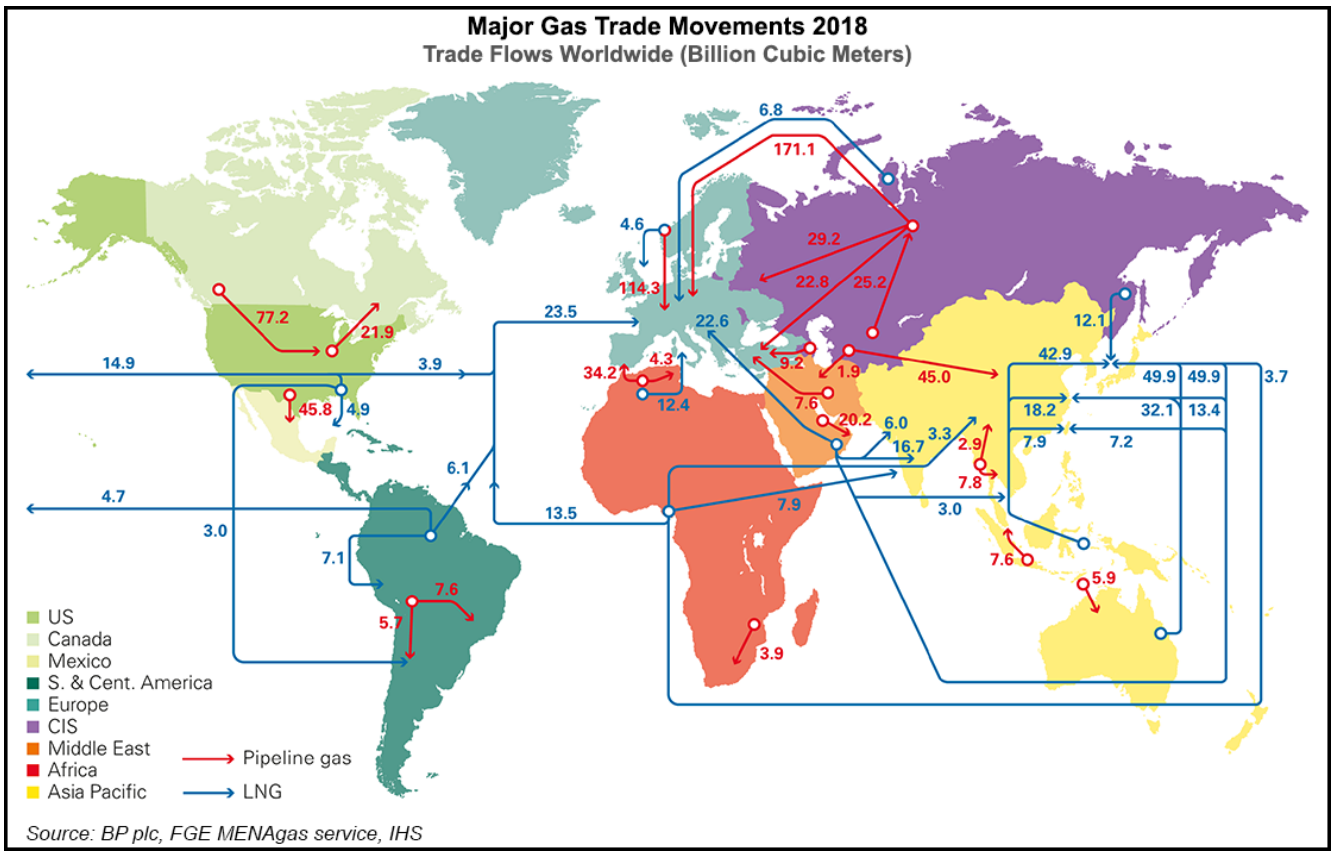

Figure 13. Major gas trade movements 2018. The year 2018 with both global consumption and production increasing by over 5%, showed one of the strongest growth rates in either gas demand or output for over 30 years. Source: BP plc, FGE MENA gas service, IHS

