Economic Potential of the Arctic Geopolitical Region*

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Abstract:

The Arctic has not been in the centre of attention of national states only for the last several years. The states in the region have been acting actively and asserting their goals for several decades. The region's military-strategic importance was fully recognized as early as in the Cold War era. The ongoing climatic changes represent the fundamental factor co-affecting the increase of the states' interest in the region. It is believed that climate changes could open new territories for economic activities and new transport routs. Generally speaking, the driving force of today's activities in Arctic region is supposed to be the economic interests, i.e. the states' efforts to gain control of and exploit certain tangible goods (fish, oil, gas, minerals) or the control of new transport routes. However it does not mean that the conflict over Arctic region is inevitable. There are some factors – such as the geographical and climatic circumstances, the level of development and accessibility of necessary technologies, and last but not least, also the financial demandingness of the projects struggling for the exploitation of the Arctic – that might rather support the cooperation of states in exploiting the Arctic potential.

Keywords: Arctic, economic potential, conflict

1. Introduction

If we should list the most frequently discussed issues of international events of the recent years, there will be definitely included the issues related to climate change and global warming, the question of sustainable growth and environment protection, energy security and the growing demand for oil and natural gas, guaranteeing operable and secure sea routes and the growing Russian power. When taking a closer look at these topics, sooner or later, we will come across a rising interest in the Arctic region, which was triggered off mainly in relation to summer 2007 events when Russia symbolically demonstrated their ambitions in the region.

In specialised literature, there are a vast number of variously successful attempts at the theoretical delineation of the notion of conflict. As it is not the aim of this article to examine

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in great depth the theoretical approaches of individual authors toward this phenomenon, we will content ourselves with the thesis that in case of conflict, it is a social reality involving at least two participants in which we can identify a clash of interests, while this clash should be openly expressed by at least one side. Therefore, conflict will be strictly distinguished from its individual main forms. Together with Wallensteen, we can identify three basic elements of conflict defined in this way (cf. Wallensteen 2007: 14–15): 1. sides of conflict, or participants; 2. clash of interests; 3. actions. In other words, in order for a conflict to break out, there must be sides that have certain interests and aims.

The forms of conflict themselves can be diverse (e.g. unarmed conflict – armed conflict – war). The topmost form of conflict that we can encounter in international politics is undoubtedly war. Wars in which clashing interests are represented by resources are not rare phenomenon in international politics. This was pointed out already by K. Holsti in his research dealing with the period of 1648 – 1989 (Holsti 1992: 307). In today's international politics, obtaining approach to resources, and to resources of strategic raw materials in particular, plays such a crucial role that this phenomenon can be found practically in most of armed conflicts and wars after 1989.

Hence it is worth concentrating in the research on the economic potential of the Arctic and analysing resources that this continent disposes of at the level of the present state of science and technology while taking into regard the tendencies in the changes of climate. It is the available resources that can significantly contribute to whether conflicts in the Arctic will or will not escalate. If the point of resources was missing or of small importance, it is impossible, or at least less likely, that it will result in a conflict and vice versa. Conflicts over regions rich in resources are not exceptional in the past; they are more likely a rule.

Furthermore, in considering the conflictful potential of the Arctic, it is necessary to bear in mind that it is not only the range of resources available i.e. at the level of the present development of science and technology of exploitable resource but also the perception of the situation by the individual participants.

The aim of this article is to define the Arctic as a geopolitical region and to analyse its economic potential which could be exploited in the future. A brief research of the specialised texts dealing with this area shows that a comprehensive definition of the Arctic is still missing. Also its economic potential tends to be overexaggerated. Therefore it is necessary to deal with this nontrivial issue at an academic level.

2. Defining the Arctic as a geopolitical region

The main problem of many contemporary texts specialised in the field dealing with the area of the North Pole is posed by the vague terminology. Discussed areas are most often called *the Arctic* or *the North*. These nouns are usually completed by various adjectives; e.g. *circumpolar* (i.e. the region around the Pole), *far* or *high*. It is easy to imagine the approach in which the afore-mentioned variations would be used as synonyms. The problem is that the same terms used by different authors may as well refer to completely different areas within the Arctic. Holtsmark and Smith-Windsor warn that the choice of an appropriate term and the definition of its content is much more than a scholastic exercise. There is a risk of overgeneralization

resulting in a wrong perception of the actual situation. Thus, some of the most alarmist scenarios of regional conflict escalation tend to evaporate with a closer look at the map and clarification of terminology (Holtsmark and Smith-Windsor 2009: 10).

Therefore it is essential to employ the clear definitions of geographical terms. This is especially true when we take into account such a vast region which the Arctic undoubtedly represents. Therefore the whole area must be delineated more precisely. Unfortunately, there are a series of numerous definitions. According to Hoel (Hoel 2009: 81), the following three definitions are used most frequently: a) the area north of the North Pole (i.e. 66°32´ north latitude); b) the area north of the 10°C July isotherm; c) broader definition used within the Arctic Human Development Report (AHDR).

In all cases given above, the regions are very vast. The area of the Arctic Ocean (AO) only occupies over 14 million km². It is an area 1.43 times as large as the USA and 3.25 times as large as the area of the EU.[1] If we delineate the Arctic according to the definition which is assumed by AHDR and with several small divergences, also by the Arctic Council, we will acquire a region occupying 30 million km², yet with only c. 4 million inhabitants (Bogoyavlensky and Siggner 2004: 27). Alf Håkon Hoel mentions, as far as the issue of definitions is concerned, the broader definition makes the Arctic naturally an area of more importance. This is true especially from the economic point of view as most today's economic activities are restricted to peripheral regions (areas around the Arctic Ocean). However such vaguely defined delineations lead to the loss of the region's uniformity, i.e. the defining attribute from the geographical perspective (Hoel 2009: 83).

The Arctic Council decides for a definition based not purely on geographical factors but also on taking into account the political issues. A broader delineation has been used by the Council in order to take into consideration the internal administration of member states. Hence the Arctic's delineation copies the borders between the federal states in the USA, federal territories, autonomous regions in Canada, etc. (Tesař 2008: 7).

