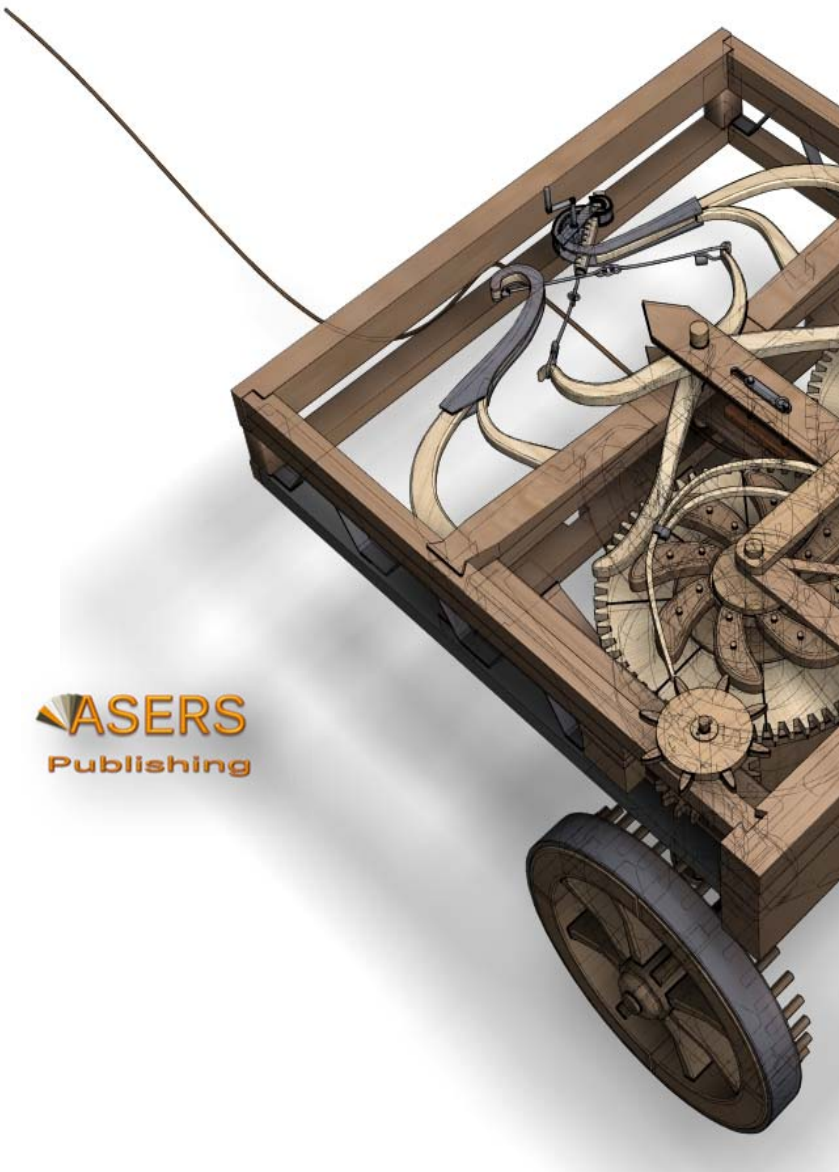
ASERS

Journal of Environmental Management and Tourism



Quarterly
Volume X
Issue 5(37)
Fall 2019
ISSN 2068 – 7729
Journal DOI
https://doi.org/10.14505/jemt

ASERS Publishing

Fall 2019
Volume X
Issue 5(37)

ASERS Publishing
http://www.asers.eu/asers-publishing
ISSN 2068 – 7729
Journal DOI: https://doi.org/10.14505/jemt

Table of Contents:

Fall 2019
Volume X
Issue 5(37)

ASERS Publishing
http://www.asers.eu/asers-publishing
ISSN 2068 – 7729
Journal DOI: https://doi.org/10.14505/jemt

Call for Papers
Winter Issues 2019
Journal of Environmental Management and Tourism

Journal of Environmental Management and Tourism is an interdisciplinary research journal, aimed to publish articles and original research papers that should contribute to the development of both experimental and theoretical nature in the field of Environmental Management and Tourism Sciences.

Journal will publish original research and seeks to cover a wide range of topics regarding environmental management and engineering, environmental management and health, environmental chemistry, environmental protection technologies (water, air, soil), pollution reduction at source and waste minimization, energy and environment, modeling, simulation and optimization for environmental protection; environmental biotechnology, environmental education and sustainable development, environmental strategies and policies, etc. This topic may include the fields indicated above, but are not limited to these.

Authors are encouraged to submit high quality, original works that discuss the latest developments in environmental management research and application with the certain scope to share experiences and research findings and to stimulate more ideas and useful insights regarding current best-practices and future directions in environmental management.

Journal of Environmental Management and Tourism is indexed in SCOPUS, RePEC, CEEOL, ProQuest, EBSCO and Cabell Directory databases.

All the papers will be first considered by the Editors for general relevance, originality and significance. If accepted for review, papers will then be subject to double blind peer review.

Deadline for submission:	29th November 2019
Expected publication date:	December 2019
Website:	https://journals.aserspublishing.eu/jemt
E-mail:	jemt@aserspublishing.eu

To prepare your paper for submission, please see full author guidelines in the following file: JEMT_Full_Paper_Template.docx, then send it via email at jemt@aserspublishing.eu.

