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The Arctic and Nordic Countries in the World of Economyand Politics

Ryszard M. Czarny[1]

ECONOMY OF THE HIGH NORTH: AN OUTLINE

The socio-economic development in the High North, and particularly in the Arctic region, has become a very important theme in a political dialogue and discussions on a global and regional scale, as well as within separate countries. The subject matter and the temperature of these debates clearly point to the need of coordinating international actions, which are essential to solve the issues present in the Arctic region.

At the outset of the 21st century, in the era of high prices of energy resources, the melting of the ice and global warming, the economic condition of this region becomes the focal point not only of the Nordic countries or Russia, but also of the European Union, NATO, USA, Canada, and other countries. This is due, among others, to the fact that the High North is an area of tremendous economic potential and one of the newest large energy-supplying zones of Europe and the whole world[2] with particularly high importance to the countries of the northern hemisphere.

The Potential of Energy Resources of the High North

The High North is currently one of the key areas of the global dimension. Its territory reaches USA and Canada, but in the European context, which is the main

[1] Prof. Ryszard M. Czarny, the Jan Kochanowski University in Kielce and the University of Ss. Cyril and Methodius in Trnava, Poland-Slovakia.

[2] It is of vital importance because the global energy demand will be about 35 percent higher in 2040 than today. The world's population is expected to approach nearly 9 billion people (from roughly 7 billion today) and global economic output is expected to more than double. More on the issue in "Energy and the World in 2040," December 11, 2012, Posted by Ken Cohen, ExxonMobil's *Outlook for Energy: A View to 2040,* http://www.exxonmobilperspectives.com/2012/12/11/energy-and-the-world-in-2040/?utm_source=paid.disqus.com&utm_medium=cpc&utm_campaign=Perspectives_-_Full_Site, web. February 17, 2013.

point of interest of this article, it includes some part of the continent, several islands as well as the seas (the Barents Sea, the Greenland Sea) located beyond the polar circle. The area encompasses the territories of a few countries, namely Denmark, Norway, Sweden, Finland, and the Russian Federation[3]. The region is characterized by high activity and also a certain nervousness of its countries. This is hardly surprising since the deposits of oil and natural gas under the seabed were discovered in that region as early as the 1960s. Initially, it was thought that oil and gas extracted in the Arctic accounted for 10.5% and 25.5% respectively in the global production[4]. Nearly all verified deposits of natural gas in the Arctic involved the territory of Russia. Later on, however, based on geological methods and findings, the unexplored deposits in the Arctic were estimated for the global share of oil and gas at 20.5 and 27.6 %, accordingly[5].

According to the US Geological Survey (2000), the Arctic share in verified and estimated deposits of oil and gas on the global scale stood respectively at 14 and 23 % which meant in essence that the Arctic region was one of the main players in the global energy resources. It was assumed that the Arctic held 5.3 and 21.7% of the total, verified global deposits of oil and gas[6].

Consecutive finding of the US Geological Survey (USGS) confirmed that those deposits may be as high as 29% or even 30% of all unexplored deposits of gas in the world, but later the estimates of the percentage of oil deposits were reduced to 13%[7] while natural gas to 20%[8]. Those estimates mean approximately 90 milliard barrels of oil, 1,670 billion square feet of natural gas (i.e. 47.29 billion square meters) and 44 milliard barrels of liquid natural gas in 25 geologically defined areas. The exploration of 84% of those deposits is possible using the offshore method as "the majority of them are located under the seabed. These areas belong to USA, Canada, Sweden, Norway, Russia, and Denmark (Greenland)"[9]. Obviously, when the ice keeps melting rapidly due to global warming, it is much easier to search for those deposits and later on exploit them. According to the afore-mentioned American survey, the majority of the Arctic resources are located close enough to the land to be included in the economic zones of the countries of that region. With the development of new technologies, the exploration becomes

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[3] See http://www.regjeringen.no/nb/dep/ud.

[4] "The Arctic's Share in the Global Production of Oil, 2002," in: *The Political Economy of Northern Regional Development* – Yearbook 2008, p. 246.

[5] The estimates of the range and size of the deposits were much varied, just like the assessment of the profitability of exploitation and exploration.

[6] Verified deposits of oil in the Arctic in 2002; *ibidem*, p. 246.

