



ENERGY RESOURCES OF THE ARCTIC REGION: CURRENT STATUS AND PROBLEMS

Gadir BAYRAMLI*
Kaan KAPAN**

Abstract

As the peak point of energy resources located in the Middle East, Alaska, North Sea and Russia has been left behind, significance of the Arctic region increased. Harsh climactic conditions, complex geological structure and geographical distance have caused the Arctic region to be considered as "reserve energy area". However, with the declination of the reserves of the existing energy resources, the interest in the arctic has increased, leading to geopolitical struggle for it. Furthermore, the Arctic is a region that may make significant contributions in term of biological resources, mineral deposits and world food safety.

Hars climate and complex geopolitical structure of the Arctic require use of special and suitable innovative technologies appropriate to the regional conditions. Hence, it is expected that the multinational companies having high experience, advanced technology and sufficient financial resources are expected to play an active role in this respect. It is obvious that operation of the resources of a region with such special conditions as those of the Arctic may only be possible by means of an effective cooperation among the regional countries and settlement of the existing problems.

Keywords: Arctic, Regional Geography, Natural Resource, Energy, Geopolitical Struggle.

1. INTRODUCTION

The Arctic, one of the regions worldwide rich in terms of natural resources, has recently started to be mentioned frequently. And the fact that it may make contribution to the achievement of food security of the world has also been emphasized often, in addition to the energy and mineral resources. With development of transportation vehicles proper to the Arctic conditions, the region shall transform into an appropriate route between the West and Far East.

Although "geopolitical struggle" for the Arctic due to the resources of it has started early in the last century, it became a matter of fierce discussion among Russia, USA, Norway, Denmark and Canada in the last 30-40 years. The increasing importance of the Arctic has led to growth of scientific studies concerning energy resources, geopolitical status and problems of the region. This study deals with the geographical position, natural conditions and use and problems of the energy resources of the Arctic, so-called "Arctic Desert".

2. METHOD

In this study, regional analysis, statistical benchmarking and cartographic methods have been used to point out "Energy Resources of the Arctic Region: Current Status and Problems". In this context, firstly, the council data related to the Arctic region and studies of the countries having claims upon the region with respect to the region are examined comparatively. And, secondly, the statistical publications of the Arctic Info and Russian Energy Institute are compared with these data. After the derived data is compared in general, the current status and problems concerning the energy distribution are made more visible by means of cartographic method.

3. FINDINGS

3.1. Geographical Position and Natural Climactic Conditions of the Arctic

Origin of the term "Arctic" which is used to define the North Pole, one of the two far points in the north and south of the Earth comes from the Greek word ἀρκτικός (arctikos), "near the Bear, northern" basing on the word ἄρκτος (arktos), meaning bear. The Arctic region in the framework of this study refers to the North Polar Region constituting about 1/6 of the world in area, containing shallow discrete seas, islands and riparian land parts of the continents of North America, Europe and Asia as well as the deep Arctic basin. With an area of 27 million km² approximately, the region is almost three times Europe and one and half times Russia in area (Ateş, 2017:59). With the Arctic Council established in 1996, cooperation was built among the countries and thus the continental shelf and economical existence of 8 countries (Russia, Canada,

* Asst. Prof. Dr., Azerbaijan State Economic University, Faculty of Turkish World, Business Administration, kadirbayramli@gmail.com, Responsible Writer.

** Dr., Istanbul University, Faculty of Literature, Department of Geography, kaan.kapan@istanbul.edu.tr



USA, Norway, Denmark, Finland, Sweden and Iceland) in this region were recognized. This council could not create a legal and administrative order comparable to that of the Antarctic. The Council has rather focused on the environmental issues (MatzLück, 2009: 240). While the region has currently no administrative border drawn politically, the discussions and claims among the countries are still primary problems in this respect.