DOI : https://doi.org/10.14505/jemt.v10.5(37).09

International Regulation of Environmental Management in the Arctic Zone

Oleg M. BARBAKOV
Department of Business Informatics and Mathematics
Industrial University of Tyumen, Russian Federation
omb@bk.ru

Lyudmila K. GABISHEVA
Department of Marketing and Public Administration
Industrial University of Tyumen, Russian Federation
ignatenkova@tyuiu.ru

Anastasia Yu. KRETOVA
Department of Marketing and Public Administration
Industrial University of Tyumen, Russian Federation
nastya_kretova@mail.ru

Suggested Citation:

Barbakov, O.M., Gabisheva, L.K., Kretova, A.Yu. (2019). International Regulation of Environmental Management in the Arctic Zone. *Journal of Environmental Management and Tourism*, (Volume X, Fall), 5(37): 1020 - 1028. DOI:10.14505/jemt.v10.5(37).09

Article's History:

Received May 2019; *Revised* June 2019; *Accepted* June 2019.

Abstract:

The strengthening of global integration processes necessitates the development of cross-border regions and the intensification of cross-border cooperation in the field of environmental management, which determines the relevance of this study. This issue is particularly relevant for the Arctic region, where the start of large-scale development of natural resources, development of territories and the creation of new transport routes require the development of environmental management principles that would ensure economic development, preservation of the lifestyle of indigenous people and the preservation of biodiversity. The article examines aspects of the legal characterization and regulation of natural resources' treatment that are jointly owned or geographically located in two or more states. It is shown that political, social, sociological and economic prerequisites impose on the principles of such cooperation. Until now, the problem of joint management and use of natural resources and products of their processing remains unresolved. It is proposed to create interstate commissions, as well as concessions, as the basis for the development of natural resources' joint use. The leading direction in the development of the situation is interstate cooperation on the biosphere's conservation.

Keywords: transboundary cooperation; ecosystem; biodiversity; resource management; Arctic zone.

JEL Classification: Q22; Q25, Q34; Q35; Q57.

Introduction

A transboundary natural resource is the uniform natural resource whose location covers territories with different national or international legal regimes of two or more states responsible for its rational use and conservation. Transboundary natural resources include transboundary water objects, migratory animal species, transboundary mineral deposits, transboundary ecosystems. A large number of natural resources are located on the territory of two or more countries. These resources acquire the status of transboundary ones. Neighboring countries can equally use transboundary resources.

Strengthening the world integration processes necessitates the development of transboundary regions and the intensification of cross-border cooperation. In this area, the considerable attention is paid to

transboundary nature management and transboundary natural resources, in particular. Transboundary management of natural resources is a tool that facilitates the expansion of cooperation across international borders, has a number of objectives, including resource management, biodiversity conservation, promotion of regional economic development, regional and cross-border cooperation, and the strengthening and development of friendly relations between states.

To date, uncoordinated points regarding the legal definition of the status of transboundary natural resources remain highly controversial issues (Ali and Zia 2017). The latter are sometimes the subject of disputes and conflict situations arising between bordering countries. It is not always the negotiation process and good-neighborliness between states that contribute to the solution of such problems (Degefu *et al.* 2016). Therefore, it is important to promote the implementation of international legal issues regulation, to remove obstacles in this area. The above-mentioned problems were the subject of study (Carr 2017). Some aspects were considered in the works (Giordano *et al.* 2016; He *et al.* 2017). Among the authors, we should mention the works (Li *et al.* 2016; Schiff 2017), in which the problematics found proper coverage. (Earle and Neal 2017) aims to provide a comprehensive scientific study of issues related to the legal regime of natural resources that are located in territories with different legal status.

C.F. Mason (Mason *et al.* 2017) explores various aspects of cross-border cooperation, namely: ecological, socioecological-economic, economic-legal. He notes that an effective mechanism for cross-border cooperation must be ensured for the sustainable management and monitoring of the use of transboundary resources. (Mason et al. 2017; Pétré et al. 2016) define the main problems of transboundary environmental and economic cooperation in the field of use and protection of water resources. (Rai *et al.* 2017a), (Al-Faraj and Tigkas 2016) consider the regional aspects of the natural waters' protection and the prerequisites for improving the economic mechanism of water management. (Singh 2016) believes that integrated management of water resources is the most effective approach to water management. (Tang *et al.* 2016) explores the management of water conservation activities. The problems of the development of the Arctic zone and some aspects of regulating natural resources exploration found coverage in the works of (Haley *et al.* 2011; Dana and Anderson 2014; Heikkinen *et al.* 2016; Boldt-Burisch and Naeth 2017; Nordam *et al.* 2017; Tolvanen *et al.* 2018; Malinauskaite *et al.* 2019; Timashev and Bushinskaya 2019; Hein and Chaudhri 2019).

Outside the field of view of domestic researchers there are such types of transboundary resources as transboundary ecosystems and transboundary mineral deposits requiring more detailed consideration. The rapidly growing geopolitical, resource, economic and environmental role of the Arctic requires a deeper scientific study and the development of fundamentally new approaches to the development of this territory (Karbetova *et al.* 2016; Umbetbayeva *et al.* 2016; Villa *et al.* 2017; Volkov and Melnikiene 2017; Savchenko *et al.* 2017; Satelles *et al.* 2018; Salvo *et al.* 2018; Poškus *et al.* 2018; Baboshkina *et al.* 2018). In connection with the start of large-scale development of natural resources, the development of territories and the creation of new transport routes, significant problems arose, caused by the imperfection of legislation regarding control over environmental pollution (Mazur 2010). The purpose of this article is to study transboundary natural resources and their types. Special attention is paid to the international regulation of natural management and the development of territories in the Arctic zone, since this territory is rich in natural resources and because of its strategic importance becomes a subject of controversy. Accordingly, the following tasks are set: to determine the main features of "transboundariness", to substantiate the relevance of transboundary natural resources management and to identify the main factors that affect its state.

