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Social Impact Assessment as a Tool for Sustainable Development of the Russian Arctic

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Abstract. In the context of dynamic economic development of the Arctic, one of the strategic tasks is to ensure environmental safety and preserve the conditions and quality of life of the local population. It is possible to solve this problem by conducting environmental impact assessment (EIA) at the stage of economic activity planning, which is mandatory in all Arctic countries. During the EIA process, companies assess possible environmental and related social and economic impact of the planned investment project. For this purpose, appropriate techniques are used, and their number is sufficient to carry out a comprehensive assessment of the impact on the natural environment. At the same time, assessing social impact of economic initiatives is quite a challenge for companies due to the fact that Russia lacks the documents and methodological recommendations that regulate the implementation of such an assessment. This fact is confirmed by the practice of EIA and by scientific research, according to which the assessment of social impact of economic activity is one of the most difficult and least studied issues in modern science. It becomes particularly important to find a solution to this problem for the Russian Arctic, where the indigenous population lives, whose conditions and quality of life largely depend on the state of the environment and preservation of traditional economic activities. In this regard, we set a goal to find an approach to the development of a methodology for forecasting social changes for the Arctic region of Russia. To achieve the goal, we do the following 1) we analyze the existing methodological approaches to assessing the social impact of the planned economic activity in the context of Russian and foreign research, as well as the practice of EIA; 2) we describe a system of indicators of the social environment of

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the Russian Arctic; 3) we build a matrix of social impact of the planned economic activity. The findings of our study can become the basis for the development of specific techniques, including sectoral methods, to assess social impact of the planned economic activity; these techniques can be used for a comprehensive environmental assessment of the planned economic activity by public and private companies.

Key words: economic activity, impact, social environment, assessment, social impact, indicator, methodology, Russian Arctic.

Introduction

Development of the Arctic is one of the national priorities for many Arctic and non-Arctic countries [1, p. 10]. Mining, development of oil and gas fields, development of energy and transport infrastructure – all this can make the Arctic region one of the most attractive territories for investment and implementation of large business projects. According to the Arctic Business Forum held annually in the Finnish city of Rovaniemi, the volume of international investment in projects in the Arctic will be 49.7 billion EUR in 2016–2020 alone; most of the money will go to the development of transport infrastructure, as well as projects in the mining and oil industries [2, p. 73].

Due to the presence of hydrocarbon reserves, availability of infrastructure facilities as well as logistics capabilities of the Northern Sea Route, Russia is the undisputed leader in the development of the Arctic [1, p. 5]. At the same time, it is obvious that the economic development of the Arctic will increase the level of anthropogenic impact on the environment and can significantly affect the conditions and quality of life of the local population. Despite the obvious economic potential of the Russian Arctic, the number of people permanently residing in the region is decreasing every year; this fact is confirmed by negative migration dynamics [3, pp. 51-57]. The main causes of population decline are dissatisfaction with the standard of living and quality of life, as well as poor ecology. Preserving the traditional way of life of indigenous peoples of the Arctic is an equally serious problem [4, pp. 26-27]. Industrial development of natural resources is often accompanied by the alienation of territories used by local communities [5, p. 96] for traditional economic activities; and pollutants entering the environment as a result of industrial activities pose a serious threat to the health of the local and especially indigenous population of the Arctic, whose lives still depend on hunting, fishing, reindeer husbandry and plant harvesting [6, pp. 4-13].

In this regard, it is urgent to develop specific ways to prevent negative environmental and social implications arising due to the development of the Arctic. It is possible to solve this problem, on the one hand, by introducing new or improving the existing methods of forecasting risks to the natural and social environment, and on the other hand, by developing specific technologies aimed to ensure environmental safety of economic activity and improve the quality of life of the population in the Arctic.

Environmental impact assessment (EIA) is one of the tools to prevent negative consequences of economic activity. EIA is carried out by companies at the stage of investment planning in order to make an environmentally friendly decision on the implementation of a project, choosing alternative options or deciding against its implementation.