[7] *Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle*, Report US Geological Survey, 2008 (http://pubs.usgs.gov/fs/2008/3049). The Arctic Council estimates the energy potential of the Arctic at 5% of world deposits of oil and 20% of natural gas.

[8] 90 Billion Barrels of Oil and 1,670 Trillion Cubic Feet of Natural Gas Assessed in the Arctic Released: 7/23/2008US Geological Survey Report, http://www.usgs.gov/newsroom/article.asp?ID=1980, February 17, 2013

[9] K. Urbański, *Droga do niedrogiej ropy [A Road to Inexpensive Oil]*, *Rzeczpospolita*, July 30, 2008.

not only possible but with the increase of prices of energy resources also much more profitable.

It is worth-noting that today the USGS is the only credible source of publicly available estimates regarding unexplored deposits of hydrocarbons. They are of special value as based on its estimates and prognoses, the prospecting led to the discovery of over 400 deposits of oil and gas north of the polar circle. The discovered deposits amount to approx. 40 milliard barrels of oil, more than 1,100 billion square feet of gas (i.e. ca. 31.15 billion m^3 of gas) and 8.5 milliard barrels of liquid natural gas[10].

It is estimated that more than a half of unexplored oil deposits are located only in three geological areas: Arctic Alaska, the Amerasia Basin, and the East Greenland Rift Basins. On an oil-equivalency basis, undiscovered natural gas is estimated to be three times more abundant than the oil in the Arctic. More than 70 percent of the undiscovered natural gas is estimated to be located in three provinces - the West Siberian Basin, the East Barents Basins, and Arctic Alaska.

Economy of the High North: Characteristic Features

In the year 2002, the population of the Arctic polar circle was estimated at 10 million[11] which constitutes only 0.16% of the world population. As regards the Arctic's share[12] in the global production of goods and services measured by the GDP (Gross Domestic Product) index, it is slightly higher and stands at 0.44%. The quoted numbers may seem to suggest that the Arctic plays a small role in the global economy. However, the picture changes radically when one considers the contemporary importance of energy resources. In this category, the area of our interest has much to offer indeed. From oil and minerals to fisheries and forestry, it plays a significant role as a provider of such needed resources. Managing the region[13] and the coordination of actions seem to grow in importance with the

[10] The estimates of oil deposits in the Arctic are more difficult to ascertain. More on the subject in "The USGS Circum-Arctic Resource Appraisal," see: http://energy.usgs.gov/arctic.

[11] I. Aslaksen, "Presenting the Economy of the North," in *The Political Economy of Northern Regional Development.* Vol. I ,Yearbook 2008, Copenhagen, p. 118.

[12] More on the Arctic in *Geopolitics in the High North, Multiple Actors. Norwegian Interest*, A five-year (2008-2012) research programme financed through the Norwegian Research Council and conducted by the Norwegian Institute for Defence Studies with partners and associates, www.norden.org, p. 7. (Web. Downloaded: March 23, 2011), Changes in the Arctic: Background and Issues for Congress, Ronald O'Rourke, Coordinator Specialist in Naval Affairs, Congressional Research Service, August 1, 2012, 7-5700, www.crs.gov R41153, CRS Report for Congress *Prepared for Members and Committees of Congress,* p. 5, (Downloaded: February 12, 2013), where the author states it in the following way: "Some observers use the term 'high north' as a way of referring to the Arctic. Some observers make a distinction between the 'high Arctic'—meaning, in general, the colder portions of the Arctic that are closer to the North Pole—and other areas of the Arctic that are generally less cold and further away from the North Pole, which are sometimes described as the low Arctic or the subarctic."

[13] More on the issue in P. Soroka, *How to Manage the Arctic – Possible Strategies and their Consequences*, in: The Northern Spaces Contemporary Issues (R.M. Czarny, R. Kubicki, A. Janowska, R.S. Czarny – ed.), SCANDINAVIUM, Warszawa – Kielce 2012, pp. 145–158.