According to the U.S. Energy Informational Administration, China is the third-biggest oil importer in the world, importing 3858 thousand barrels per day, and the second-biggest consumer. As mentioned above, Chinese consumption has soared above domestic production since China became a net importer of oil in the early 90s. One-third of the Chinese imported oil came from Saudi Arabia and Angola in 2008. Iran, Oman, Russia, Sudan, Venezuela, Kuwait, and Kazakhstan follow them with much smaller fractions. It is important to note that China, in contrast with the EU, has its own quite significant oil production. The small amount of coal that China imports come from Mongolia, Australia, Canada and Russia. However, China faces the difficult challenge of drastically decreasing its coal usage in the near future to curb skyrocketing pollution levels. It is no easy task to replace such a particularly cheap and effective energy source, especially considering the degree to which China depends on coal.

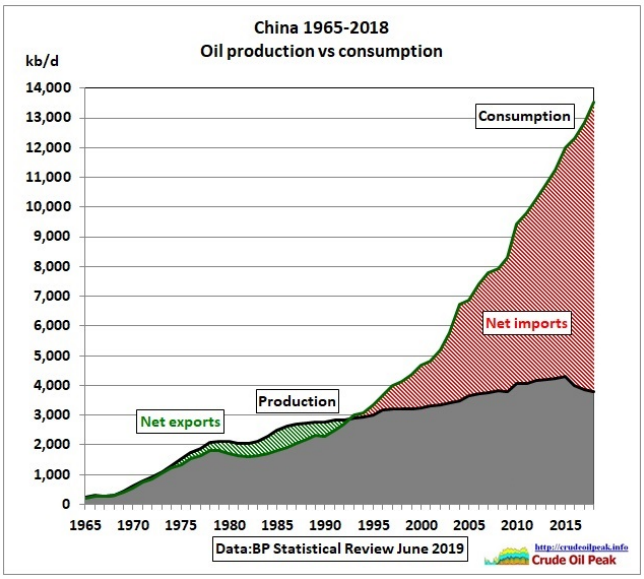

Figure 14. Oil production vs consumption of China 1965 – 2018 measured in kb/d (kilo-barrels/day)[3] Source: https://crudeoilpeak.info/peak-oil-in-asia-where-will-the-oil-come-from-for-the-asian-century

Natural gas does not represent a significant portion of the energy consumption total; it is only 3 percent. Natural gas has been complemented with LNG and government programs have been created in 2009 to launch more LNG ports in China. LNG and renewable resources will help diversify the energy in the coal-dominated spectrum. The government expects LNG to change significantly the Chinese energy mix. China imported its first shipment of LNG in 2006. CNOOC is the major actor in importing LNG.

3.1. The Chinese policy toward the Arctic

Although China is engaged in strategies, according to China's Assistant Minister of Foreign affairs, Mr. Hu Zhengyue "China does not have an Arctic strategy" but it seems to have a clear agenda. China respects the sovereignty of the Arctic states and judicial rights but promotes the cooperation between the Arctic and Non-Arctic states (Jacobsen, 2010). Mr. Guo Peiqing an associate professor at the Ocean University of China stressed that "circumpolar nations have to understand that Arctic affairs are not only regional issues but also international ones". Basically, China considers the Arctic a common heritage of the world (Graham-Harrison 2010). The shipping routes are considered by China as important world heritage as the energy sources of the Arctic. The Neo-Liberal way to reach the Arctic energy sources can be seen in the ambition to gain the permanent observer status of the Arctic Council and the bilateral dialogues with Arctic states. Mr. Rob Huebert, a political scientist of the University of Calgary stressed: "the Chinese are about to emerge as a major Arctic power". He had declared his point just right before he traveled to Beijing and Shanghai for the Sino-Canadian forum at the end of February in 2010. That forum was held about the Arctic issues and he visited the Chinese main polar research institution.