1. Status and Regime of Transboundary Natural Resources

Transboundary resources are bodies and forces of nature, the quantitative and qualitative composition of which cannot be attributed to the property of only one state, and the use of their useful properties by one state can damage another having a common border with it (Bolgov *et al.* 2016). A transboundary natural resource is the only natural resource whose location covers territories with different national or international legal regimes of two or more states responsible for its rational use and conservation (Holmatov *et al.* 2016). So, we can assert that transboundary resources are defined as natural resources, which are regulated by the management regimes of two or more geographically neighboring states. Transboundary natural resources include transboundary waters, transboundary ecosystems, and transboundary mineral deposits.

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, March 17, 1992) under "transboundary waters" means "waters that define, cross the borders between two or more states or are located within such boundaries" (Article 1 of the Convention). A transboundary ecosystem is a collection of living organisms (a system of plants, animals and microorganisms) that have adapted

to cohabitation on the territory of two or more neighboring states. A transboundary mineral deposit is the accumulation of mineral matter on the territory of two or more neighboring states, which is used in human economic activities.

In our opinion, these resources should have such features. Firstly, with regard to efforts to manage natural resources and maintain the quality of the environment, they must be important natural systems. Secondly, cross-border resources should be managed by several states. This means that the management of any resource of this type is not effective, if implemented by only one state. It is possible to single out the main elements of "transboundary", that is, the cases that enable the natural resources to belong to the category of transboundary objects:

- a transboundary resource crosses borders between two or more states;
- a transboundary resource defines the boundaries between two or more countries (including situations, when a boundary crosses a transboundary resource which is located between two or more countries);
- a transboundary resource is located within the borders of two or more countries.

Transboundary natural resources management are the joint actions of two or more countries in the organization, regulation and coordination of processes for the optimal organization of the rational use and protection of natural resources located on the territory of these countries. Rational use of natural resources in the border areas includes a complex of knowledge in such areas as management, environmental resource management, environmental economics, international relations and political economy. Consequently, the study of transboundary natural resources requires an interdisciplinary approach. The use of transboundary natural resources and environmental protection are closely linked to national policies, national security, social objectives and economic development, and affect international relations.

We consider it expedient to single out the factors that influence the transboundary natural resources management. *Physiographic influence*. The geographical location of transboundary natural resources, such as groundwater, mineral resources, as a rule, do not agree with the political boundaries of countries. As a result, the use of such resources requires close cross-border cooperation. There are a large number of borders that divide rivers, lakes and other natural and geographical objects, so there will always be difficulties in their transboundary management. *Political influence*. Since the neighboring countries have different political systems, this leads to the fact that the rational use of transboundary natural resources becomes much more difficult. *Economic influence*. Despite the trend towards global economic integration, the policy of economic development and environmental protection in countries is different.

Although the neighboring countries are separated only by a common border, they can have similar natural conditions, common natural resources, but they can simultaneously have huge differences in individual economic indicators, in the level of economic development in general. Cultural influence. In some border areas, especially those with two or more distinct cultural identities, the transcultural impact on the natural resources regulation is of particular importance. Without intercultural cooperation, managerial goals are unlikely to be achieved. Due to significant intercultural differences, natural resources transboundary management will always be a difficult and at the same time an important task in the border regions.

The term "status" in international law is considered together with the concept of "regime" and is often used in relation to territories. As a rule, the doctrine does not disclose their content, but there is an understanding of their differences. Some authors, using the term "status" in relation to the territory, noted that if the legal status of the land national territory can be considered final, then the legal status of the bottom of the World Ocean offshore is still in the formation stage. There are also opinions that the legal regime of airspace is compiled on the basis of the legal status of sovereign and open airspace and contains specific permits and prohibitions on the implementation of certain types of activities. In this context (McInnes 2016) noted: "International law knows the following types of territorial regime: territorial sovereignty, a territory that is not subject to the sovereignty of any state or group of states, and which has its own status (for example, mandated territories), No-man's land and territory, which belongs to all "(Pritchard 2016).

Many scientists recognize that the status of the territory is associated with the spread of the state's sovereignty over the territory and in accordance with this criterion there are two types of territory – one that is under state sovereignty and the international territory. Within the territories with one status, there can be a significant number of territories with different legal regimes, that is, a set of rights and obligations regarding the use of this type of territory. Investigating this issue, some authors proposed a new classification of spaces, which is interesting in that it focuses on the problem of the states' rights to resources, since the principles of the resources' use underlie the allocation of spatial categories along with the spread of the state sovereignty principle. However, the territory itself as the location of natural resources cannot be considered as a natural

resource located within it. The status of natural resources should be considered as a separate legal phenomenon, which is related to the legal characteristics of the territory.

The issue of the status of transboundary natural resources relates to the states' rights, since these rights are:

- firstly, they are derived from the territories' status and regime;
- secondly, they are not equivalent to the states' rights to natural resources within the same territory;
- thirdly, they determine the identity of the status of transboundary natural resources among other types of natural resources.