In Russia, EIA is carried out for any economic activity that has a direct or indirect impact on the environment[1]. The legal obligation to carry out EIA was established on May 16, 2000, when Order No. 372 of the State Committee on Environmental Protection of the Russian Federation approved the Regulations on environmental impact assessment in the Russian Federation. In 1991, Russia signed the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, Finland, 1991); this fact contributed to the emergence of a national EIA procedure. And although Russia did not ratify this Convention, many of its provisions were taken as a basis for the development of the Russian EIA procedure.

According to its content, EIA is the process of determining possible types of negative impact on the environment, which includes assessing the impact of economic activity on natural components: the atmosphere, water environment, land, soil, flora and fauna, as well as forecasting social and economic implications. When carrying out environmental assessment, companies are guided by legislative and subordinate acts, state standards, technical regulations, manuals and instructions, the number of which is currently enough to conduct a comprehensive assessment of environmental impact. At the same time, assessing social implications of the planned economic activity presents a great difficulty for companies due to the lack of regulatory documents and methodological recommendations regulating its implementation in Russia. The absence of a national procedure for assessing the impact on the social environment and the related impossibility of an objective and comprehensive analysis of social impact of economic activities compromise the effectiveness of EIA as a whole and make it necessary to consider social impact assessment as a scientific, theoretical and applied problem.

Review of the literature and methodological approaches to social impact assessment

Barrow [7] was the first to consider social impact assessment criteria for EIA process; Vanclay [8] and Becker [9] further developed its conceptual understanding. According to the scientists, social impact assessment is often reduced to the consideration of the implications of economic activity for human health, but this is not entirely accurate. Social impact assessment is much broader in its content and should include all aspects related to the individual, their existence and quality of life. These aspects include not only health, but also infrastructure, education, culture, living conditions and people's rights. In addition, social impact assessment should reflect the specifics of the territory; this fact is especially important in the conditions of active economic development of the Arctic.

In the practice of assessing the social impact of planned activities, international companies rely on the concept proposed by the International Association for Impact Assessment (IAIA) and the recommendations described in the procedures of the World Bank and the European Bank for Reconstruction and Development. According to the IAIA, social impact assessment is defined as "the process of analysis, monitoring and management of direct and indirect social implications of planned impacts (programs, plans, projects), as well as any processes of social change that may arise as a result of these impacts" [10]. In our opinion, the above definition contains a number of logical shortcomings. First, the economic impact on the social environment

[1] On environmental protection: Federal Law 7-FZ of January 10, 2002. Retrived from the information and legal system "ConsultantPlus".

can have both positive and negative effects. In this regard, it is necessary to clarify what kinds of impact should be analyzed in the process of social impact assessment. Second, economic activities can affect the current state of the social environment and have consequences in the future, so it is important to indicate whether the social impact is to be assessed in the short or long term. Third, in addition to the inhabitants of the territory in which the project is planned, economic activities can have an impact on the population of the surrounding areas, so it is equally important to take into account the transboundary impact of the planned activities in analyzing social impact.

The exensive practice of social impact assessment in the activities of the World Bank and the European Bank for Reconstruction and Development also does not provide a convincing answer to the question of criteria and methodology for social impact assessment. In 2014, the World Bank issued a framework document on environmental and social issues, containing basic principles and standards, compliance with which should contribute to sustainable socio-economic development in the given territories. This document establishes requirements, the implementation of which is mandatory for the World Bank to make a decision on the financing of investment projects. These requirements are aimed at prevention, minimization, reduction or mitigation of negative social and environmental risks and consequences of projects [11]. Major social risks of investment projects are as follows: negative impact on human health, threat to public safety, impact on traditional habitats and biodiversity, depletion of natural resources, change in the traditional way of life of indigenous peoples, demolition or destruction of monuments of spiritual and material culture [11]. The World Bank has developed appropriate standards for each of these impacts; the observance of these standards is mandatory for obtaining financing for the implementation of economic activities.