The region, being of the coldest regions worldwide in terms of natural conditions, has harsh and long winters and short and cold summers. Average temperature in winter is between -10 °C and -35 °C, occasionally going down to -60°. Abrasion arising from coldness in the region is widespread. And the temperature in summer is rarely above 0°. In general, grey clouds appear in the sky and precipitation (mostly with snow) occurs frequently. Heavy evaporation causes vapour on the water surface (Arctic Desert, 2016). Due to the effect of the cold climatic conditions, the islands and the mountains on land part of the Arctic are covered by thick ice layers. 30-40% of the islands of Novaya Zemlya and Severnaya Zemlya and 83-90% of Greenland, Spitsbergen, Franz Josef Land. Ice thickness varies in the range of 700 - 1.000 meters. The icy area is 1.800 thousands km² in Greenland, 56 thousands km² in the Arctic part of Russia and a total of 213 thousands km² in the archipelago of Canada, Spitsbergen and Alaska (M.Morgunova, A.Tsunevski, 2012). Total area of glaciers is more than 2 million km².

In the last century, significant changes occurred in the climate of the Arctic. While precipitation increased by 8% in the said period, the snow cover reduced by 10% in the last 30 years. The satellite data clearly show that area of the Arctic glaciers reduced by 2.7% in each 10 years in average (L.Zelenina, S.Fekuşova, 2016). According to studies performed under the Arctic Climate Impact Assessment (ACIA), a temperature increase in range of 4 and 7 centigrade degrees is expected in the Arctic Region by the end of the century. Furthermore, the studies in question show that glaciers shall completely disappear by the summer months in 2040. However, current researches show that disappearance of the glaciers may occur earlier (Kefferpütz 2010: 1; Kefferpütz ve Bochkarev, 2009: 1, Yılmaz 2014: 3).

Examination of the climatic data in detail shows that temperature change here is 2 times the other points of the world. And this causes destruction of the natural life cycle and change of the control balances of the existing habitat. "The rapidly melting glaciers also pose danger to life of the local people living in the Arctic region" (M.Morgunova, A.Tsunevski, 2012).

Climate change may lead to the following irremediable consequences in the Arctic:

- ❖ Reduction of the biodiversity,
- ❖ Exacerbation of the interspecies competition,
- ❖ Reduced effect of the ultraviolet effect on the biological process in the marine environment,
- ❖ Diminution of the habitat of the sea bears, seals and some bird species,
- ❖ Destruction of the feed reserves and traditional migratory routes of the arctic deer and other species of animals (L.Zelenina, S.Fekuşova, 2016).

It is obvious that factors mentioned above are the most important restrictive natural conditions of the climatic change, existing and expected, in the Arctic region and they will adversely affect social and economic activities.

3.2. Natural Resources of the Arctic

Upon recognition of the importance of the region, a variety of information has been published about the natural resources of the Arctic region in the printed and broadcasting media. As these publications are dealt with from a popular perspective, they are unscientific. The 2008 USA Geologic Research is accepted as the most comprehensive study about the Arctic in scientific terms. This research has established that the region has reserves of oil in amount of 90 billion barrels, natural gas of 47 trillion cubic meters and 44 billion barrels of natural gas liquid. "And these figures account for about 6% of the proven oil reserves worldwide (1.7 trillion barrels) and, more importantly, one fourth of the proven reserves of natural gas worldwide (187 trillion cubic meters) (Kazakoğlu, 2014).

Interregional distribution of these energy resources in the Arctic shows difference. As to the possible oil resources, it accumulates in 5 areas (Alaska and surroundings, American-Asian basin, east basin of Greenland, East of Barents Sea, and the shelf area between East of Canada and West of Greenland). 70% of the possible reserves of natural gas are located in Alaska and its surroundings, eastern shelf of Barents Sea and West Siberian Basin. Furthermore, according to information gained from a variety of sources, there are more than 230 reserves of natural gas and oil in the seas of Peçora, Barents Sea and Kara. That these energy resources are located not more than 500 meters in depth increases possibility to use them.

As we have mentioned above, there are other natural resources in the Arctic in addition to oil and natural gas. As to the regional distribution of the minerals, there are rich deposits of nickel, copper, coal, gold, uranium, wolfram and diamond in the parts of Russia; uranium, copper, nickel and iron in the parts of USA and there are small amount of copper, nickel and iron within the borders of other countries. However, as most of the discovered deposits are hard to have access and cost highly, they cannot be operated (<http://ru.arctic.ru/resources/>, Date of access: 21.04.2016). When all these natural resources are examined, Russia seem as the most advantageous country (Timor, 2000).