In this regard, the problem that is being considered is related to the question of the state's sovereignty, the extent and nature of the rights exercised by the state with regard to natural resources. Although, according to many experts of international law, the inherent supremacy on the state's territory and independence in international relations are being increasingly limited by international law (Rai *et al.* 2017b).

The problem of transboundary natural resources lies in the fact that they are located on the territory of the state periodically, but not completely. According to some experts, such resources are not an integral part of the territory. One can agree with the opinion on the availability of natural resources on the territory of the state, which are subject to the state's sovereignty and international resources. In particular, transboundary resources, which are not an integral component of the state territory, although they may be on it. The inalienable sovereignty of the state over its natural resources is expressed in the state's right to freely dispose of its natural resources and freely exploit them without violating the rights of other states. With regard to transboundary natural resources, a state cannot exercise disposal and use as freely and in the same scope of rights as with its own resources. For example, the construction of some structures on international rivers can lead to violation of other states' rights. The rights of a state with respect to transboundary natural resources cannot be considered exceptional to the same extent like with its own resources.

The scientific literature suggests a view according to which the state extends its sovereignty (and, accordingly, ownership) to a part of the transboundary natural resource located on its territory. Considering this question, it is necessary to determine:

Firstly, that the concept of "inalienable sovereignty over its natural resources" is a manifestation of state sovereignty as a whole. State sovereignty extends to a certain space – terrestrial, water, air, and not to the material part, which has the ability to move and change. Secondly, the spread of state sovereignty to a part of a transboundary natural resource contradicts its unity. This is most clearly seen in the case of gaseous, liquid and mobile resources.

Transboundary natural resources are located on the territory of states and form part of their geographical environment. States have rights to exploit transboundary natural resources because of their sovereignty over their own territory. Thus, the question of natural resources located on the state territory should be solved as follows: the state has inherent sovereignty over its natural resources, other resources – international, including cross-border – connected with the territory, but the state, without sovereignty over them, exercises certain rights. International resources are diverse in their status: they include, for example, transboundary natural resources that do not have a connection with any one of several territories and are not a permanent part of it.

The exercise of rights with respect to transboundary natural resources and their management should be determined by an international treaty. Due to the absence of agreements between states, the regime is determined by the general norms of international law and the national legislation of states. It should be noted that natural resources located partly on the territory of the state and partly in its exclusive economic zone or on the continental shelf are not transboundary. The location of transboundary natural resources should affect two or more States or international public spaces.

Transboundary natural resources that are shared by states in their exclusive economic zones (eg, straddling fish stocks) and on the continental shelf (eg, transboundary mineral deposits) also do not belong to the state's own resources on the continental shelf and in the exclusive economic zone. The rights with respect to these resources for each of the interested states are unequal in relation to their rights with respect to their own resources. The specific legal regime of such transboundary resources is established by states in the process of their interaction with each other. In this case, transboundary natural resources, and the environment as a whole, are a complex material benefit, which consists of a wide range of material and non-material benefits derived from it (Tilleard and Ford 2016; Bezpalov 2014).

Particular attention should be paid to transboundary fish stocks as a type of transboundary natural resources, as well as migratory fish species. These transboundary resources are located in international spaces with various international legal regimes: the open sea, the exclusive economic zone. In particular, the principle of

freedom of fishing operates on the high seas. The Special Convention on Straddling Fish Stocks of 1995 was adopted to implement the provisions of the UN Convention on the Law of the Sea of December 10, 1982. The said deal established balance and compromise for the states concerned with the aim of conservation and rational use of these natural resources. Precisely this compromise was connected with the need to address the problem of the efforts' correlation undertaken by states in parts of the sea with different legal regimes.

Thus, transboundary natural resources have a different international legal status than other resources. These resources are not covered by the sovereignty of any state. The origin of the states' rights to these resources is related to the fact of their presence in the state territory or territory of jurisdiction. The scope of these rights is not the same and is associated with the status and regime of those territories on which the resource is located. The implementation of the states' rights to transboundary natural resources requires the cooperation of all interested states.

2. Environmental Management in the Arctic and Its International Regulation

Interest in the Arctic has grown recently, when it became known that as a result of global climate change, Arctic waters became more favourable for shipping and the development of natural resources. At present, Russia, Canada, USA, Norway and Denmark are considered to be subarctic states; Iceland, Sweden and Finland also claim this status, although they do not have oceanic borders with the Arctic. An international treaty that would fully regulate activities in the Arctic is currently absent – it is governed by the national laws of the Arctic states, a number of bilateral agreements, and partly by international agreements that, however, do not affect the legal status of the Arctic. By the mid-1920s, the Arctic was actually divided between the USA, USSR, Norway, Canada and Denmark according to the sectoral principle – the point of the north pole was the border of the interested states. But after the adoption of the UN Convention on the Law of the Sea in 1982, the situation changed. In accordance with the Convention, subarctic states have the exclusive right to develop the subsoil within their exclusive economic zone and continental shelf. At the same time, the interested states can no longer claim sovereignty over the outside shelf area.