Indeed, these criteria are important for making a socially oriented management decision on the implementation of an investment project, but they are universal and do not take into account sectoral and regional specifics. In addition, these requirements apply only to those projects for which funding is requested from the World Bank, and do not apply to all others. This fact is confirmed by the projects of the Russian companies Sakhalin Energy[2] and Yamal LNG[3], which in cooperation with foreign partners are implementing large-scale investment projects in the field of oil and gas production in the Russian Arctic. The development of projects is carried out by these companies in accordance with the requirements of international standards to ensure environmental and social sustainability of the territories of presence[4] and involves the mandatory assessment of social risks, the development of a methodology for assessing the impact on the social environment, measures to inform stakeholders and the public, ensuring effective interaction and dialogue with the population, as well as the allocation of significant funds for social investment to address urgent issues and improve the quality of life. At the same time, in Sweden, where EIA is also mandatory, the assessment of the impact of the planned project on the local population

[2] Sustainable development policy. Sakhalin Energy Investment Company Ltd. 2016. Pp. 6-9. Available at: http://www.sakhalinenergy.ru/media/library/ru/policies/SD_POLICY_2016.pdf (accessed: 29.10.2018).

[3] Environmental and social impact assessment. "Yamal LNG". Available at: http://yamallng.ru/upload/ESIA%20RUS%20.pdf (accessed: 21.11.2018).

[4] Environmental and social sustainability performance standards. Available at: https://www.ifc.org/wps/wcm/connect/cd44c6004b8bbc068dbccfbbd578891b/PS_Russian_2012_Full-Document.pdf?MOD=AJPERES (accessed: 08.11.2018).

is reduced to the analysis of implications for public health, and a financial compensation mechanism is used to compensate for the damage caused by companies to indigenous minorities [12, p. 69].

In Russian scientific literature, the concept of social impact assessment was also not subjected to a thorough scientific and theoretical analysis and therefore does not have a clear definition. This is largely due to the historical development of environmental legislation and environmental impact assessment in the USSR and modern Russia. In the Soviet era, environmental protection included environmental management and prevention of negative impacts on the nature, but did not involve the assessment of social consequences of such impacts[5]. In modern Russia, it has become clear that social impact assessment is important for the creation of favorable conditions and preservation of the quality of life of local population. As a result, the term "environment" was subjected to critical rethinking. With the adoption of the Constitution of the Russian Federation in 1993, the term "environment" was understood as not only a set of components of the natural environment, but also a set of natural and anthropogenic objects. With the expansion of the concept of environment and the inclusion of a social dimension in its content, changes have been made to the process of environmental impact assessment. According to the official instructions currently used by Russian companies in carrying out EIA, social impact assessment is defined as a tool to analyze the current state of the social environment in order to forecast possible social changes, as well as to prevent and reduce possible implications[6]. This definition raises two questions: what indicators of the social environment are assessed when conducting EIA and what methods are used in the the course of EIA? Having analyzed professional sources we see that there is a lack of common approaches to the definition of social environment indicators that should be evaluated in the planning of economic activity. For example, according to the requirements developed in 2012 for carrying out engineering and environmental surveys in construction, the assessment of the social aspect of EIA should include population size, employment, living standards, medical and biological conditions and morbidity[7]. According to other regulations for construction project developers, the forecast of social change, in addition to the above, should take into account regional characteristics, such as the relationship between indigenous peoples, old-timers and newcomers[8].

In practice, social impact assessment is usually carried out within the framework of determining the economic benefits of the planned project for the local population without taking into account territorial, social, cultural and other features of the territory [13]. In this regard, standard indicators of social efficiency of a project are as follows: the number of new jobs, wage level, improvement of the standard of living, etc. All these indicators are calculated values and they have a cost estimate. However, as E.V. Ryabukhina points out, "the benefits

[5] Directions on the composition, development procedure, coordination and approval of design specifications and estimates for the construction of enterprises, buildings and structures: approved by the resolution of Gosstroy of the USSR No. 253 of December 23, 1985. Retrieved from the base of legal and regulatory-technical documentation "Electronic Fund".

[6] *Engineering surveys for construction. Fundamentals. A set of rules: SNiP 11-02-96.* Moscow, 2012.

