

CONSEQUENCES OF THE GLOBAL WARMING

***Аннотация:** В данной статье предпринята попытка проанализировать последствия глобального потепления для социальной и экономической сфер жизнедеятельности в Арктике. Автор дает прогноз, касающийся политических решений, которые могут стать ответом на глобальное потепление.*

***Ключевые слова:** глобальное потепление, последствия, судоходство, нефтегазовая промышленность, рыболовство, коренное население.*

***Abstract:** In this article, the attempt is made to analyze the consequences of the global warming in the key social and economic sphere of people life in the Arctic. The author makes prediction concerning political decisions which will follow the consequences of the global warming.*

***Key words:** global warming, consequences, shipping, oil and gas industry, fisheries, indigenous people.*

Nowadays it is not a secret that global warming affects both environmental and social transition. This process presents new challenges and creates new opportunities that can change people's life and the environment drastically. The greatest effect of the global warming is noticeable in the Arctic region. The global warming transforms this region with difficult conditions in the new epicenter of industry and commercial. Consequently, this process will give an impetus to developing of governance, institutions and inter-state relations in the Arctic on the new level.

Over the past 100 years, the average temperature of the atmosphere surface layer has increased by 0,3-0,8 C and the level of the World's oceans has risen on 10-20 cm on the average. Evidence show that 2000 to 2009 was hotter than any other decade in at least the past 1,300 years (Denchak M., 2016). The earth's rise temperatures cause different disasters and evidences of it are longer and hotter heat wave, frequent prolonged droughts, heavier rainfall and floods, more devastating hurricanes.

Today scientists still cannot define with 100 percent certainly what reasons cause climate changes. According to the National Climate Assessment, the number one cause of global warming is human influences, especially the carbon pollution we cause by burning fossil fuels and by destroying forests that are the main power of cleaning atmosphere. Namely our commercial and agricultural activities are constantly increasing emission of carbon dioxide in the atmosphere that acts as overwrap of greenhouse and doesn't let surplus heat to dissolve in the space. So, more water collect in the atmosphere and it change weather patterns in such way that wet areas become wetter and dry areas become drier (Denchak M., 2016). Over last 250 years, about 1100 billion tons have been flown in the atmosphere and, what is more important, the half of this value have been for last 35 years!

Moreover scientists emphasize other reason causes the global warming too. They connect this process with changing of solar activity. All climate processes on the planet depend on solar activity. That is why also insignificant changes of it influence on weather and climate of the earth. Scientists distinguish 11-year-old, 22-year-old and 80-90-year-old cycle of solar activity (Glaysberg's). It is possible that that the global warming we are watching now due to regular rise of solar activity that can decline again in the future.

People in over the world try to solve this dangerous problem. Now there are the harsh environmental laws in the highly developed industrial country such as requirement to emission treatment, developing new technology preventing pollution, stricter standards for emission of cars exhausted gases and etc.

But the Arctic is the region that is more affected by climate change. Therefore, the consequences of the global warming are the most visible and tangible in the Arctic.

Average air temperature in the Arctic has increased at twice the rate as on the rest of the globe (Beaudry, 2016). Although climatologists have long known that the ice cap of the Arctic Ocean is decreasing but not many of them could predict such a rapid pace of ice melting. In 2007, the Intergovernmental panel on Climate change estimated Arctic summers would become ice free beginning in 2070. Yet more satellite observations have moved that date to somewhere around 2035, and even more sophisticated simulation in 2012 moved the date up to 2020. On the whole, over the last 30 years, the ice in the Arctic Ocean has decreased by half in size and three-quarters in the volume. But it is not only the ocean become warmer. So the warmest summer in the last 170 years was recorded in the Greenland. In the same year monitoring station in Alaska has recorded the highest temperature ever (Borgerson, 2016).

So several years ago we imagined the Arctic as the white desert field that it is difficult to reach. Now melting ice opens access to rich mineral deposits such as oil, gas and mineral resources. Besides, the Arctic Ocean can become an important thruway for freight. But are there only pros when we are talk about consequences of Global warming in the Arctic particularly?

Climate changes influence on social and economic sphere of people life and after they become causes political changes. So I would like to consider consequences of the global warming in social and economic spheres of the Arctic region, such as shipping, fishery industry, oil and gas industry and indigenous people, and define how climate changes in the region will influence on developing relations between countries.

Shipping

According to The Arctic Climate Impact Assessment, the continuing reduction of sea ice is very likely to lengthen the navigation season. The last report that was done in addition to the first one (Arctic Marine Impact Assessment (AMSA) 2009 report) clarifies "It is highly plausible there will be greater marine access and longer seasons of navigation, except perhaps during winter, but not necessary less difficult ice conditions for marine operation." (2009:4) So the transit revitalization through the Northern Sea route is considered to be quite real and that is why international

significant of the Northern sea route will increase as ice of The Arctic ocean melts. It is expected that the Arctic will be available to shipping for 8 month in the year by 2021.