The Arctic region can become a source of international tension due to competition for access to its resources. According to the US Geological Survey, about 22% of the world's undiscovered hydrocarbon resources lie under the ice of the Arctic. At the same time, 84% of the resources are located on the shelf of the Arctic Ocean and only 16% – on the land territory of the Arctic states within the Arctic Circle. Article 76 of the United Nations Convention on the Law of the Sea automatically establishes the boundaries of the shelf at 200 nautical miles, but gives the state the right to claim a shelf extending beyond that boundary. Denmark, Canada and Russia claim to expand the limits of their continental shelves. Also, Russia, Denmark and Canada argue in the UN about the ownership of the Lomonosov Ridge, which is especially rich in hydrocarbons; each state considers it a continuation of its continental shelf (Boguslavskaya 2019).

According to experts, subarctic states see commercial opportunities in climate change in the Arctic because the territory of the Arctic is rich in hydrocarbons, and now resource extraction can become more economically viable (Boguslavskaya 2019). About 30% of Russia's GDP is produced in the Arctic, while in the Arctic outside of Russia, oil and gas are practically not produced at the moment. 20 percent of the territory of Russia lies in the Arctic Circle. Also, according to experts, at present Russia is in the lead among other Arctic states in the development of the Arctic, both in terms of resources and infrastructure – Russia has the largest icebreaking fleet in the world (Boguslavskaya 2019). Moreover, the Northern Sea Route completely passes through the part of the Arctic controlled by Russia.

Collision of interests in the Arctic is associated with potential strategic benefits, which are determined by the geographical position of the northern waters and adjacent land areas. According to the UN, only the proven reserves of the Arctic oil deposits amount to more than 100 billion tons (which is 2.4 and 2.1 times the explored resources of Russia and Saudi Arabia, respectively) (Mazur 2010).

With the melting of sea ice and the "discovery" of the new ocean, obviously, plans will arise for using new, shorter routes through the Arctic. And it is not only about the Northern Sea Route passing through the northern seas of Russia. According to expert estimates, by 2040, routes may appear directly through the North Pole in the Arctic Ocean in the summer. Experts also note that the Arctic is a promising region in tourism and research (Boguslavskaya 2019).

The possible opening of the region for shipping and resource extraction has intensified international cooperation on Arctic issues. In the process of globalization and solving problems related to the sovereignty of states, establishing their jurisdiction over natural resources and transport routes, as well as the regime of military-strategic presence in the Arctic, an active role is played by:

- Arctic states: governments, parliaments and state institutions (including the Armed Forces) of Russia, Norway, Denmark, Canada, USA, Iceland, Sweden and Finland;
- intergovernmental organizations: the Arctic Council, the Council of the Barents / Euro-Arctic Region, the Council of the Baltic Sea States, the Northern Council and the Council of Ministers of the Nordic countries, etc.;
- international non-governmental organizations: the Arctic Atabasc Council, the Arctic Leaders Summit, Greenpeace International, International Committee on Arctic Sciences, International Federation of Red Cross and Red Crescent Societies, Inuit Circumpolar Conference, Northern Forum, Northern Research Forum, Saami Council, Association of Winter Cities, etc.;
- regional administrations: provinces, counties and municipalities; indigenous organizations and non-governmental organizations of individual countries;
- transnational corporations: mining, oil and gas, transport, telecommunications, etc. (Mazur 2010).

Now the main discussion platform is the Arctic Council created in 1996 – an intergovernmental organization whose main tasks are to ensure security in the region, address environmental problems, and protect the rights of indigenous peoples. As part of the Arctic Council, agreements were signed on cooperation in aviation and maritime search and rescue in the Arctic, as well as an agreement to combat oil pollution (Boguslavskaya 2019). The efforts of the Arctic Council and international organizations are aimed at developing a general legal framework for the regulation of all major types of economic and other human activities in the Arctic (Mazur 2010; Takhumova *et al.* 2016).

An excellent example of cooperation is an agreement on fisheries, because according to international law, all states of the world have the right to freely catch resources on the high seas. Moreover, all countries have navigation rights on the high seas, which means that the Arctic states will have to guarantee the right of peaceful passage through their territorial sea, as well as transit passage through the straits. All this testifies to the fact that the subarctic states will no longer be able to "rule" in the region individually (Boguslavskaya 2019).

The Arctic plays a crucial role in global environmental issues. For a long time, it served as a scientific laboratory, including an environmental one. The Arctic region is often called the “key region”, implying a determining influence on the global climate, global geophysical and biological processes. The specific features of the Arctic environment serve as indicators of global environmental impacts, such as climate change and long-range transboundary pollutant transport (Mazur 2010).

It is expected that in the XXI century climate change in the polar region will be one of the most significant among all regions on Earth and may cause economic and environmental consequences on a global scale. It is assumed that freeing the surface of the Arctic Ocean from ice will turn it into the most important year-round transport artery. Large-scale pollution of airspace and the sea, radioactivity and climate change pose serious problems for the Arctic, northern peoples and communities (Mazur 2010).

In terms of oil and gas projects, the Arctic is one of the most difficult regions in the world. This is due to geographical remoteness, extremely low temperatures, difficult ice conditions, a vulnerable environment and the presence of the indigenous population concerned about any outside interference. Of particular importance for the Arctic and adjacent regions is the problem of sea pollution by oil and oil products due to the intensive development of the oil and gas industry in the Arctic. At the stage of exploration and exploitation of offshore fields, the greatest danger is represented by emergencies in boreholes and floating platforms – oil and gas fountains from wells, fires, sudden destruction of equipment and pipelines, erroneous actions of personnel, destruction of supporting structures, etc. (Mazur 2010).