[7] *Ibidem*.

[8] *Environmental Protection. A Practical Guide for Developers of Construction Projects.* FSUE Center for Scientific and Methodological Support of Engineering Maintenance of Investments in Construction". Moscow, 2006. Pp. 160-163.

of the project are perceived differently by different population strata" [14, p. 85], since, in addition to economic, there are also other criteria for human development [15] that are related to human values. The cost approach to the assessment of social impact does not take into account the types of impact that cannot be calculated, for example, the impact on cultural and spiritual values, the impact on social well-being, which many scientists refer to as "subjective" [16, p. 101] or qualitative evaluation criteria. In addition, in such regions as the Arctic, there are people whose income level is often significantly lower compared to the income level of the rest of the population [17, p. 4], so the economic benefit from the planned project cannot be a key factor when deciding on the implementation of the planned economic activity.

Thus, the main question that arises in assessing the social impact of the planned activity is related to the choice of indicators of the social environment, which will be analyzed in the course of the assessment.

In order to answer this question, first of all, let us turn to the definition of the concept of "social environment", which means "a set of spiritual, social, communal, housing and similar conditions in which the individual lives" [18, p. 83]. This definition is based on the consideration of the social environment as the integrity, unity and "co-existence" (M. Heidegger) of its basic elements, namely nature, man and society [19]. Consequently, social impact assessment should include an analysis of the consequences of economic activity for all components of the social environment, and necessarily take into account the social structure and socio-cultural dynamics of the selected region [19]. With this approach, the priority objective in assessing the social impact of the planned economic activity for the regions with so-called vulnerable ecosystems, such as the Arctic, should be to improve the quality of life of permanent residents and indigenous people.

An equally inportant question, which arises when assessing the impact of the planned project on the social environment, concerns a methodology for social impact forecasting. So far, there is no universal methodology for assessing changes in the social environment as a result of the impact of economic activity both for Russia as a whole and for individual social systems, such as the Arctic. This fact is confirmed by research findings, as well as practical manuals for developers of investment projects. One possible reason is that when assessing the impact on the social environment it is difficult to predict how the planned project will affect the health, biophysical state and living conditions of the local population and what social consequences it will have in the future. In this regard, the main methods used by companies in assessing social impact are identical to those used in assessing the impact of the planned project on the components of the nature. These include the method of forecasting by analogy and the expert method [14, p. 106].

The essence of forecasting by analogy lies in the fact that when assessing the impact on the social environment companies compare the planned project with the already implemented projects, find similarities and differences in the types of social impact and, by analogy, make a forecast regarding the possible implications [20, pp. 59-60]. The main disadvantage of this method consists in the fact that it does not take into account the natural and climatic features of the given territories and the living conditions of the local population, which will be affected during the project implementation; as a result, this method can give only a rough picture of the possible social impact.

The method of expert assessments consists in drawing up a list of indicators of the social environment and in establishing the degree of impact (in points) based on individual or collective opinion of specialists (experts) [21, p. 309]. According to E.V. Ryabukhina, the main disadvantage of this method is "the subjectivity of assessments, which is not eliminated by the availability of a large number of expert opinions, since a large number of expert opinions can increase the objectivity of assessments only if individual opinions are independent, which is difficult to achieve in practice" [14, p. 119].

Thus, the analysis of domestic, foreign and professional literature has shown the absence of general scientific and theoretical approaches to assessing the social impact of the planned economic activity; this fact is due to a number of factors. First, modern science has not yet developed a unified assessment theory, which could be used for the analysis of individual projects and programs [22, p. 7]. Second, the social space of the Arctic region has not been studied in detail. Third, most of the methods used to assess the environmental impact of planned economic initiatives are not applicable to the forecast of social change. In this regard, according to some researchers, long-term forecasts of socio-economic development in relation to the Arctic are hardly possible to carry out at the present stage [23, p. 11].