progressing climate changes. Regrettably, the Arctic's economic development brings in consequence the increasing pollution crossing state borders and thus affecting public domain, such as air, water, and bio-diversity of nature[14]. Since separate areas of the Arctic belong to separate countries[15], the coordination of their actions is the call of the day since the dispersed information on the level of the polar circle cannot be readily grasped. All of these considerations necessitate presenting comparative studies on the scale and structure of the economy in this region. As stated by I. Aslaksen: "The Arctic is made up of 28 separate regions in 8 different countries: Arctic Russia includes the Republics of Karelia and Komi, the Murmansk and Arkhangelsk Oblasts, the Yamalo-Nenets and Khanty-Mansi Autonomous Okrugs, the Taimyr and Evenkia former Autonomous Okrugs, the Republic of Sakha, the Magadan Oblast, and the Chukotka and Koryakia Autonomous Okrugs. The North American Arctic includes Alaska and the Northern territories of Canada (Northwest Territories, Yukon, Nunavut). The European Arctic consists of Greenland, Faroe Islands, Iceland and Arctic Norway (including the Svalbard Archipelago and Jan Mayen), Arctic Sweden and Arctic Finland."[16].

Arctic's economy is based on the exploration of nonrenewable resources and the activities regarding the use of renewable resources. Industry proper plays some role only in a few areas of the Arctic and is treated as a secondary sector at best. Services, a sector of only tertiary importance, consist mainly of book-keeping or accounting for over 50% of the economic activity. Three areas on the territory of the Russian Federation (Khanty-Mansi, Yamalo-Nenets, Sakha) and Alaska generate over 60% of the economic activity of the Arctic, which includes mainly oil and gas production. Practically, all regions of the Arctic Scandinavia, together with Iceland, Greenland, and the Faroe Islands, have a GDP per capita[17]

[14] This issue is well-understood and made a priority by the coalition government of J. Stoltenberg in Norway, as evidenced by assigning special importance to the regions of the High North (Nordområdene) and preparing a plan of action which is to guarantee the preservation of the right balance between protecting the natural resources of the region and their effective exploration (ecosystem based management). When preparing the special plan for developing the High North, several factors had to be carefully examined: fisheries (maintaining the affluence of the waters, countering illegal fishing and overfishing), industrial activity on these territories (geological conditions, exploration of resources in an ecologically safe manner, working out the most advantageous conditions of exploration), natural environment and its preservation, as well as safeguarding maritime transport. During the work, additional research and analyses proved necessary. Due to the special location of this region (the northern provinces of Nordland, Troms and Finnmark, together with the adjoining maritime areas), when preparing the project, the Norwegian government cooperated with the Russian authorities who very positively reacted to developing a bilateral dialogue regarding the Barents Sea; see: R.M. Czarny, *Energy Dilemmas of the Nordic Region Countries,* SCANDINAVIUM, Kielce 2009, pp. 145-168.

[15] It is worth-noting that most territories in Europe classified as High North are located within the borders of the Kingdom of Norway; see: http://www.regjeringen.no/nb/dep/ud.,

[16] I. Aslaksen, *ibidem*, p. 240.

[17] GDP, Region Arktyki [The Arctic Region], 2003. USD-PPP per capita; see: The Political Economy…, *op.cit*., p. 243.

corresponding with the average of the polar Arctic. They are also characterized by diversified economy and enjoy a relatively high standard of living and economic development in comparison with other Arctic countries.

One needs to keep in mind that a high GDP level does not automatically translate into a high level of earnings or consumption. It is particularly noticeable in the regions of significant extraction industry. On the one hand, the profits gained through resourcefulness and ingenuity as well as the return on the capital may be transferred outside of the region to the owners of the capital. Even though the numbers may be added to the regional GDP[18], they will not influence the consumption or the level of turnover in the region. On the other hand, direct state transfers will increase the earnings and consumption, but they will not show in the regional GDP indicators.

Apart from oil and gas, the Arctic has abundant mineral resources, particularly of nickel, cobalt, wolfram, palladium, and platinum. Many known deposits are not being explored because of their inaccessibility. Alongside with the Arctic Russia where the output is the biggest, other countries of the region also supply minerals to the world market. The Russian Arctic economy is based mainly on industry and to a lower degree also on forestry. A significant role is played there by the employees of the state administration and the military. The fuel sector is currently the main source of income in the Asian part of the Russian Arctic; in the European part it is represented by the Shtokman field. All of that determines the unequal distribution of wealth in the Russian High North; while the Khanty-Mansi and Yamalo-Nenets regions generate much higher income than the average for the whole Russia, others have profits not much higher than the median[19]. The European part is dominated by the engineering, fishing, forestry, shipbuilding and military industries. Agriculture plays an insignificant role due to a short vegetation period.