It would be completely wrong to consider the Arctic region only on basis of natural resources it has. The Arctic is regarded as one of the important regions for food safety of the world and in terms of water resources. Today 10% of the world fishery is performed in the Arctic seas (including the northern, eastern and central parts of North Atlantic). And the region is important in the world fishery trade. And the region should, therefore, be taken as a whole by considering it together with all the other factors.

3.3. Use of Energy Resources and Problems

Although the Arctic region has rich energy resources, it would be safe to safe that there are some factors that restrict use of these resources. For clarification, these factors shall be expressed under two categories: *political* (border problem) and *physical factors*. Primary one of the *political factors* is border conflicts. Russia, USA, Canada, Denmark and Norway, the countries that consider themselves as the primary beneficiaries, divide the region up in 1920s on basis of the northern parts of their borders. In the subsequent period, due to the condition of the determined borders, Iceland, Sweden and Finland also made claims on the land of the Arctic and more than 20 countries (e.g. India, China, South Korea, Brazil, Germany and Japan etc.) declared that they are ready to process the deposits in the Arctic shelf (<http://www.arctic-info.ru/Encyclopedia/Rubric/-straniiregioni>).

After the year 200, struggle for the resources of the Arctic region has become fierce. As to the process in the said period, the first initiative came from Denmark that started researches in the North Arctic. The team of this country claimed that Lomonosov Ridge belonged to Greenland. And Russia started new researches in the same region in 2007, claiming that the ridge in dispute was continuity of its mainland shelf. And Canada spent 200 million US Dollar for the region in 2013 and claimed that Lomonosov ridge belonged to this country because it spanned up to the archipelagos of it. And the said countries did not withdraw from their claims and declared their intention to solve this problem before the United Nations (Savin, 2016).



Figure 1: Share of the Maritime Zones and Disputed Areas in the Arctic Region.
Source: Kavas, 2014.

Although claims with respect to borders and rights in the region have started in the past and still continued so far, the borders could not be drawn precisely. Furthermore, the interests of East Asia countries



which are observer members in the Arctic Council also increased in recent years. In this context, China, Japan and South Korea made efforts to become permanent observer states and eventually attained their goal in May 2013 (Kavas, 2016). Today it is managed by 8 member countries of the Arctic Council and the president change in each two years. Canada was the first president. It has been followed by USA, Finland, Iceland, Russia, Norway, Denmark and Sweden. After a full round, the position was taken up by USA and currently by Finland (2017-2019).

It is evident that this Council and use of modern technology shall play role in assessing the Arctic resources and using them for economic purpose. We may say that USA, Norway, partly Canada and Denmark are lucky in this respect. Although Russia is powerful in financial sense, Russian companies do not have the required technology and equipment to build modern platforms. "Attempt for manufacturing of the required oil rigs in the Russian plants gave no positive result. Manufacturing of oil rigs at the plant in Viborg and other places for Prirazlomni oilfield proves this point. In the end, it has come out that cost of the desired oil rig costed one and half times the comparable ones. We have no sound evidence to indicate that the Arctic project may be made cost effectively" (Kryukov, 2012:190).

The current conditions clearly show that Russia is not ready to use the said resources independently. And this fact has forced Russia to make changes in its Arctic policy and caused it to develop joint projects with companies such as Exxon Mobil, Statoil and Eni which have extensive and rich experience in drilling oil wells in deep waters. (http://www.ng.ru/energy/2012-11-13/13_chase.html, Access: 16.04.2016). However, that the relations between Russia and West have been getting colder in recent years is likely to affect the cooperation plans in the Arctic region in a negative way. Crimean crisis, followed by the developments in Ukraine, have brought Russia and Western countries face to face most seriously for the first time after the Cold War. This tension experienced between Russia and West naturally reflected on the arctic region which has huge hydrocarbon resources. USA, Canada and other regional countries have suspended cooperation with Russia (Hasanoğlu, 2016). Conflict of interest in the Middle East and, in recent months, Caucasus further caused to make the relationship between West and Russia colder, causing to postpone cooperation plans for the Arctic region.