Hence it leads us to the question which states can be regarded as "Arctic". Unity prevails concerning the five states whose coasts are washed by the waters of the Arctic Ocean – the Russian Federation, the USA, Canada, Denmark (Greenland) and Norway. Also Finland, Sweden and Iceland tend to be regarded as Arctic due to their membership in the Arctic Council. The problem is that due to the development in the recent years, a number of other participants are starting to get involved in the Arctic events starting to pursue their interests in the region despite the fact, that these new "exotic" actors are often domiciled in remote parts of the world. Those are above all China, India, Japan and South Korea (Holtsmark and Smith-Windsor 2009: 13).[2] A significant role in the region is then played by other participants of internationalcommunity. After last two decades also NATO and EU turn again their attention to the north Similarly like MNCs and NGOs play ever more important roles in the region.[3] Therefore the Arctic has been becoming a region of the global importance. Also the range of participants present is global.

From the geographical point of view, the Arctic is primarily viewed as a region beyond the Polar Circle. It is this definition which appears to transcends particular branches of science and which is the most stable one.[4] The region defined in this way represents 6% of Earth surface. Out of that, approximately one third is occupied by mainland; one third by the area of the continental shelf into the depth of 500m; and the rest is the open sea (Gautier et al. 2009: 1175).

The most of the Arctic is formed by the ocean. Contrary to the Antarctic there is no peculiar continent. [5] The largest area is occupied by the Arctic Ocean. It is, de facto, an inner sea connected with the world's ocean only by Bering Strait, Nares Strait between Canada and Greenland, and the area on the axis of Greenland – Svalbard – the Norwegian coast in the Barents Sea. Up until recently, it had been held true that the defining attribute in the area was a thick layer of ice (see further chapters). Moreover, the Arctic Ocean has the least average depth in comparison with other oceans, which is caused by wide continental shelves (especially the Russian one) occupying c. half the ocean's seabed, which makes it unique all over the world (Børresen 2008: 5). The main structures of the relief of the Arctic Ocean's seabed are 3 ridges and 4 oceanic basins. The average depth between the Novaya Zemlya and the Bering Strait is only 100 metres. In the area of the Barents Sea between Norway and Svalbard, the ocean's depth reaches only 350 metres at the most (Børresen 2008: 7). The favourable depth of the sea of the continental shelf obviously promotes ideas of natural resource extraction. At the same time, the areas of the northern seas also offer great potential for fishing.

Nowadays, most economic activities including fishing are restricted to the waters neighbouring upon the Arctic Ocean. Fishers can be found mainly in the Barents and Bering Sea and in the areas around Greenland and Iceland. Even so, these activities represent 10% of the world's fish production (Hoel 2009: 81). Apart from the ocean, there are a number of islands in the Arctic. The largest ones are Greenland (2,130,000 km²), Baffin Island (507,414 km²), Victoria Island (217,291 km²), Ellesmere Island (196,236 km²), Novaya Zemlya (82,180 km²), Svalbard (63,080 km²), the New Siberian Islands (38,400 km²) and Severnaya Zemlya (37,560 km²).

Arctic region is inhabited by indigenous people (Inuit, Sami, etc.) as well as the first or further generations of "immigrants" from the more southwards areas of Arctic countries. The largest settlement is the Russian Murmansk with 340 thousand inhabitants followed by Norilsk with 135 thousand (Bogoyavlenskiy and Siggner 2004: 30). Furthermore, in the Russian Federation, we can find over 30 towns with more than 10 thousand inhabitants, which makes Russia with nearly half the region's entire population the ultimate leader as for the number of inhabitants.

In North America, we rank among the largest settlements situated north of the Polar Circle the Alaskan Barrow with 4,683 inhabitants and Iqualuit – the capital of the Canadian territory of Nunavut – with 6,183 inhabitants. The Greenlandic population numbers altogether up to c. 57 thousand inhabitants, yet most of them living in the southwest of the island. Svalbard is inhabited by only a little over 2 thousand people. If we compare these numbers with the enormous area of the Arctic, it is obvious that the density of population is very low (Bogoyavlenskiy and Siggner 2004). The Arctic economy is based on the exploitation of natural resources (especially oil, natural gas, other mineral resources and fish). The structure and extent of the economic activity differs country from country and subregion from subregion (especially according to the degree of exploitation of primary commodities). In this respect, too, the primary role is played by Russian areas.[6]

3. Analysis of the region's economic potential

The Arctic has not been in the centre of attention of national states only in the last several years. The states in the region have been acting actively and asserting their goals for several decades. The region's military-strategic importance was fully recognized as early as in the Cold War era. This "value" obviously still prevails and it may even grow in the future[7]. The Arctic remains a place where the distance between the North American continent and Eurasia diminishes, which will continue to attract military strategists' attention (early warning systems, joining NMD, rocket force such as in Fort Greely in Alaska, ground for SSBNs and strategic bombers).[8] Furthermore, the waters of the Arctic Ocean connect the two world's most significant oceans (the importance of straits as choke points of sea transport) and on the Arctic borders, there is a major traffic artery between the west coast of America and Europe.

The new surge of interest in the Arctic is related mainly to the region's economic potential, climatic changes and its altered perception. Climate change and technological progress should enable us to make use of the Arctic natural resources and sea routes. However, new SLOCs would not have to serve only to the export of local resources to world markets but also as a transit route between the world harbours.

It is this "wealth" that is becoming exploitable which attracts the contemporary attention of states. Thus the driving force of today's activities are especially economic interests, i.e. the states' efforts to gain control of and exploit certain tangible goods in order to have profit. A major role is also played by the fact that states vital interests are at stake because strategic resources (oil and natural gas) could increase state power and security. Therefore, in the following parts of our article, we will try to identify and characterise the potential of the Arctic more thoroughly and assess whether the optimism concerning its exploitation is justifiable. In order to reach such a conclusion, we will have to deal with the issue of climatic change and its potential impact on the Arctic.

3.1 Climate change and its importance for using the Arctic's potential

Due to the climate conditions, it had been held true up until recently that the states' activities in the region were restricted to sending out the scientific expeditions, supporting indigenous people and other predominantly seasonal activities. The peak of involvement in the region was reached in the Cold War era. However, even in this period, there were only manoeuvres of nuclear submarines and strategic bombers and the waters of the Arctic Ocean could be entered only by a small group of specifically modified ships. The climate in the Arctic still remains the major limitation restricting any activity in the region.