Since the future of oil and gas exploration in the North depends on its coexistence with fishing, establishing a delimitation line in the Barents Sea created new opportunities for Norway itself as well as for the Norwegian-Russian cooperation, even more so as since the very outset it was rightly assumed that the unexplored deposits on the Russian territories are much larger than on the unquestionable Norwegian side. On the Russian side, gas was discovered in the Severo-Kildinskoe field near the delimitation line. The alleged richness of oil and gas deposits in the area speeded up the negotiations on the border line between the two countries. Among the discoveries already made by Russians, without any doubt the afore-mentioned Shtokman field is the biggest, and it is 2-3 times larger

[18] Wartość dodana. Surowce naturalne i inne gałęzie przemysłu w regionie Arktyki, 2002 (wskaźnik procentowy GDP) [The Added Value. Natural resources and other branches of industry in the Arctic Region (GDP percentile indicator)]; see: The Political Economy…, *op.cit*., p. 244.

[19] H. McDonald, S. Glomsrod, I. Maenpaa, *Arctic economy within the Arctic Nations,* [in:] *The Economy of the North*, Oslo 2006, pp. 59-60.

than the Troll field on the Norwegian side. It is estimated that it holds some 3200 milliard m^3 of gas[20].

There is no doubt that Norway and Russia should cooperate when it comes to the Barents Sea and all issues regarding this area for the common good. The Norwegian discussion on the exploitation of the Barents Sea resources concentrates in a major part on the environmental matters. In Russia, however, the approach appears to be quite different. What characterizes the debate in Russia regarding the Barents Sea is the clear lack of local enthusiasm for the future activities in the shelf[21].

Fishing in the Arctic region constitutes 10% of the world fishing (2002). The numbers include also shrimp and Arctic crab (king crab or stone crab) whose catch makes up 5.3% (2002) of the global crustacean fishing. Salmon and trout farming in the Arctic accounts for approx. 7.7% of the world production.

This is well exemplified by Greenland where fishing has been the main industry in which shrimp clearly play a dominant role[22]. Traditional cod catch has decreased recently mainly because of overfishing. Other job generating sectors on the island are education, health care, and social welfare. In the last few years, sheep farming has noted a dramatic increase as a result of a gradually more suitable climate. As a consequence, production of grass, which constitutes the basic sheep feed and was once imported, has become a profitable industry sector. Interestingly, in Greenland one cannot purchase land to own it; the only way to secure pastures is to lease the land from the state[23]. Fossil fuels are not extracted at all, but the country possesses humongous reserves of geothermal water, to a large degree not fully utilized[24]. The situation is dramatically different in Iceland where renewable resources play a key role in the state's fuel-energy balance sheet[25]. Ten hydroelectric power stations and two geothermal ones provide over 70% of electric power used in Iceland[26]. Enormous possibilities of further development of this form of energy production prompted the government in Reykjavik to attract energy-consuming types of industry, i.e. steel mills and aluminum smelters[27]. Diesel fuel is used only for vehicle engines and fishing boats, but also in those cases it is to be replaced by renewable resources. The goal of Icelandic authorities

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[20] Although initially it was announced that the exploitation of the field would start in 2010, currently, it is to commence a few years later. It is estimated that the annual production will reach 60 mld m^3 of gas.

[21] The point here is not only tremendous cost and technological deficiencies on the Russian side connected with the exploration of gas in extreme conditions and on sea, but it is also about legitimate Russian suspicions that the Norwegian plans to increase exports of gas in the last few years are to provide an alternative to Russian supplies to the European market.

[22] Fishing and fish processing constituted jointly 11.4% GDP in 2002,

[23] H. McDonald, S. Glomsrod, I. Maenpaa, *Arctic economy…, op.cit*., p. 53

[24] *Ibidem*, p. 56.

[25] Because of that, the participation of Iceland in the global emissions of carbon dioxide is minimal and stands at 0.2 percent.

[26] More on the subject in: R.M. Czarny, *Energy Dilemmas*…, *op.cit*., pp. 129-132.

[27] *Ibidem*, p. 130.

is to switch entirely to renewable energy resources by the year 2030. The total elimination of fossil fuels is to be reached by the year 2050[28].

When analyzing the economic potential of other sectors, it should be stressed that the forestry reserves of the Arctic constitute 8% of timber volume and these are the largest world forests remaining in a natural state due to climatic factors and lack of infrastructure for exploitation. Hence the Arctic's participation in the global timber industry counted in millions of square meters stands only at 2.2%.