In our opinion, one of the approaches to creating a methodology for assessing social impact in the Arctic can consist in the development of a comprehensive system of social environment indicators [24, p. 17] and their assessment using the matrix method. The use of this technique will allow us to determine the current state of the Arctic social environment, to establish cause-and-effect relationships between its components and impact factors and to make a forecast of possible social changes that may occur in the course of economic activity.

Research methodology and methods

To develop a methodology for social impact assessment in 2014–2016 we conducted a study of existing practices for environmental impact assessment in the European part of the Arctic zone of Russia. Empirical data were collected in the Arkhangelsk and Murmansk oblasts, in the Komi Republic and Nenets Autonomous Okrug via semi-structured interviews with the main participants of EIA process such as business companies that are initiators of economic activities and customers of EIA materials; state authorities at the federal and regional levels responsible for coordinating economic initiatives and issuing permits for the implementation of projects, municipal authorities accompanying the procedures of public hearings of EIA materials; non-profit organizations representing the interests of the public; organizations developing project documentation, as well as experts involved in the state environmental assessment of EIA materials. In addition, the study of EIA practice was conducted in Moscow and Petrozavodsk (Republic of Karelia).

All in all, 51 interviews were conducted. Forty interviews were conducted in the regions of the European part of the Russian Arctic, 35 of them – in person and 5 – by telephone. The analysis of the data revealed that 13 respondents did not have sufficient knowledge and practical experience in the field of forecasting the environmental and social impact of the planned economic activity. As a result, 27 interviews were analyzed, 7 of them – with representatives of federal and regional authorities, 2 – with representatives of municipal authorities, 5 – with heads of business companies, 6 – with representatives of project organizations, and 7 – with non-profit organizations.

The main purpose of the field research was to update the information in the official documents on the criteria and methods of environmental impact assessment and methods of forecasting social impact of the planned economic activity in the Arctic regions of Russia.

The questions that respondents were asked at personal interviews were divided into three thematic groups. The first group of questions concerned the legal regulation of EIA process in general and the assessment of social impact in particular: *"For which economic projects is EIA mandatory?", "What laws and regulations are companies guided by in conducting EIA?", "Is the legal regulation of EIA process different in the Arctic and in other regions of Russia?"*.

The second group included questions concerning methodological and instrumental support for the assessment of environmental and socio-economic impact of the planned activity, namely methods for collecting baseline data, establishing the criteria for determining the degree of impact of the planned project on the components of the natural and social environment, as well as tools for monitoring environmental and social impact in the process of project implementation: *"Are there officially approved methods and criteria for assessing social impact of the planned economic activity?", "Is the traditional knowledge of local communities and indigenous peoples taken into account in assessing social impact and, if so, how is it done?", "What period is the forecast of social impact made for? If the forecast is for 10 or 15 years (for example, in the oil and gas industry), then what tools are used for data collection and what methods are used for long-term forecasts of changes in the social environment? What assumptions about social impact are included in the analysis?"* The third group of questions was aimed at finding out ways of involving the public in the process of assessing environmental and socio-economic impact and using local potential and traditional knowledge of indigenous peoples: *"Do you think that it is mandatory that the population should participate in EIA and that public opinion should be taken into consideration when conducting EIA?", "Are companies interested in disseminating information about the project they are planning to implement?", "What instruments of public participation are implemented in practice?", "How is public opinion reflected in the final materials on EIA?"*.

In the end, respondents were asked to provide examples from personal experience of participation in environmental impact assessment and to provide recommendations for improving the procedure taking into account natural and social characteristics of the Arctic region. In particular, the respondents were asked the following questions: *"What environmental and social issues in the Northern regions deserve special attention during EIA?" and "Do you think that a special EIA procedure should be developed for the Arctic?"*.

In 2017, the study of environmental impact assessment was continued and extended to the Asian part of the Russian Arctic Zone[9]. We collected empirical data with the help of a questionnaire survey of the main participants of EIA process in the Arkhangelsk and Murmansk oblasts, the Komi Republic, the Republic of Sakha (Yakutia), Nenets and Yamalo-Nenets autonomous okrugs. Out of the 92 questionnaires sent to respondents, 26 were filled in. Among them: ten – from federal and regional authorities, eight – from representatives of business companies, seven

[9] The study was conducted on the basis of Lomonosov Northern (Arctic) Federal University under the order of the Ministry of Economic Development of the Russian Federation in the framework of the international project "Recommendations on environmental impact assessment and public participation in the Arctic".