Many indigenous peoples of the Arctic – and their number is about 400 thousand people – continue to rely entirely on traditional ways of existence, which puts them in complete dependence on the Arctic ecosystem in matters of nutrition, living and preserving the identity of their culture (Mazur 2010). The implementation of oil and gas projects, of course, brings its own benefits to the local population, for example, associated with an increase in the number of jobs, but many residents have certain inconveniences and problems in this regard. Therefore, the challenge facing the states bordering the Arctic is to find ways to develop its energy resources and at the same time ensure the protection of the environment and the preservation of the culture and ways of the local population. It is necessary to create a legal system that would take into account modern realities and, on the basis of both international and national interests, could create conditions for successfully resolving issues of interstate space and identifying fish protection zones, economic activities, environmental protection, respect for human rights, etc.

Conclusions

So, transboundary natural resources are different from other resources. The main difference is their "cross-border", that is, the placement on the territory of two or more neighboring states. Managing such resources by each country separately is inappropriate, efficiency will be achieved only through joint cross-border cooperation.

Since the issue of managing transboundary natural resources is still not well understood, we believe that it is necessary to focus on the problems and prospects of transboundary management of natural resources, as well as to identify the main ways to improve it. The nature management in the Arctic zone requires the development of a general legal framework for the regulation of all major types of economic and other activities at the international level. It is necessary to create a legal system that would take into account modern realities and, on the basis of both international and national interests, could create conditions for successfully resolving issues of interstate space and identifying fish protection zones, economic activities, environmental protection, respect for human rights, etc.

The prospects for further research are that in the current implementation, legal regulation affects only certain areas of transboundary resources. Here, in particular, only the economic approach prevails in that only resources that bring at least some income for the state should be rationed. This position should be changed in order to determine the possibility of implementing the ecosystem approach, which is formed basing on the predisposition of the local ecosystem. This should include such aspects as the prevalence of environmental and human protection over economic activity. In this regard, the harmonious development of international legislation and the perception of the environment as a holistic mechanism in the biosphere regime are necessary.

References

[1] Al-Faraj, F.A.M. and Tigkas, D. 2016. Impacts of multi-year droughts and upstream human-induced activities on the development of a semi-arid transboundary basin. *Water Resources Management,* 30(14): 5131-5143. DOI:https://doi.org/10.1007/s11269-016-1473-9

[2] Ali, S.H., and Zia, A. 2017. Transboundary data sharing and resilience scenarios: harnessing the role of regional organizations for environmental security. In Adeel Z. and Wirsing R.G. (Eds.), *Imagining Industan: Overcoming Water Insecurity in the Indus Basin.* Springer International Publishing.

[3] Baboshkina, A.A., Savina, N.P. and Morozov, I.V. 2018. Management processes in the development of the socio-economic environment of the region. *Journal of Advanced Research in Law and Economics,* 9(2): 376-385.

[4] Bezpalov, V.V. 2014. Diagnostics methods for purposes of restructuring of regional management system. *Life Science Journal* 11(9 SPEC. ISSUE), 9: 56-59.

[5] Boguslavskaya, A. 2019. Arctic: the struggle for resources and influence. *Deutsche Welle.* https://www.dw.com/ru

[6] Boldt-Burisch, K., and Naeth, M.A. 2017. Early colonization of root associated fungal communities on reclamation substrates at a diamond mine in the Canadian Sub-Arctic. *Applied Soil Ecology,* 110: 118-126.

[7] Bolgov, M.V., Demin, A.P., and Shatalova, K.Y. 2016. Institutional, regulatory, and managerial aspects of the development of transboundary water bodies and streams in Russia. *Water Resources,* 434: 711-717. DOI:https://doi.org/10.1134/s0097807816040047

[8] Carr, C.J. 2017. *Transboundary Survival Systems: A Profile of Vulnerability River Basin Development and Human Rights in Eastern Africa – A Policy Crossroads*. Springer International Publishing.

[9] Dana, L.-P., and Anderson, R.B. 2014. Mining and communities in the Arctic: Lessons from Baker Lake, Canada. *International Journal of Entrepreneurship and Small Business,* 22(3): 343-361.

[10] Degefu, D.M., He, W., Yuan, L., and Zhao, J.H. 2016. Water allocation in transboundary river basins under water scarcity: a cooperative bargaining approach. *Water Resources Management,* 30(12): 4451-4466. DOI:https://doi.org/10.1007/s11269-016-1431-6

[11] Earle, A., and Neal, M.J. 2017. Inclusive transboundary water governance. In E. Karar (Ed.), *Freshwater Governance for the 21st Century*. Springer International Publishing.

[12] Giordano, M., Suhardiman, D., and Peterson-Perlman, J. 2016. Do hydrologic rigor and technological advance tell us more or less about transboundary water management? *International Environmental Agreements: Politics, Law and Economics,* 16(6): 815-831. DOI:https://doi.org/10.1007/s10784-015-9297-2

[13] Haley, S., Klick, M., Szymoniak, N., and Crow, A. 2011. Observing trends and assessing data for Arctic mining. *Polar Geography,* 34(1-2): 37-61.

[14] He, D., *et al.* 2017. International rivers and transboundary environment and resources. *The Geographical Sciences during 1986-2015: From the Classics to the Frontiers.* Springer Singapore.