The Influence of Climate Changes on the Economic Potential

The above brief already illustrates the economic significance of the High North. Climate changes influence the region's economy in two ways. On the one hand, they create new possibilities for the development of fisheries and exploration of resources in energy sector: a warmer climate will certainly result in the increase in catching stenothermal species of fish and make exploration and exploitation of gas and oil fields much easier and more efficient. Moreover, tourism may become a very important industry in the circumpolar areas and boost regional development substantially. Climate changes and better infrastructure signal better access to many interesting places in the North thus creating the necessary conditions for this sector's development. At the same time, however, recent and very clear growth in the interest in tourism in the Arctic brings about many new challenges for sustainable development. Although tourism provides new economic opportunities for the local populations, its very development in the region gives rise to new risks of degrading the own base of tourist attractions as in consequence it contributes to further climate changes and the environment degradation. Nevertheless, the development of tourism is one of the few alternative sources of support for the local communities, particularly in the context of the risk of losing the traditional means of support by the indigenous people (for example, because of climate changes). In addition, actions geared towards environment protection, e.g. establishing new national parks, create new opportunities for tourism in the Arctic. On the other hand, as mentioned before, tourism poses a serious risk for the local ecosystems which are very vulnerable to all changes brought about by the increase in population and the necessity of developing infrastructure. The governments of Nordic countries try to face those challenges by taking due care to ensure balance between the nature and humans.

Another change in the perception of the High North occurred once the Cold War ended. When it lasted, the main focus was on the defense of the territory and the region itself was treated as a convenient site for radiolocation stations. Today, the issues of maintaining sovereignty and security have been broadened by the prospects of economic development, raising the standard of living for the local inhabitants, protection of natural environment, and developing cultural exchange[29].

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[28] *Ibidem*, p. 132.
[29] R.M. Czarny, *Energy Dilemmas…*, *op.cit*., p. 159.

Of equal importance is the matter of safe maritime transport which keeps gaining importance due to climate changes that open new sailing routes and simultaneously increase the number of vessels present in the Arctic basins[30]. Of particular importance in this context is limiting the chances of spills and accidents, safe fuel transport, and improving safeguards on the vessels in the case of increased exploitation in the North[31].

All the above-mentioned determinants are of particular interest to the European Union, which since 2008 has been extremely active in Arctic matters as the region might play a significant role in the diversification of hydrocarbon supplies for the states of the Commonwealth. Such an attitude is verified by the EU document dated to March 2008, titled *Climate Change and International Security* and directed to the European Council. The paper prepared by the EU High Representative for the Common Foreign and Security Policy, Javier Solana, among others states that the rapid melting of the polar ice caps will open up new waterways and international trade routes as well as facilitate exploitations of mineral resources in the Arctic[32]. The document emphasizes also the need of securing the interests of the EU, including access to the resources in the Arctic Region[33].

In the process of establishing a common Arctic policy, the EU accepted also the official statement of the European Commission titled *The European Union and the Arctic Region* (November 20, 2008). In it, the Commission defines the basic guidelines for the Commonwealth, presents the goals and proposes action in three fundamental areas: environment protection and climate changes, measures to ensure sustainable exploitation of the resources, and the strengthening of multilateral governance of the Arctic.

As evidenced, climate change is no longer an abstract concept but a reality bringing about totally new kind of challenges[34]. They can be of great significance from the point of view of security of separate states as well as whole regions, and they might affect also natural environment and economic and political stability on the global scale. As those changes are best visible in the Arctic areas, they obviously influence the living conditions of the inhabitants of the High North.

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[30] More on the subject in: K. Kubiak, Interesy i spory państw w Arktyce w pierwszych dekadach XXI wieku [Interests of and Arguments between the Countries in the Arctic in the first Decades of the 21st Century], Warszawa 2012, pp. 76-96 and 193-210.

[31] One of the already accepted solutions is establishing mandatory sailing routes outside of the territorial waters. In addition, a new maritime traffic control center for northern Norway in Vardø is to strengthen the safety of maritime transport and safeguard the environment against spills.

[32] R. Domisiewicz, *Zimna wojna [The Cold War]*, *Polska Zbrojna* 2008, no. 25, p. 50.