– from project organizations and one – from a non-profit organization that represents the interests of indigenous minorities.

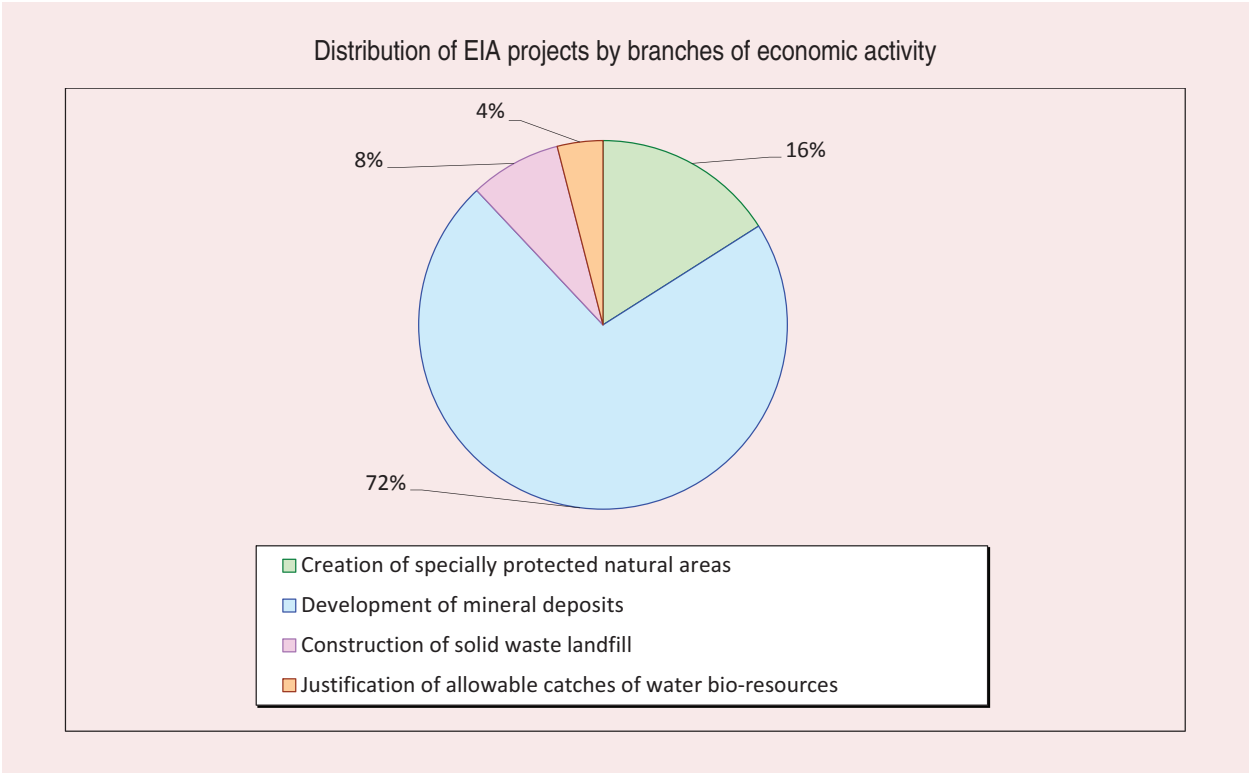
The main purpose of the questionnaire was to study the positive experience of stakeholders' participation in EIA and to collect proposals to improve the current procedure of environmental and social assessment. In total, respondents were asked 12 questions, which were divided into two groups. The first group of questions was aimed at obtaining information on the existing practice of EIA in the Russian Arctic: *"Have you participated in the environmental impact assessment and, if so, then in what capacity: as initiator of the project, developer of project documentation and EIA materials, representative of public authorities or the public?", "If you have, than what was the project (give its short description) and what were your responsibilities?"*.