[15] Heikkinen, H.I., Lépy, E., Sarkki, S., and Komu, T. 2016. Challenges in acquiring a social license to mine in the globalizing Arctic. *Polar Record,* 52(4): 399-411.

[16] Hein, J.E., and Chaudhri, V. 2019. Delegitimizing the enemy: framing, tactical innovation, and blunders in the battle for the Arctic. *Social Movement Studies,* 18(2): 171-192.

[17] Holmatov, B., Lautze, J., and Kazbekov, J. 2016. Tributary-level transboundary water law in the Syr Darya: overlooked stories of practical water cooperation. *International Environmental Agreements: Politics, Law and Economics,* 16(6): 873-907. DOI:https://doi.org/10.1007/s10784-015-9308-3

[18] Karbetova, Z., *et al.* 2016. Strategic priorities and challenges of environmental management in Kazakhstan. *Journal of Advanced Research in Law and Economics,* 7(5): 1058-1065.

[19] Li, B., Tan, G., and Chen, G. 2016. Generalized uncooperative planar game theory model for water distribution in transboundary rivers. *Water Resources Management,* 30(1): 225-241. DOI:https://doi.org/10.1007/s11269-015-1158-9

[20] Malinauskaite, L., Cook, D., Davíðsdóttir, B., Ögmundardóttir, H., and Roman, J. 2019. Ecosystem services in the Arctic: a thematic review. *Ecosystem Services* 36: 100898.

[21] Mason, C.F., Umanskaya, V.I., and Barbier, E.B. 2017. Trade, transboundary pollution, and foreign lobbying. *Environmental and Resource Economics,* 70(1): 223-248. DOI:https://doi.org/10.1007/s10640-017-0118-7

[22] Mazur, I.I. 2010. The Arctic as a bifurcation point in the development of a global world. *Age of Globalization,* 2: 93-104.

[23] McInnes, R.J. 2016. Transboundary Ramsar site management: Lake Chad. In C.M. Finlayson, M. Everard, K. Irvine, R.J. McInnes, B.A. Middleton, A.A. van Dam, and N.C. Davidson (Eds.), *The Wetland Book: I: Structure and Function, Management and Methods*. Springer Netherlands.

[24] Nordam, T., Dunnebier, D.A.E., Beegle-Krause, C., Reed, M., and Slagstad, D. 2017. Impact of climate change and seasonal trends on the fate of Arctic oil spills. *Ambio,* 46: 442-452.

[25] Pétré, M.-A., Rivera, A., Lefebvre, R., Hendry, M.J., and Folnagy, A.J.B. 2016. A unified hydrogeological conceptual model of the Milk River transboundary aquifer, traversing Alberta (Canada) and Montana (USA). *Hydrogeology Journal,* 24(7): 1847-1871. DOI:https://doi.org/10.1007/s10040-016-1433-8

[26] Poškus, M.S., Valickienė, R.P. and Kuzinas, A. 2018. Making the right decision: Subjective evaluation of pro-environmental public service announcements. *Public Policy and Administration,* 17(4): 619-633.

[27] Pritchard, D. 2016. Transboundary wetland management. In C.M. Finlayson, M. Everard, K. Irvine, R.J. McInnes, B.A. Middleton, A.A. van Dam, and N.C. Davidson (Eds.), *The Wetland Book: I: Structure and Function, Management and Methods*. Springer Netherlands.

[28] Rai, S.P., Wolf, A.T., Sharma, N., and Tiwari, H. 2017a. Hydropolitics in transboundary water conflict and cooperation. In N. Sharma (Ed.), *River System Analysis and Management*. Springer Singapore.

[29] Rai, S.P., Young, W., and Sharma, N. 2017b. Risk and opportunity assessment for water cooperation in transboundary river basins in South Asia. *Water Resources Management,* 31(7): 2187-2205. DOI:https://doi.org/10.1007/s11269-017-1637-2

[30] Salvo, L.M., Santiago, M.R. and Silva de Assis, H.C. 2018. Biomarkers as a tool to evaluate environmental quality of aquatic ecosystems susceptible to pesticide contamination. *Periodico Tche Quimica,* 15(30): 56-64.

[31] Satelles, J.L., Bezerra da Silva, H.E., Farias, L.R. and Panero, F.D.S. 2018. Evaluation of the environmental impacts of the domestic sewage treatment station on the grande igarapé in Boa Vista /RR. *Periodico Tche Quimica,* 15(30): 160-176.

[32] Savchenko, A., Babikov, O. and Oliinyk, O. 2017. Comparative and legal analysis of criminal and legal protection of individual components of natural environment: European experience. *Journal of Advanced Research in Law and Economics,* 8(7): 2219-2226.

[33] Schiff, J.S. 2017. The evolution of Rhine river governance: historical lessons for modern transboundary water management. *Water History,* 9(3): 279-294. DOI:https://doi.org/10.1007/s12685-017-0192-3

[34] Singh, N. 2016. Human right to water in transboundary water regimes. In N. Singh (Ed.), *The Human Right to Water: From Concept to Reality.* Springer International Publishing.

[35] Takhumova, O.V., Lovyannikova, V.V., and Konovalova, I.A. 2016. Innovative mechanism for increasing the efficiency of regional agroindustrial sector. *Actual Problems of Economics,* 184(10): 228-234.