Therefore, the ongoing climate changes represent the fundamental factor co-affecting the increase of the states' interest in the region. Let us now leave aside the impact of these processes on the environment and Arctic fauna and flora, which can be traced in the works of different scientific branches (see Anisimov, Vaughan, Callaghan, Marchant, Prowse, Vilhjálmsson and Walsh 2007).[9] We are more likely interested in the impacts that could influence the international politics.

The most frequently discussed issue is the shrinking and reducing ice. It was the ice of the Arctic Ocean which has recently become not only the key indicator of the ongoing climatic

changes but also a factor making it possible to reconsider the potential use of the whole region from the perspective of national interests. An ever-growing percentage of water melts completely and refreezes every year; within one year we thus witness greater extremes than in the past. Every year, we find largest extent of ice covered areas in March; on the contrary, the least ice can be found there in the melting period in September. If we transfer this to an average ice surface, it is approximately 14 million km² at the most and c. 7 million km² at the least (Perovich and Richter-Menge 2009: 420). However, from the perspective of climatic changes, it is not only annual cycles which are at play but also long-term trends.

Despite climatologists' differences in opinions caused by various methods of calculation, it seems, according to available resources, that in the long run, ice in the Arctic is shrinking. However, the decline is not linear and it has become much quicker in the last decade. The overall shrinkage of ice between 1980 and 2007 represents 3.6 million km² (especially in the area of the Beaufort, Chukchi and East Siberian Sea). Apart from the overall ice surface, another significant parameter is the thickness of ice. Here, too, there is an evident continuous declining trend. Last but not least, multiyear ice is being replaced by seasonal ice. Consequently, the seasonal as well as long-term shrinkage of ice promotes further warming, which leads to accelerated melting (Perovich and Richter-Menge 2009: 421).[10]

The question is how the situation is going to evolve in the future. Will there be a complete recession of ice? And if not, will the conditions in the region change so much that it will be possible to develop human activities to a greater extent at least at a certain time of the year, or at least in some parts of the Arctic?

Of course, there are no obvious answers to these questions. Most reliable *specialised* – i.e. not political scientific, international relations or economic but climatological – reports approach any predictions rather apprehensively. They agree on the fact that there will be further ice shrinkage and global warming (Perovich and Richter-Menge 2009; Overland, Wang and Walsh 2009). Any more specific projections and closer estimations are somewhat uncertain.

Perovich and Richter-Menge claim that all scenarios rely on the existence of seasonal winter ice. Therefore, the Arctic ice is *never* going to disappear completely. It is unclear whether we can expect at least ice-less summer months. Only the most extreme scenario under consideration of the Intergovernmental Panel on Climate Change (IPCC) counts with such a development. In this projection which does not presuppose any counteraction against climate changes, the IPCC speaks of the year of 2100 (see Parry et al. 2007). Yet once again, it is necessary to emphasise that it is the most extreme, noticeably relative and uncertain conclusion.

The proof of its being relative can be that the actual states of ice observed in the Arctic in September 2007 got ahead of the theoretical presuppositions concerning ice shrinkage by approximately 50 years. This has led to daring claims counting on the summer Arctic without ice as early as around 2015 (Lasserre 2009: 179). On the other hand, in winter 2008 there was more ice than in 2007. According to Perovich and Richter-Menge, this shows not only the dynamics of the ongoing changes but also the troublesome character of any modelling of the Arctic climate of the future (Richter-Menge 2009: 437). Hence serious climatologists do not try to hide their lack of knowledge, which does not make the work of political scientists and international relations experts any easier.

That is also why it is more suitable (and also more precise) to stay more likely at the subregional level. According to most studies, most ice shrinkage is likely to take place in the area of the Chukchi, East Siberian and Beaufort Sea. On the contrary, minimal changes in comparison with today will occur in the area of the Baffin Bay/Sea and Canadian islands. The greatest uncertainty, as far as any estimation is concerned, regards the future conditions in the areas of East Greenland, Kara Sea and Laptev Sea (Overland and Menge 2007)

Undoubtedly, ice shrinkage opens the doors to new activities which had been hard to imagine up until recently. Despite the present dynamics, it is rather difficult to estimate how quickly the imaginary doors will be open to the development of human activities. Moreover, ice shrinkage does not take place equally in the whole region. In some areas of the Arctic, we can actually count with further recession of permafrost in the near future; other areas will remain practically unchanged.

Even from now on, it will be necessary to count with the yearly cycle of ocean's melting and freezing, which is different year from year. However, it is not the shrinkage of ice itself that is important. It is only a factor limiting the development of activities in the region. With regard to the size of the Arctic, the question of ice surface must be considered *ad hoc* in relation to the particular subregion and the particular character of the planned enterprises. Therefore, the issue of ice surface is not the only problem making any activities in the region difficult. The other factors coming to play are weather conditions, sea currents, floating ice, etc.

The problem is that the afore-mentioned moderate estimations expressed by experts pointing to the complexity of the issue and emphasising its subregional character are in a great contrast to the information presented in the media. The uncritical acceptance of the vision of the future iceless Arctic is an extreme. In the better case, the availability of natural resources tends to be held as problematical only with regard to the ice surface and further manifestations of the extreme climate and limits posed by the region's remoteness are left aside (e.g. Skogrand 2007). Such voices result in a deviation from *perceiving* the Arctic as a region *inaccessible* for human activities to another extreme – perception of the Arctic as a region *completely accessible* for human activities. The idea of the Arctic that is open to human activities often standing on overgeneralised information and schematic thinking is, to a great extent, accepted by politicians and decision-makers (cf. the European Commission 2008a or IFS2009). It is this perception – living its own life regardless of the reality and detached approaches of climatologists – which represents the driving force of the ideas of exploiting the region which, until recently, had not been on the programme of the day. In general, they are mainly discussions about new sea routes and natural resources exploitation. Hence in the following parts, we will gradually deal with the discussion of these observed opportunities.