Although some experts do not anticipate a new threat of cold war in the region, conflicts among the countries always bear such possibility. And the countries always desire to use any kind of natural resource to their own benefit for welfare and happiness of their own citizens. Although the colonial mentality of the states has not made itself visible since the industrial revolution, the things we currently witness in the world suggest that such mentality may appear again. For this reason, this region which has an important part of oil and natural gas reserve in the world shall always attract attention of the global powers and has, therefore, potential to bring up struggles among the countries (Erkan, 2016).

And the physical factors which restrict use of the resources in the region are as much hard as the political factors. In addition to harsh climatic conditions and complex geological structure mentioned above, the real difficulty is seismic activity of the region and gas fission which make it difficult to drill wells. While there are low-magnitude earthquakes in the most parts of the region, some high level of seismic activity occurs from time to time. In 2002, for example, an earthquake of 7.9 in magnitude occurred in Denali, Alaska and great environmental disaster was prevented thanks to application of Damper 3 seismic system and safe building of Trans-Alaska pipeline (Bogoyavlensky, 2012).

Another restrictive physical factor is free gases located in the shallow areas. Gas hydrates make it difficult to drill wells and may cause accidents. For example, in 1985, explosion of powerful methane gas which gushed out from a depth of 300 meters at the first exploratory well where "West Vanguard" oil rig was installed in Mikkel oil field located in Norway sea resulted in one death and gas release has continued two months (Bogoyavlensky, 2012). As it is, it is clear that the political and physical geographical conditions of the region should be carefully researched prior to processing the Arctic energy resources and the operating activities should be executed by taking into consideration the regional characteristics.

4. CONCLUSION

At a time when the "peak point" of great energy basins such as Middle East, Northern Sea, Siberia and North Africa has been left behind, the Arctic which contains rich energy resources has great significance. Despite of great size of oil, natural gas, mineral and biological reserves in the Arctic region, the harsh climatic conditions, complex geological structure and underdeveloped infrastructure make it difficult to make use of them in economic sense.



The Arctic has become a platform for severe geopolitical struggle between Russia on the one hand and four NATO-member countries (i.e. USA, Canada, Norway and Denmark) and Finland, Sweden and Iceland. As the region is mostly under cold waters and ice layer, it restricts economical activities and also makes it difficult to draw the borders.

In addition to the said countries, other countries such as United Kingdom, France, Germany, China, India and South Korea also show interest in the energy resources of the region. As a result of development of transportation vehicles usable under the Arctic conditions, the Arctic route shall play important role in developing trade between the West and Far East countries. Convenient transportation facilities have great importance in the world economic sector for processing oil and natural gas deposits.

Advanced technical rigs and experience are required for processing rich energy resources of the Arctic. Having most advanced technological facilities to successfully perform energy activities in the deep waters, Norway and USA appear more promising for processing the energy deposits under the Arctic conditions. It does not seem possible for Russia to have its own means and advanced technologies in the short run to process the energy deposits under the Arctic conditions. However, it should be remembered that significant part of the energy and mineral reserves in this region remains the borders of Russia.

Processing the Arctic deposits extensively requires a multilateral cooperation of the regional countries. The relations going cold between the Western countries and Russia after the events in Ukraine, Crimea and Syria adversely affect the intended cooperation for the Arctic region and postpone such cooperation. Finally, it should always be remembered that any action to be performed in the region, protection instinct, environmental awareness and sensitivity should be at high level.