[36] Tang, L., Gui, L., Shao, G., Wang, L., and Shi, L. 2016. Practice and research progress on ecosystem conservation in transboundary areas. *Chinese Geographical Science,* 26(1): 109-116. DOI:https://doi.org/10.1007/s11769-015-0761-2

[37] Tilleard, S. and Ford, J. 2016. Adaptation readiness and adaptive capacity of transboundary river basins. *Climatic Change,* 137(3): 575-591. DOI:https://doi.org/10.1007/s10584-016-1699-9

[38] Timashev, S.A., and Bushinskaya, A.V. 2019. Analysis of interdependence of Arctic critical infrastructures as transportation networks. *IOP Conference Series: Materials Science and Engineering,* 481(1): 012008.

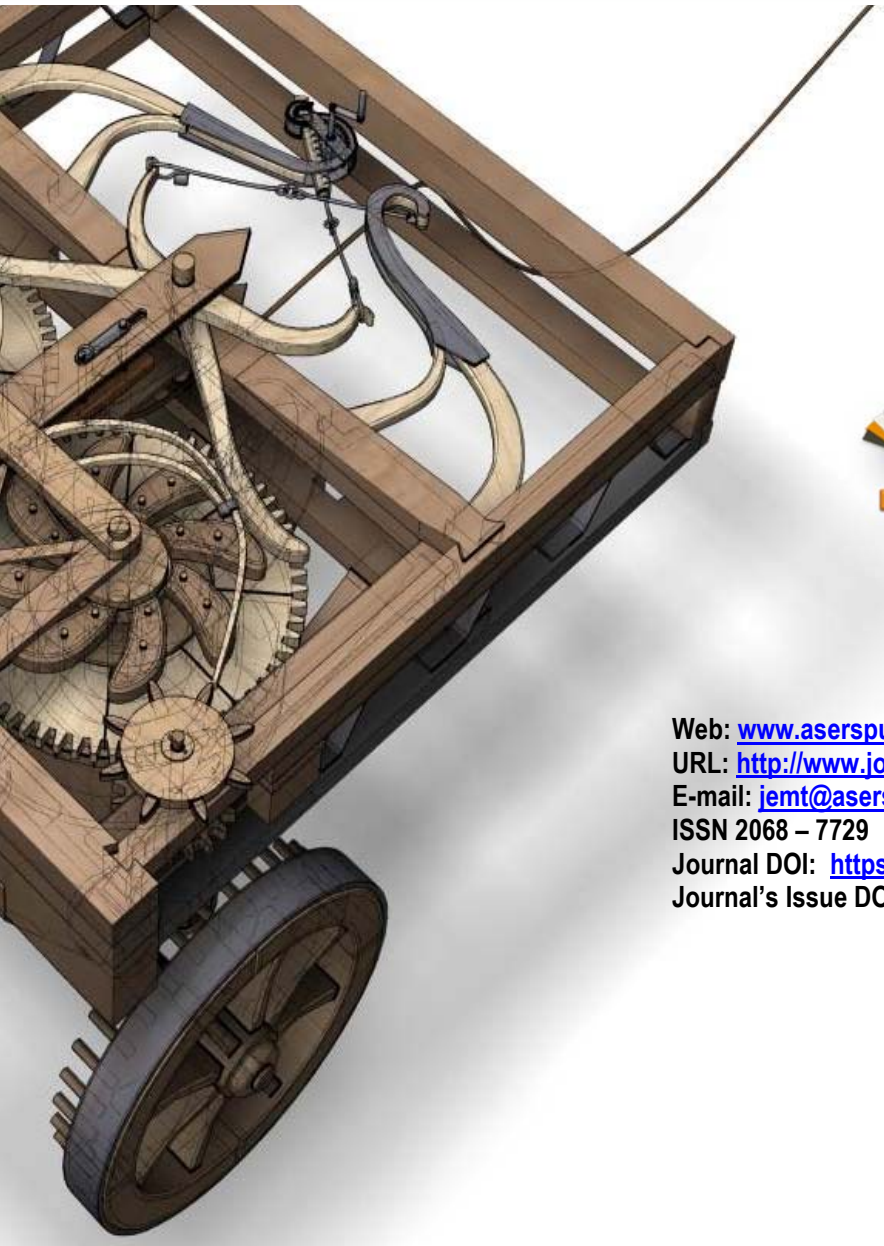
[39] Tolvanen, A., *et al.* 2018. Mining in the Arctic environment – A review from ecological, socioeconomic and legal perspectives. *Journal of Environmental Management,* 233: 832-844.

[40] Umbetbayeva, Z.B. *et al.* 2016. International legal aspects of the environment protection in modern conditions. *Journal of Advanced Research in Law and Economics,* 7(6): 1528-1538.

[41] Villa, S.M., *et al.* 2017. Quality assurance of anions environmental monitoring in IPEN's environmental monitoring program. *Periodico Tche Quimica,* 14(27): 91-96.

[42] Volkov, A. and Melnikiene, R. 2017. CAP direct payments system's linkage with environmental sustainability indicators. *Public Policy and Administration,* 16(2): 231-244.

ASERS



ASERS Publishing

Web: www.aserspublishing.eu
URL: http://www.journals.aserspublishing.eu/jemt
E-mail: jemt@aserspublishing.eu
ISSN 2068 – 7729
Journal DOI: https://doi.org/10.14505/jemt
Journal's Issue DOI: https://doi.org/10.14505/jemt.v10.5(37).00