3.2 The future of sailing in the Arctic region

The technological progress and climate change have led us to the threshold of the new era of sailing in the Arctic. In 2007, it was possible for the first time ever to sail through the Northwest Passage from the Atlantic to the Pacific. Similar expectations can be held true regarding the shipping routes above the northern coast of the Russian Federation. In August 2009, two ships heading from South Korea to the Netherlands were the first to sail along the Russian coast without the assistance of icebreakers (Kirschbaum 2009). In October 2007, the

first Russian ship completed its voyage on the so-called Arctic Bridge – on the route between the Russian Federation and Canada passing over the Arctic Ocean – into the Canadian Churchill (Friesen 2007). It is thus only a matter of time when the region will become an area intersected by a network of sea routes of world importance. A significant shortening of distance and considerable reduction of costs of sea transport is at stake. The Arctic will become the "new Baltic, in winter covered only by a thin ice layer and thus fully navigable all year round" (Borgerson 2008). This is a generally accepted vision which goes hand in hand with the (wrong) perception of climatic changes mentioned above. [11]

Only a negligible number of analysts and politicians doubts the idea that it is only a matter of time before new sea routes of world importance will be launched in the Arctic (Lasserre 2009: 179). Naturally, such a conclusion makes the importance of the whole region much greater. The question is to what extent similar opinions are justifiable. That is also why it is necessary to deal with the issue of sea routes more thoroughly. Lassere argues that the opinions from the previous paragraphs must be regarded as, at best, "an educated guess" and that it is possible to make serious estimations only for the development in the near future which always precedes the far away one (Lasserre 2009: 182). Factors limiting sailing are substantial. It is the idea of a potential growth of sailing which makes the importance of the Arctic greater and it is closely connected to the ideas of the state's sovereignty, ship control, etc. To what extent then can it be held true that climatic changes will lead to a major development of sea transport in the region?

Basically, the receding ice opens three routes. (1) *The Northwest Passage* (NWP) is a term representing several alternatives of SLOC connecting the waters of the North Atlantic and the Pacific. Therefore, we speak of the route leading along Alaska and the Canadian coast from Bering Strait to Lancaster Strait. (2) *The Northeast Passage* (NEP) – often called also the Northern Sea Route – referring to the routes between the Siberian coast and the islands of New Zemlya, Severnaya Zemlya, the New Siberian Islands and Wrangler Island. (3) The last group includes the routes crossing the Arctic Ocean (e.g. from Canada to Russia or from Greenland towards Bering Strait). Actually, it is primarily the so-called *Arctic Bridge* connecting Russian harbours and the Canadian Churchill on the route along the southern coast of Greenland.

The core of the generally accepted visions mentioned above of the significant growth of sailing is composed of the question of distance. For example, the route from Rotterdam to Yokohama represents a distance of 13,950 km in the case of the NWP; 13,360 km through the NEP; 23,470 km through the Panama Canal and 21,170 km through Suez (Christensen 2009). When taking a look at the map, it is evident at the first sight that SLOCs across the Arctic will be shorter and thus faster and cheaper. Let us now leave the presumption undoubted that it is possible in such considerations to count with a constant speed of sailing in order to compare the afore-mentioned routes (for the discussion, see below) and let us focus only on the question of distance.

It is true that in certain cases, there is really a considerable shortening of the route (e.g. sailing from London to Yokohama). However, we will just as find routes for whom the Arctic is attractive from the perspective of distance only partially or hardly at all. However, the question of distance which appears to a layperson when travelling only by looking at the map as the most important one really represents only one of a series of significant factors. What are the other variables in the case of the NWP and NEP?[12]

Picture 1: Comparing different alternatives of SLOCs between harbours

Distance in km between harbours using various southern and northern routes

Route	Panama Canal	Northwest Passage	Northeast Passage	Suez and Malacca
London - Yokohama	23.300	15.930	13.841	21.200
Marseilles - Yokohama	24.030	16.720	17.954	17.800
Marseilles - Singapore	29.484	21.600	23.672	12.420
Marseilles - Shanghai	26.038	19.160	19.718	16.460
Rotterdam - Singapore	28.994	19.900	19.641	15.750
Rotterdam - Shanghai	25.588	17.570	15.793	19.550
Hamburg - Seattle	17.110	15.270	13.459	29.780
Rotterdam - Vancouver	16.350	14.330	13.445	28.400
Rotterdam - Los Angeles	14.490	15.790	15.252	29.750
Gioia Tauro (Italy) - Hongkong	25.934	24.071	21.556	14.093
Barcelona - Hongkong	25.044	23.179	20.686	14.693
New York - Shanghai	20.880	17.030	19.893	22.930
New York - Hongkong	21.260	18.140	20.982	21.570
New York - Singapore	23.580	20.310	23.121	18.770

Marginally longer route | Shortest route

Source: Christensen 2009

At present, there is no adequate mapping of areas that would allow the secure navigation of ships. Therefore, a number of topographic and cartographic expeditions will be necessary to describe the character of the seabed, depth, currents and other facts fundamental for navigation. However, even if there were good maps, complications caused by the Arctic climate would remain. The Arctic will continue to be relatively cold and it will be submerged into the polar night for half a year. In the course of winter, the ocean will freeze repeatedly. It is hard to estimate in advance the exact date for the unblocking of the particular sea route. Yet any strait can freeze or be blocked literally from day to day. Moreover, every year, different areas melt, which again makes it rather complicated to plan anything ahead.[13] Lassere claims that companies providing sea transport will have to guess every year since when and where they will be able to sail with their ships. Yet, long-term planning in the commercial sea transport has become a standard nowadays (Lasserre 2009: 194).

Even in summer, ships will have to tackle drifting ice, which represents a great risk particularly in the areas of Canadian straits. Moreover, it is in the area of islands along the Canadian mainland via which the NWP runs that the ice shrinkage will take place the most slowly and floating ice blocks will hence be formed especially by multiyear ice, which is especially dangerous for ships. Protection is not provided even by a special construction of the ship's hull, which can be proved by the recent crash of the Explorer, which sank near the Antarctic after it collided with a floating ice block (BBC 2007). Apart from these fractions of ice and floating ice blocks, they will have to count with icebergs the number of which will

only grow in case of warming (especially in the area of Greenland). We need not speculate what kind of consequences a crash with an iceberg can have. As a result, ships will have to slow down and navigate carefully in the problematic areas.

The relatively small depth of the Arctic shelf sea, especially evident in some straits (often only around 10 m of depth), reduces also the draft and size of ships that can sail through the area (Ragner 2008). The opinions that the NWP or NEP could be made navigable also for the largest cargo ships are absolutely mistaken. Ragner states that the navigability of the NEP will be, on the contrary, smaller than the navigability of Suez (Ragner 2008).