REFERENCES

- Ateş, Oktay (2017). Rusya Federasyonu'nun Arktika Politikası. *Avrasya İncelemeleri Dergisi*, 6:57-95.
- Erkan, Yunus (2016). Küresel Anlaşmazlıklarda Yeni Sorun Arktika Bölgesi, <https://www.academia.edu>, Erişim:06.05.2016.
- Kefferpütz, Roderick (2010). On Thin Ice? (Mis)interpreting Russian policy in the High North. *CEPS Policy Brief 2010*, V(205), 1-10.
- Kefferpütz, Roderick, Bochkarev, Danila (2009). *Wettlauf um die Arktis: Empfehlungen an die EU*. Brüssel: Heinrich Böll Stiftung.
- Kryukov, Valeri. (2012). Günümüzde Arktik Bölgenin Enerji Kaynakları: Beklenti Faktörünün Etkisi, Yoksa Reel Zaruret?. *Ekonomi ve toplumların gelişme sorunlarına dair XII Uluslararası Bilim Kongresi, Kitap II*, Moskova: NİU VŞE Yayın Evi.
- Morgunova, Maria , Tsunevski, Andrey (2012). *Arktika'nın Enerjisi*. Moskova: Energiya Yayınları.
- Matzlück. Nele, (2009). Planting a Flag in Arctic Waters: Russia's Claim to the North Pole. *Göttingen Journal of International Law*, V(1), 235-255.
- Savin, Leonid, (2016). Arktika uğruna mücadele. <http://www.geopolitica.ru/article/borba-za-arktiku#>. U7p_ZZR_tzo.
- Timor, Ayşe, Nur, (2000). Hazar Denizi Bölgesi Petrol ve Doğal Gaz Kaynakları. *Coğrafya Dergisi*, Sayı 8.
- Yılmaz, Nihat, & Çiftçi, Ali (2014). Arktika Bölgesi'nin Siyasal Önemi ve Siyasal ve Hukuksal Statüsünün Karşılaştırılması Değerlendirilmesi. *Sosyal ve Beşeri Bilimler Araştırmaları Dergisi*, (31), 1-16.
- Zelenina, Larisa, Fekuşova, Svetlana, (2012). Forecasting and Consequences of Climate Change in the Arctic Region. *Arctic and North*, (5).
- Internet Resources**
- Arctic Natural Resources, http://ria.ru/arctic_spravka-/20100415/220120223.html, Erişim: 22.05.2016.
- Arktika Çölü, http://www.arctic.info.ru/Encyclopedia/Article/arktices_kaapystina, Erişim:22.04.2016.
- Arktika Hidrokarbonları Uğruna Mücadele, http://www.ng.ru/energy-/2012-11-13/13_chase.html, Erişim, 16.04.2016.
- Arktika Kaynaklarının İşletilmesi: Riskler ve Sorumlu İdarecilik. <http://pro-arctic.ru/24/09/2012/resources/316>, Erişim: 21.04.2016.
- Bogoyavlensky Vasily, *Arktika Şelfinin Petrol ve Doğalgaz Yataklarının İşlenmesi Perspektifleri ve Sorunları*. <http://burneft.ru/archive/-issues/2012-11/1>, Erişim: 06.05.2017.
- Doğal Kaynaklar*. <http://ru.arctic.ru/resources/>, Erişim tarihi: 21.04.2016.
- Hasanoğlu, İbrahim. *Rusya'nın Arktika Stratejisi*. <http://www.stratejikortak.-com/2016/04/rusyanin-arktika-stratejisi.html>, Erişim: 23.04.2017.
- Jeopolitik Kontekste Arktika'nın Hidrokarbon Kaynakları*. <http://old.-mgimo.ru/news/inno/document239858.phtm> 25.06.2013. Erişim:12.04.2017.
- Kavas, Alp, Yüce. *Rusya'nın Arktik Politikası ve Türkiye*. <http://www.-bilgesam.org/incele/78/-rusya'nin-arktik-politikasi-ve-turkiye/#.VzcUDjWLRdh>, Erişim: 11.04.2018.
- Kazokoğlu, Cüneyt, (2014). 8 Ülkenin Gözü Neden 'Kutup Bölgesi'nde. http://www.bbc.com-turkce/haberler/2014/02/1dogusu40220_kutup_dairesi-enerji, Erişim: 11.04.2018.
- Krutihin, Mihail. *Buzlar Eriyene*.<http://rusenergy.com/?page=articles&id=833>, Erişim:22.04.2017.
- Ülkeler ve Bölgeler*. <http://www.arctic-info.ru/Encyclopedia/Rubric/strani-i-regioni>, Erişim: 19.04.2016.