China has already had a bilateral dialogue with Norway on Arctic issues. In the first China- Norway meeting of 2009, the most promoted points in their dialogue were: effects of climate change and polar researches. Additionally, the parties changed their views about Arctic policy, energy issues and sea routes (Jakobson, 2010[1]). We can see a clear intention of China towards Arctic states either altogether or separately.

China has two different ways to reach the Arctic energy sources. Besides the Neo-Liberal policy of China to gain permanent observer status in the Arctic Council, it has another way to achieve its aims. The realist way to get energy sources from the Arctic through foreign investments, joint ventures or the international market (Byers, 2010). This realist policy was visible clearly as a priority of the Chinese energy strategy: the relevant role of gas diplomacy, overseas investments, the security of energy transport routes, and the diversification and security of oil import. In contrast with the Neo-Liberal way, the Realist policy seems to be already more efficient toward the Arctic energy sources. The most desired partner from the Arctic countries is Russia. China has the capital and Russia has a territory in the Arctic. The Yamalo-Nenets Autonomous region owns 90 percent of the natural gas production of Russia. Furthermore, it gives 12 percent of its oil production, too (UPI, 2010). Dmitry Kobylkin, the governor of this region stated: "we are ready to offer our Chinese partners mutually advantageous and constructive cooperation in such spheres as hydrocarbons and solid mineral resources, the Northern Sea Route, agriculture, innovations and science" (Novosti, 2010).

[3] 1 cubic metre = 6.2898 oil barrels

China seems to be a successful partner for energy cooperation. The only thing that is missing, is the well-developed technology for special drilling and transport conditions. The Deutsche Bank analysis marks that the development of the Russian Shtokman natural gas project in the Barents Sea could have taken from 5 up to 8 years. This time the estimation included the period from the initiation of substantial capital investment to full production. The result of this analysis stressed that "with the technical and environmental complexities involved in the development, we see a high risk of delay and cost over-runs" (Thomas et.al. 2004). It means that banks usually do not show a high willingness to invest in Arctic explorations. Contrary to banks, China was willing to invest in order to get energy sources from Arctic Russia in order to ensure its sustainable energy supply, which seemed to be relevant even to Russia. The Chinese and Russian dialogues about energy are more developed than the other Arctic states' activities. However, during the last ten years, the expansion of shale gas and the lower gas prices had quickly changed the international energy markets, which resulted in the closure of the Shtokman project and in June 2019 the company that was to develop the huge natural gas field in the Barents Sea has been quietly abolished (Staalesen, 2019).

Russia owns 15 percent of the world's total hydrocarbon reserves. Vladimir Putin plainly stressed that he wants "to position Russia as the key dealer at the new Arctic energy table" (Glover, 2010). Furthermore, the Russian biggest shipping company made an agreement with China to carry oil from Murmansk to China across the Arctic Ocean (Novosti, 2010). That cooperation also represents the efficiency of the Realist way of Chinese energy strategy. The high-level cooperation can be seen in the several common projects of Russia and China.

4. New development: China is going green

China, due to its vast population and fast-growing industry, is now the world's largest greenhouse-gas emitter, accounting for more than 25% of the world's greenhouse gas emissions. Even in per capita terms, it has just overtaken the European Union average, but still far behind the US level. This reflects the race for economic dominance with an electricity system based 70% on coal, and China's global leadership in heavy industries such as steel, cement, and chemicals. Recognizing the urgency of reforming the energy supply and environmental policies, the Chinese government initiated vast investment programmes in renewable energy sources during the last ten years with the brave strategy to phase out coal from energy production. As a first step, China has already canceled further investments in coal-based industries. China is already by far the biggest investor in wind and solar power and is now canceling plans for further coal investment. And as China builds a low-carbon economy, it enjoys a massive resource advantage.