Therefore, shipbuilders cannot avoid constructing a special class of ships equipped with adequate radars for night sailing, a trained crew and other equipment necessary to master the Arctic spells of weather. Securing the cargo and insuring the voyage, too, will be financially demanding (Ljungrenn 2009). As a result, that all together means a shorter but also noticeably more expensive voyage. If we add the hard predictability of conditions and the risk of a great delay due to deteriorated weather, the appeal of newly available Arctic sea routes will decline to a great extent.

Moreover, there is no necessary infrastructure for rescue operations in the area in case of a ship crash (e.g. tankers). A memento in this respect represents the crash of the Exxon Valdez tanker, ranked as one of the worst natural disasters caused by people ever. A potential leakage of oil whose liquidation is almost impossible in the Arctic conditions would have a devastating impact on the local ecosystem. This results in a number of interest groups and environment protectors as well as some governmental and international agencies protesting against the development of sea sailing, e.g. the question of extraction in protected Alaskan areas – the so-called Arctic National Wildlife Refuge. (Shogren 2005) Of course, the absent infrastructure can be constructed and the environmentalists' voices can be ignored. It is questionable whether such an investment will be profitable. High costs will be paid back only providing a certain level of exploitation of facilities constructed. However, the growth in exploitation may take place only very gradually, due to the high input costs into the specific field of polar sailing. Thus we find ourselves in a vicious circle out of which one can step only after a long-term coordinated effort of private companies and the state.

The potential of the SLOCs under discussion differs depending on the individual kinds of sea transport. The afore-mentioned facts have other consequences for tankers, others for container transport and still others for bulk carriers, etc. Each of the sectors of shipping industry listed above requires different preconditions for a safe and economically profitable voyage (for details see Lasserre 2009). Oil companies tested the navigability of the NWP as early as in the late 1960s. The SS Manhattan tanker sailed the route with the assistance of icebreakers but the oil industry soon rejected this alternative as economically non-profitable and rather risky as for security (Borgerson 2008).[14] In the field of container transport where the competition is high, it is a standard to arrange not only the place of loading and delivery but also the precise date of delivery. Any delay can mean high contractual fines. This could happen if, for example, the drifting ice would prohibit them to sail through one of the NWP straits and as a result of that, the ship would be delayed. Furthermore, most ship-owners are trying to use the ship's capacity as much as possible and thus they plan their routes with several interlandings. The NWP and, to a lesser extent, also the NEP do not still offer a possibility of landing in a harbour of a greater economic importance enabling the transhipment of

containers. Not least, the yearly freezing of the Arctic Ocean would mean changing the route of the ship's voyage twice every year, which again increases the input costs. Owing to that, Lasserre argues that it is highly improbable from the perspective of container transport to think of the Arctic as a profitable alternative to the present SLOCs (Lasserre 2009: 197). Somewhat more optimistic expectations can be found in the branch of bulk carrier transport, such as corn, natural minerals, wood, cement, and others. Nevertheless, the calculation of the price of the potential voyage will matter most.

Finally, it is appropriate to distinguish between transit transport when ships only sail through the Arctic area, and transport to/from the harbour directly situated on the north coast of Euroasia or North America and the adjacent islands. As an example, we can name the local sea transport between Murmansk, Kara Strait south of the Novaya Zemlya and the harbour of Dudinka near the mouth of the Yenisei River, which has been under seasonal operation since the late 1970s (Christensen 2009: 4). Contrariwise, the development of transit transport on the whole length of the NEP is blocked, apart from ice and climate, also by the relatively high sailing charges required by Russian authorities. Yet in many respects, the NEP offers a greater potential than the NWP. The ice surface will be shrinking the most quickly precisely in the area north of Russia. What is more, the Russians also dispose of the best developed infrastructure (already functioning harbours all along the NEP), equipment (a great fleet of icebreakers), as well as necessary experience (Lasserre 2009: 199). From the perspective of economic profitability, the best SLOCs seem to be the SLOCs across the Arctic Ocean. However, they are at the moment – with the exception of the Arctic Bridge – the least considered alternative due to the prevailing ice in the areas around the North Pole.

The Arctic must be regarded as a specific region in which sea transport, despite the ongoing melting, will be complicated also due to the other factors listed above. Even so, sea transport in this area will definitely continue to develop. Nevertheless, the driving force will more likely be the development of *local* transport shipping similarly to Russia. The growth in the volume of sea transport will be very gradual. Regarding the different dynamics of climate changes in various areas in the region, the size of the whole area (the Arctic Ocean is much larger than the Baltic) and various demandingness of sailing in various parts of the region (the NWP vs. the NEP vs. the Arctic Bridge), it is again more suitable to stay more likely at the subregional level. Therefore, the volume of transport will depend especially on the development of other human activities in the region – e.g. the volume of natural resources extraction, the development of tourism and fishing.

3.3 Mineral resources in the Arctic area and their exploitation

The effort to exploit Arctic natural resources is not new. Apart from fishing, there is a great potential for the exploitation of mineral resources, oil and natural gas. Mineral resources exploitation on the mainland has been going on for several decades. Coal has been mined in Svalbard since as early as the first half of 20th century. While nickel, copper and iron have been mined in the north of Norway and Russia for a few decades, more extensive mining in Greenland and Canada started only recently (Larressen 2009: 187).

Nowadays, the greatest boom takes place in the Canadian northern territories. Prospectors are looking for discovery sites of iron, uranium, gold, nickel, copper and zinc hoping they

will be just as successful as diamond mining companies. It was the development of several sites in Northwest Territories and Nunavut from the 1990s that made Canada one of the major producers of diamonds in the world. Only in the period from 2004 to 2007, investments into the mining industry had grown in three northern Canadian territories (Yukon, Nunavut and Northwest Territories) by 110%. (Lasserre 2009: 187) A similar expansion of mining activities on the mainland has been going on also in Greenland and Russia.