Due to the warming, the shortest path between the duration of the Asia-Pacific region and Europe become economically viable. If there were only 4 foreign ships that used the Northern Sea Route in 2010, then there were 34 in the next year and in the 2012 there were 46.

Using simple calculator it is easy to prove advantage of The Northern Sea Route. It is necessary 25 days and 625 tons of fuel oil for shipping from Europe to China by The Northern Sea Route and it is 35 days and 875 tons by the Suez Canal. Reduced the term of shipping on 10 days it is possible to save money using a smaller amount of fuel.

Besides, there is other evident advantage. The piracy problem is absolutely excluded in the NSR.

While it is commonly known that the route via the Suez Canal is affected by this problem.

But it is necessary to solve some problems for more effective using of the NSR.

There is problem that people can not solve such as extreme weather conditions cause comparatively large cost. But people can create infrastructure that will help to solve this problem. Russia, along the border which runs most part of The Route, can not create it by oneself because of deterioration of socio-economic situation. That is why megaproject of collective development and exploitation of the NSR can become one more sphere for developing relations between countries interested in shorter and more profitable shipping via The NSR. It will include measure needed to ensure the safe transit and minimizing the possible negative impact the vulnerable Arctic environment.

Oil and gas industry

One of the most important reason causes growing interest of arctic and non-arctic countries to Arctic is huge oil, gas and mineral resources reserves. According to The US Geological Survey, there is 22% of world's undiscovered oil and gas. It is 13 % of world's undiscovered oil reserves, 30 % undiscovered natural gas. Main challenges for oil and gas development in the Arctic are the sea depth and weather conditions. Besides,

icebergs can complicate conditions of the oil and gas production. It is expected that ice melting will increase access to marine ports and coast infrastructure and part of shelves that expand opportunities of oil and gas production.

Reduced sea ice is likely to allow increased offshore extraction of oil and gas, although increasing ice movement could hinder some operation (The Arctic Climate Impact Assessment). Besides, there are indirect challenges. Climate changes can cause extinction of some animal species. So, there is a need for environmental measures that will affect functioning of the oil and gas industry. In addition, migration change of commercial fish can lead to fisheries geography change and it causes possible conflict of interests between two main sectors of Arctic economy (fishery and oil and gas industry).

In general, climate changes expand opportunities of oil and gas extraction. The depletion of non-renewable source of energy can lead to huge extraction of oil and gas in The Arctic Ocean.

Fisheries

The total catch of fish in the Arctic is, by one estimate, 5% of world's catch (Arctic opening: Opportunity and Risk at the High North, 2012) and 10 % by other (Eskeland, Flottorp, 2006).

Climate changes can influence on migration of commercial fish and, consequently, on the geography of world's catch. Modern researches do not reliably determine what negative and positive influence the global warming will have in this industry. But Norwegian experts consider that positive effects for fishery in one area will combine with negative effects in others. It is possible that the cumulative effect for fishery will be negative although it is expected the tendency of improving conditions of growing fish in arctic water (Eskeland, Flottorp, 2006).

Indigenous people

It is double that Indigenous people of the Arctic region feel impact of the global warming more than someone on the earth. Sheila Watt-Cloutier, a Canadian Inuit activist said that eskimos are like quicksilver in the barometer. They spend a lot of time

in nature. So, they can notice the smallest change that is why the rest world society should be interested in their living on their place.

Key consequences for Indegious people are highlighted in the ACIA. Many Indegious people depend on hunting polar animals, fishing and gathering, not only for food and to support the local economy, but also at the basis for cultural and social identity. But some species of arctic animals and plants can disappear in near future because of the global warming. Besides, changes in species' ranges and availability, access to these species, travel safety in changing ice and weather conditions present serious challenges to human health and food security, and possibly even the survival some culture. (ACIA)

So, what political decisions will follow the above-described consequences of the global warming?

First and the most important, in my opinion, decision should be connected with protection of arctic environment. So, first steps have been done. The Kyoto protocol has been signed by majority world countries. But it will not be in act in full strength while The USA, the worldpower and arctic country sign it. It is commonly known that Arctic open wide opportunities for economic developing. But countries should find the right balance between exploitation resources and environmental activities. It is necessary to conduct a comprehensive census of the region's natural resources and biological diversity. As better scientific baselines are established, governments can make informed decision about development, balancing the risks to this sensitive environment with their other economic and security priorities.

The second is connected with Indegious people. It is they who suffer the most from the global warming and environmental pollution. These processes destroy traditional style of life and culture of indigenous people. Larry Merculeff, the leader of Aleut, said that together with disappearance and reduction of plant and animal species the link between generations weakens and disappears. Besides, many arctic villages are thrown in the lurch because of bureaucracy of federal support programs. So, villages destroy and the governance can not know about it or do not want because it is additional expenses. There are 6 organizations of Indegious people as permanent

members in the Arctic Council. But it is not enough for solving this problem. I think it is necessary to research village, invest in infrastructures and share of experience of solving this problem.

I believe that many problems can be solved by common efforts. And arctic problems are not exception of it.

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