According to a recent report by the International Energy Agency, the world's largest wind and solar resources are located in China's sparsely populated western provinces of Tibet, Qinghai, Xinjiang, and Inner Mongolia. In principle, covering just 5% of that total land area with solar panels could supply China with 6,000 TW hours of electricity per year, which alone could satisfy the country's entire current electricity demand. The wind resources are also massive and have vast development potential (Scheel, 2019). Another important way to increase the effectiveness and the efficiency of renewable energy production and use is sector coupling, the interconnection of power, heating, and transport and particularly the electrification of heating and transport, which is aiming to increase the uptake of renewables in the transport and thermal sectors. Sector coupling also allows the integration of large proportions of variable renewable energy, although this is still at an early stage. China is specifically encouraging the electrification of heating, manufacturing, and transport in high-renewable areas (Teske et.al. 2017).

The new Chinese energy strategy is surprisingly simple: a) electrify everything and b) clean up the power system. Bringing power to all the people of China at a low cost has been a core of this already successful strategy: since 2000, China has added enough power generation capacity to meet the combined electricity needs of Japan, India, and Germany. In recent years China added over 50 GW of new solar capacity to the grid last year, which is more than the total solar capacity of the United States (Scheel, 2019). Considering these development trends, in the not so far distant future China's interest in the Arctic fossil energy reserves may decline and the competition between energy buyers may not be actually any longer.

5. The most sustainable way forward: integrated energy systems

There are vast renewable energy reserves in the world, including geothermal energy (geothermal power plants and heat pump systems), solar (photovoltaic) power, hydropower, wind, solid biomass, liquid biofuels (ethanol, biodiesel), biogas, syngas, and waste to energy programmes, which build on recycling and the re-use of waste resources (Némethy and Kőmíves, 2016). There are substantial renewable energy resources in the arctic and sub-arctic areas, such as the geothermal energy of Iceland, the biomass in the boreal forests, wind energy, hydropower (e.g. the vast hydroelectric power plants in Sweden, producing over 40% of the country's electricity), etc. Bioenergy is a particularly useful source, since it may be linked with bio-degradable waste systems as a component in larger, more complex energy systems (Némethy, 2018).

6. Conclusions

China's energy policy has two significant advantages compared with the liberal policy of the European Union. "The first relates to China's willingness to ignore international opinion in its dealings with 'states of concern' such as Iran, Sudan, Burma, Myanmar, Turkmenistan, Venezuela, Uzbekistan and a number of states in central and west Africa."

The second advantage of China is the capability to ignore the internal policy of the energy supplier countries. It means that

China does not take care of the politics of the countries where it invested in, it does not try to make any influence on the supplier countries' political life, China is non-committal and uninvolved in any domestic affairs of them. This policy is undermining the western countries' policy, which tries to encourage good governance, democracy, and helps the states to promote their own interests. China comes into conflict with the EU's interests in these countries. The two powers' methods of diplomacy and the aims are sometimes extremely different. The EU tries to establish common projects, technology transfer, offering help, protect human rights, and liberalize the supplier country. These are commendable aims, but they can be even harmful from a purely commercial point of view. China has more utilitarian aims than the EU and it does not want to invest energy, money, and efforts to make changes in the supplier countries. China's exclusive focus in these situations is business.

The Chinese Energy strategy follows Realism because it wants to supply its energy demand in all circumstances. However, the Chinese policy had to change a few of its instruments in the past few years in order to be an acceptable business partner of the other international partners. China had to employ the methods of western policies such as dialogues, strategic partnerships, and common operations. It meant that the usage of the liberal tools in shaping the Chinese Energy strategy and move towards a little bit to the Neo-Liberal direction. The "Going Global" program or the closer and closer energy cooperation with the EU are good examples of this movement. However, China is dealing with the international stage in the Neo-Liberal way and makes agreements and supports common aims, but when the efficiency is not successful it changes its strategy for Realist policy.

In view of the changing energy market, falling fossil fuel prices, climate change, phasing out coal-based energy production, increasing the share of renewable energy sources and aiming at carbon-neutral, zero-emission production, the competition for arctic fossil fuel resources might become insignificant in the future. However, as mentioned earlier, the arctic is also rich in renewable energy resources and in other mineral resources as well, which might be a new target for exploitation.

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