Next to mining in extreme climatic conditions itself, a major problem is posed by the question of transport of the acquired resources to world markets. For the most part, they are mined in remote places that would be usually reached by railway or road transport. Yet, the construction of ground communications is rather complicated on the working permafrost. The Soviets tried to develop the infrastructure for their mines already in the 1930s. In spite of building a limited number of railways, they finally resorted to the development of the NEP as the most acceptable form of transport (Lasserre 2009: 190). Even today, building roads and railways capable of enduring several winters remains to be very financially demanding; therefore, companies every year resort to a construction of temporary communications over the frosted tundra. However, they hardly ever live to see the next winter due to melting and shifts of land. Yet climatic changes make it possible to take into account sea transport even in places where it used to be impossible due to ice. Projects dealing with the development of seasonal sea transport – led by syndicates of natural-resource mining companies operating in the Siberia and Canada – may contribute significantly to the development of sea transport in the near future. Mineral onshore mining will definitely bring about a growing importance of the region.

3.4 Oil and natural gas: the Arctic as the energetic region of the future?

Nowadays, the vision of vast resources of oil and natural gas that will become exploitable due to climate changes stands in the centre itself of the growing interest in the region. The question is to what extent these visions are justifiable. For that reason, we will try to take a closer look at the feasibility of perceiving the Arctic as the energetic region of the future. Let us now ask what energetic potential is offered in the area beyond the North Polar Circle.

First, it is suitable to pay attention to some basic information concerning the character of the fields dealing with the extraction of oil and natural gas. In general, it can be claimed that these industries are, in all respects, financially and technologically very demanding. The process itself of exploration, development and the subsequent extraction requires enormously long time periods (sometimes even several decades) and the investors in the sector battle, due to the extreme financial demandingness of the projects and volatility of prices, with major risks of profitability of the invested capital (Adelman 2002: 184). Investments can bring profit only in the long-term perspective, providing that the prices of oil and natural gas will not fall under a certain price level when it would be impossible to financially sustain the extraction from the given locality. The actual value of the particular locality can be estimated for sure at earliest at the time of launching the actual exploitation (Adelman 2002).

Out of all possible ways of extracting oil and natural gas, the most time and financially demanding of them is exploitation outside the mainland which is the more intricate, the more extreme the climatic conditions are and the further it is from subsidiary facilities and other parts of the industry (refiners, etc.).

If we would like to find world's localities where exploitation will be most demanding and most expensive, the places in the Arctic region will always belong to the top of the imaginary chart.[15] Budzik names the following obstacles: extreme temperatures and weather;[16] distance from world markets, limited possibilities of transport, higher workforce costs, and last but not least, also a potential clash with the interests of the indigenous people, or with environment protection (risk of legal pursuits) (Budzik 2009). That all must be added to volatility of world prices of oil and natural gas and in a short run, also the impacts of the world crisis. That is also why not all resources of oil and natural gas are of interest but only those that will be so available and vast that the profitability of costs will be guaranteed.[17] According to EIA analysts, in the case of the Arctic, it is the oil fields and natural gas resources which will offer at least 500 million barrels of oil equivalents (Budzik 2009: 3).

The problematic character of exploitation in the region and the afore-mentioned facts are confirmed also by practice. Despite a whole number of very promising sites having been discovered in the Arctic as early as in the 1970s and 1980s, extraction has not been launched in most of them so far. At present, there are 61 large oil and natural gas fields (each over 500 million barrels of oil equivalents) beyond the Polar Circle on the area of Alaska, Canadian territories, Russia and Norway. Out of that number, 11 Canadian, 2 Russian and 2 American extraction sites have not been launched yet (Budzik 2009: 4). Onshore extraction is mostly concentrated in the area of western Siberia and northern Alaska (Gautier et al. 2009: 1176). Not even these numbers are negligible. Up until 2007, extraction from onshore discovery sites was launched beyond the Polar Circle that should altogether, according to the data available, offer resources of 40 billion of oil barrels (bbo); 1,136 trillion cubic feet (tcf) of natural gas [18] and 8 billion of barrels of liquefied natural gas (LNG) (Gautier et al. 2009: 1175).

To a large extent, the current interest in the Arctic as an energetic region of the future goes hand in hand with the potential exploitation on the continental shelf, i.e. *offshore* under the sea. It is the area of Arctic continental shelves that promises the largest resources of oil and natural gas in the future (Offerdal 2009: 151). What are the current activities as far as oil and natural gas extraction outside the mainland is concerned?

Despite there being a number of suboceanic extraction sites nowadays, most of them have not been put into operation so far. That can be blamed on extreme costs, low world prices of the particular commodities and the problem of extreme climate and transport (Gautier et al. 2009: 1176). The first natural gas extraction facility in the European parts of the Arctic ever was launched by the Norwegian company StatoilHydro as late as in autumn 2007 in the locality of Snøhvit in the Barents Sea; this was so despite it being discovered already in 1984 and being close to the mainland (Offerdal 2009: 162). In the same area, the first platform to start oil extraction from the seabed is still only being expected. The primacy may be claimed by the oil field Prirazlomnoye in the Russian Pechora Sea (Offerdal 2009: 162). A similar situation can be found also in North America. The first oil extraction was launched in the oil field Endicott already in the late 1980s. Another more significant extraction site is only Northstar. The development of both localities was enabled by the extraction in the nearby Prudhoe Bay guaranteeing the construction of the necessary infrastructure (especially the oil pipeline). Just as in the European case, it is extraction only several kilometres far away from the coast of Alaska.

Nowadays, we do not witness in the Arctic (also due to the financial crisis) any major boom in the development of extracting *offshore*. However, what is the region's potential in the future? Can we expect also further discoveries of oil and natural gas that will be so interesting that their exploitation will pay off? Even though many factors have implied earlier that the Arctic is rich in vast resources of oil and natural gas, particular data concerning the whole region – and not only limited areas near the Alaskan coast or the Barents Sea – were brought by measurements and explorations conducted in the last decade. As the most important one (at least as for the interest of the media and general public), we can refer to the estimations provided by the American USGS (United States Geological Survey). The USGS published the first numbers in 2000. Based on these data, the media reported that the Arctic could offer up to 25% of world oil and natural gas resources that have not been discovered yet. It was this report that contributed significantly to the attraction of attention of the public, academics and statesmen to the north. The problem is that in the USGC report itself, there is no such a conclusion (Offerdal 2009: 158). USGC monitored geological wholes situated, for the major part, outside the Arctic (if we define it as an area beyond the Polar Circle). The USGC published other estimations in 2008 reducing the afore-mentioned number to 22%. The last report dealing purely with the area beyond the Polar Circle was then published in May in the Science magazine (Gautier et al. 2009).