[33] Nearly 90% of external EU trade and 40% of trade within the common market is done by sea, and 25% of the world vessels sail under the flags of the EU member countries, quoted after K. Jaworski, *The Perspectives of Developing*…, p. 72.

[34] J.C.J. Nihoul, *Global warming effects on the Arctic and Sub-Arctic Seas*, University of Liège, 2009.

Conclusion

Although the importance of existing Arctic economy is becoming more acknowledged, there is lack of sufficient and clear data to paint a full picture of it as for today and predictable future. It is possible, however, to define a set of its characteristic features, of which the following appear to be most significant:

- exploration of natural resources has the highest share in the region's GDP which means that even small changes may bring long-lasting consequences;
- there exist several difficulties in the region resulting from small and dispersed population base;
- there exist a number of challenges posed by climate change;
- small internal markets and narrow spectrum in terms of facilities cause dependence of the High North economy on external trade as a key source of income.

In a nutshell, these are typical features of volatile economy which may be called unstable. The mixed economy of the High North is characterized by a very strong extractive industry, which is supposed to support the local population. Moreover, there exist significant differences between not only separate areas but also between the local communities where the market based on capital, skills and exploitation of natural resources coexists with the non-market economy, among others characterized by traditional hunting and trapping. In spite of the permafrost, ice, distance and difficult access, this is no longer the economy functioning in isolation and thus protected from external influences and decisions. The region is today a meeting point between the newest technologies and particular traditional techniques assuring survival in those extreme climatic conditions. It is also an area experiencing global processes and their consequences, together with the implications resulting from the competition for the access to not only current but also future, potential resources. It is there that the growing global expectations regarding exploitation of the natural resources of the Arctic on an industrial scale will bring the increase in the environmental and human cost. Hence the key challenge appears to be correlating economic activities with preserving the integrity of the environment. Only such an approach allows reaching the goal which is to be the equitable and balanced economic and social development of the region. Its essence seems to be pinpointed by two key words: **coexistence** (ecologically sound industrial activities) and **knowledge** (comprehensive knowledge regarding the specificity of the region, its needs and conditions, and awareness of the necessity of conducting further research).

The situation calls for the necessity of a comprehensive approach towards issues concerning human beings, the environment, economic development, and governance. Policies regarding the High North must be above all based on the cooperation and dialogue with other countries of the Arctic Region. In consequence, there exists a pressing need of working out and accepting a common plan and guidelines on the prospects, which could be called a strategy for the High North.

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Abstract

The mixed economy of the High North is characterized by a very strong extractive industry, which is supposed to support the local population. There exists, however, significant differences between not only separate areas but also between the local communities. In spite of the permafrost, ice, distance and difficult access, this is no longer the economy functioning in isolation and thus protected from external influences and decisions. The region is today a meeting

point between the newest technologies and particular traditional techniques assuring survival in those extreme climatic conditions. It is also an area experiencing global processes and their consequences, together with the implications resulting from the competition for the access to not only current but also future, potential resources. It is there that the growing global expectations regarding exploitation of the natural resources of the Arctic on an industrial scale will bring the increase in the environmental and human cost.

Gospodarka Dalekiej Północy. Zarys

Gospodarkę Dalekiej Północy możemy określić jako mieszaną, z bardzo silnym sektorem wydobywczym, równocześnie mającą zapewnić środki do życia miejscowej ludności. Ponadto istotne są różnice nie tylko między poszczególnymi obszarami, ale również miejscowymi społecznościami. Mimo wiecznej zmarzliny i lodu, odległości i trudnej dostępności, to już nie jest gospodarka funkcjonująca w izolacji i tym samym chroniona przed skutkami wpływów i decyzji zewnętrznych. To miejsce styku najnowszych technologii i szczególnie tradycyjnych technik dających jednak możliwość przeżycia w wyjątkowo trudnych warunkach klimatycznych. Region zmiany doświadczający skutków procesów globalnych oraz implikacji wynikających z rywalizacji o dostęp nie tylko do obecnych, ale i przyszłych, potencjalnych zasobów, gdzie wraz ze wzrostem globalnych oczekiwań co do eksploracji zasobów naturalnych Arktyki na skalę przemysłową, rosnąć będą ich środowiskowe i ludzkie koszty.

Prof. Ryszard M. Czarny, the Jan Kochanowski University in Kielce and the University of Ss. Cyril and Methodius in Trnava, Poland-Slovakia.