The report works with oil and natural gas which would be, at the present state of technologies, exploitable *theoretically*. The word "theoretically" must be pointed out as the potential costs of the development of wells are not taken into account. In other words: the report does not deal with where the deposit is situated (e.g. several tens of metres under the permafrost sea surface), providing that this deposit could be exploited today (regardless of the costs of the well's development). In the calculations, they used indirect methods of research working with modelling and probability. Regardless of the accuracy of the research, the conclusions thus have only a limited predicative value. The authors themselves state explicitly that they work with an insufficient file of informatio on the Arctic geology. There are still no exact data for similar calculations.

The 2009 USGC report states that the region can offer approximately 30% of the yet undiscovered world resources of natural gas (770 tcf) and 13% (618 bbo) of oil resources. A brief look will imply the uneven distribution of the expected localities with greatest resources of oil and natural gas. Out of the 49 geological areas under consideration, 60% of oil fields are situated only in six of them. Similarly, two thirds of natural gas belong to mere four areas, the most significant of them being the southern part of the Kara Sea with 39% of all estimated natural gas resources. USGS claims that the largest discovery site of natural gas is eight times as big as the most promising area from the perspective of oil extraction. From other included numbers, too, it becomes evident that the Arctic will offer three times as much natural gas as oil. Most deposits should be situated outside the mainland on the continental shelf into the depth of 500 metres.

Hence we can reach the following conclusions from the report quoted. The Arctic of the future has, without a doubt, a great potential as far as energetic resources are concerned. However, for the time being, there is a lack of data in order to make more exact estimations of the size of these resources. Thus we find ourselves at a stage of uncertainty and speculations. The current priority is represented by the acquisition of geological data enabling us to make

the existing rough data more exact and, further on, make exploration wells in order to reveal the real potential. Yet even today, it is apparent that the exploitation of resources in the region will require considerable financial and technological demands. We can assume that primarily, there will be exploitation of technologically and financially less demanding localities that are situated on the mainland or in its immediate proximity. Especially in the case of Russia and Canada it can be held true that all mainland resources of oil and natural gas have not been used yet (Chazan 2008). At the same time, it is necessary to mention the uneven distribution of oil and natural gas discovery sites in the region. Most energetic resources are apparently concentrated in a limited number of discovery sites. While the generally "richer" Eurasian part of the Arctic (63% of all hydrocarbon resources) will offer mainly natural gas; the North American one, on the contrary, has a greater potential for oil extraction. Also oil resources are concentrated only in a few areas. Arctic Alaska, Amerasia Basin and East Greenland Rift altogether offer 54% of the resources of Arctic oil (if we take into consideration the USGS data). Therefore, the Arctic appears to be more promising from the perspective of natural gas resources. Among the states under consideration, Russia plays the primary role. Only in the area of the West Siberian Basin and East Barents Basin, 47% of all undiscovered resources of oil and natural gas are estimated to be found; out of that, natural gas assumes 94%.

3.5 Fishing and question of jurisdiction

Fishing represents a unique chapter of human activities in the region. To a certain degree, conclusions mentioned in previous chapters can be held true also about fishing. Global changes of climate undoubtedly enable us to transfer commercial fishing still further towards the north into the areas with a great potential. For fishing boats, too, there are risks brought about by the extreme climate and other limits listed in previous chapters.

In the case of fishing, climate changes do not bring along only greater accessibility of the region but also a great uncertainty regarding the fished species. Already today it is clear that the launched trends will cause major changes in the ecosystem not only in the Arctic but also in the nearby northern seas. It can be hardly guessed in advance where exactly the most promising localities for fishing will be situated and what fish species will be possible to catch (Molenaar 2009: 6). Hence, as opposed to the previous chapters, it is impossible to determine a priori which states will take advantage of and which will lose due to the ongoing changes (i.e. where the population of fish will move and as a result of that also fishing of the particular fish). Fish, in contrast to mineral resources, are not bound to one place only and not even the size of their population is given for ever.

Simultaneously, it is generally held true that fishing stands more likely in opposition to other potential activities in the region. Sea transport and oil and natural gas extraction on the continental shelf rather contradict the development of fishing (Molenaar 2009: 6). In the case of fishing, a much greater role is played by its regulation and the issue of environment protection. And it is not only regulation in the sense of jurisdiction over national waters and EEZ (exclusive economic zones) but also the establishment of quotas which will determine what volume of the particular species can be fished in order not to endanger its population.

The present announcements of private companies and the acting of states itself signalize an evident interest in the growth of Arctic fishing (Clover 2008).[19] On the other hand, there

are also tendencies to place significant restrictions on fishing in the newly accessible areas. In February 2009, the USA passed a provision banning the increase of commercial fishing in the federal waters[20] north of Alaska. At the same time, the passed plan states that if the increase of fishing should be allowed in the region in the future, the ecosystem must be taken into account as well as the conservation of fish populations (McLean 2009).

According to the definition of the area, the ban should also apply to the disputable region which is required by Canada as well. Therefore, Ottawa has raised a protest against the steps undertaken by the USA. Yet, the situation is far from exceptional. Already in the past, there have been several fishing disputes including the deployment of Navy into the problematic waters or application of peremptory provisions (e.g. the so-called Cod Wars between Iceland and Great Britain in 1950s and 1970s or the Turbot War between Canada and the European Communities in 1990s). The quintessence of the dispute always lay in the question of who executed jurisdiction in the given area and thus could regulate fishing.

It is the issue of fishing regulation that points to the question closely connected with all the afore-mentioned new qualities. There are unsolved territorial claims of the individual states in the region and the question of status of the areas around the North Pole. However, one should take into account the fact that these disputable areas of Arctic are usualy not valuable in economic terms. It is the qualities mentioned above that transform what is at stake and direct states to the final answer to the question to whom the Arctic belongs.

4. Conclusion

The geopolitic region of Arctic offers a great economic potential for use. Without a doubt there are changes in the Arctic leading to a considerable growth in importance and attractiveness of the whole region. Yet the development of activities does not depend only on climatic changes and ice melting. An important role was already played by the political warming-up which took place in the early 1990s, and the continuous development of activities connected to technological progress. The Arctic – together with the northern parts of Canada, Siberia and Greenland – offers immense mineral resources and it would be a pity not to exploit them. Also considerations of new SLOCs have been in the centre of attention and a major role is played by the imperative of energetic security as well. States may probably try to make full use of the newly discovered value of polar region.

An interesting question offering itself when looking at the Arctic's potential is whether the risk of an outbreak of a dispute over the Arctic resources is increasing. Many authors led by Scott Borgerson claim it is (Borgerson 2008). These considerations come from the presumption that the present dynamics in the region (climate change and newly appearing state interests) logically cause the growth of a risk of and an outbreak of a conflict in the region due to different interests of Arctic countries. On a most general level, we can admit this conclusion.[21] However, such statements are nothing new and they do not require a more profound analysis. Yet there are several facts that must not be overlooked when considering the risk of an outbreak of a conflict.

Even though Borgerson does identify the current objects of disputes correctly (area and resource and sailing control) and names the main participants (Russia, the USA, Denmark,

Canada, Norway), at the same time, he presents vague and general accounts of a growing tension in the region and implies a vague risk of an armed conflict without determining it clearly. In the Arctic, there are considerable resources of oil, natural gas and other raw materials. Without a doubt, there are just as unprecedented changes of climate resulting in a gradual opening of imaginary doors of the region. However, the climate and other geographical characteristics differ significantly in the individual subregions and this distinctness will prevail in the future. Also the resources are concentrated only in a few places, which, moreover, often do not lie in controversial areas. Not even sea transport can be developed in all areas of the region with the same intensity (e.g. restricting the size of ships due to the sea depth or strait width).

The Arctic of the future will be easier to access. Nevertheless, this is true only for some parts of the region. The attribute of "more accessible" does not automatically imply the possibility of profitable exploitation and sailing. In the long-term horizon, the polar climate will always belong to the most extreme and thus any development of activities in the near future will hardly approach the level of activities in other places of the planet.

Obviously, the Arctic of the future will attract both the Arctic states and countries outside this geopolitical region to exploit it because as it is shown in this text, it can offer rich and rare natural resources and make sea transport easier. Nevertheless, this conclusion does not still imply that the Arctic *must* become *a priori* in the future an area of conflict between the individual states or an object these states could fight over. It is necesarry to pay attention to the fact that the Arctic is very large region. Most valuable Arctic teritories lie on its periphery, close to Arctic countries and these teritories are not a bone of contention. Also the geographical and climatic conditions, together with the degree of development and accessibility of necessary technologies, and – last but not least – also the financial demandingness of the projects struggling for the exploitation of the Arctic, will more likely support the cooperation of countries interested in making use of its potential.

Notes:

1. The Arctic Ocean 14,056,000 km^2; Russia 17,098,242 km^2; USA 9,826,675 km^2; Canada 9,984,670 km^2; EU 4,324,782 km^2.
2. For the activities of "exotic" states in the Arctic area see Muse 2008.
3. MNCs (multinational corporations); NGOs (nongovernmental organisations).
4. Average temperatures may change quickly. Moreover, political borders are theoretically unsteady as well. As opposed to that the Polar Circle is a much less variable concept.
5. This is despite there having been no evidence up to the mid 20th century that would prove the existence of the mainland in the North Pole false.The absence of land on the North Pole was definitively overcome by the mission of the nuclear submarine USS Nautilus, which was the first one to complete a submerged voyage under the Pole in 1958.
6. For more on the region's economy, see Duhaime and Caron 2006.
7. This growth would be perhaps related to the growth in activities in the region and climatic changes and it would concern especially the need of securing northern borders of the states.
8. NMD (national missile defence); SSBNs (ballistic missile submarines).
9. It is true that the issues of environment protection are far from being unimportant. If we speak of factors promoting the growth of human activity in the region, it is necessary to take into account facts that may slow the similar development down significantly. One of these inhibitors is the

stronger and stronger calling after the protection of the Arctic ecosystem. An example of how strong they are, we can use oil extraction in Alaska that has been restricted by a strong environmental lobby for decades. Another inhibitor is represented by growing fears of global warming and the related attempts to face the ongoing changes actively.

10. The so-called albedo effect when the open surface of the ocean absorbs significantly more solar radiation than the ice surface. The ice reflects up to 85% of solar radiation, water only 7%.
11. This vision can be found even in official documents. The report backed by a high representative of the European Union for CFSP Javier Solana and Commissioner Benita Ferrero-Waldner discusses the impacts of global warming. In this respect, it emphasises the risk of disputes over natural resources in the Arctic region whose resources are to become "exploitable"; furthermore, it stresses the issue of territorial and border disputes in the area due to the exploitation of resources and the newly approachable transport routes. Its proponents call for the protection of EU interests in the region and they are afraid of a growing tension (for details, see European Commission 2008).
12. The following section offers a brief description of the arguments given in Lasserre (2009: 192–196) and Ragner (2008). The future development is also analysed by Ljunggren 2009 or Econ 2007, where there is a useful comparative table on page 24. The most profound information on the present and future of the Arctic sailing is given by AMSA 2009.
13. Differences in yearly ice surface are clearly evident from the animation in New York Times 2009.
14. For a rather sceptical analysis regarding the possibilities of LNG sea transport (Craig 2008).
15. Only the exploitation of oil on the Alaskan mainland is at least 1.5 times as expensive as in Texas (Budzik 2009: 9).
16. It is a complication both for surface and seabed extraction – and this is so in all stages of the development of oil-wells and extraction facilities. It is not only ice in winter but also the melting marshy tundra and the working permafrost in summer that make extraction activities more difficult.
17. This is obviously true only if we follow purely economic postulations and we do not consider starting the exploitation e.g. in order to guarantee state's security.
18. I.e. 32,168 billion cubic feet of natural gas.
19. Apart from the article listed, it is enough to read the articles in the "fishing" section on Barentsobserver.com.
20. The ban does not concern the state waters of Alaska (to 3 miles away from the coast).
21. A presumption for such a statement must be a participant who acts on the basis of calculations of profits and losses and an objective perception (i.e. he or she will strive after the areas where there is a really existing value).

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