The second group of questions was about the recommendations for improving the current EIA procedure taking into account the specifics of the Arctic region: *"In your opinion, is there an ideal EIA scheme for the Arctic region today?", "What are the shortcomings of the current EIA procedure and how it can and should be improved?", "What is the role of the public in environmental impact assessment and how, in your opinion, can the importance of public participation in the EIA be enhanced?", "What questions and themes, in your opinion, require special attention when carrying out EIA in the Arctic region?"*.

Research findings

Having analyzed the empirical data, we find out that most of the projects that are implemented in the Arctic Zone of the Russian Federation, for which EIA is carried out, are associated with the development of mineral deposits *(Figure)*.

Taking into account the high environmental risks of the projects under implementation, 93% of respondents noted the importance of



developing a comprehensive assessment of the impact on the natural and social environment of the Arctic region. To do this, it is necessary to restore the key role of EIA in decision-making on the implementation of economic projects in the Arctic, improve the national regulatory framework, conduct comprehensive research on all components of nature and society, taking into account the actual state of the natural and social environment in the area of planned economic activity, develop a detailed plan for environmental protection, introduce the system of state control and monitoring of the environment in the area of economic activity, taking into account the socio-economic and socio-cultural aspects of the territories of presence.

According to respondents, special attention should be paid to the assessment of social impact of the planned economic activity. The system of indicators of the Arctic social environment should include both basic and specific indicators for this territory; the indicators are as follows: the traditional way of life of indigenous peoples, their distinctive social organization, especially cultural and everyday life, spiritual values and traditional crafts. According to respondents, the issues that need to be addressed in the course of EIA in the Arctic include: compensation for environmental damage to indigenous small peoples in the places of their traditional use of natural resources, preservation and prevention of health, preservation and development of traditional culture and languages of indigenous small peoples.

Having analyzed scientific and professional literature and the findings of field studies, we identify quantitative (objective) and qualitative (subjective) criteria for assessing the current state and forecasting the changes in the social environment of the Arctic region of Russia *(Table 1)*.

Quantitative indicators include those criteria that can be given a numerical value [24, p. 104]. Qualitative data can be converted into quantitative data on the basis of a point system; they can be ranked according to the degree of intensity of the influence of impact factors and can be used to make an objective picture of the current state and possible changes in the social environment. To do this, it is advisable to use the matrix method, which is often used to assess the impact of the planned project on the components of the nature. The essence of this method is to establish the relationship between the indicators of the social environment, which will be considered during the evaluation, and the impact factors; it is followed by the construction of the table that indicates the fact of interaction [21, p. 310]. The degree of impact can be determined by the results of sociological research and expressed by means of point scales. As a result, a two-dimensional quantitative impact matrix will be built, which can be used to establish causal relationships between the impact factors and components of the social environment, to obtain expert

Table 1. Criteria for assessing the current state and forecasting the changes in the social environment of the Arctic region of Russia

Quantitative	Qualitative
Demographic indicators and migration processes	Traditional material culture
Employment	Traditional spiritual culture
Income and standard of living	Recreation resources
Accessibility of education	Right to engage in traditional crafts
Public health and safety	Social well-being

knowledge about its current state and possible changes [21, p. 310], to develop alternative options for the implementation of the project, as well as measures to mitigate or prevent negative implications for society.

The disadvantage of the proposed method lies in the fact that it does not provide sufficiently objective criteria for making management decisions and cannot be used in the monitoring of impacts [14, p. 111] *(Table 2)*.

Table 2. Matrix of the impact of the investment project on the social environment of the Arctic region

Social environment indicators	Impact factors	Degree of impact (point score)
Employment	Creation and provision of new jobs to all, including the indigenous population.	X
	Reducing unemployment.	X
Income and living standards	Raising income and wages.	X
	Promoting social mobility.	X
	Aggravation of social stratification by income level.	X
	Changes in the prices of goods and services.	X
	Construction and commissioning of new housing.	X
	Changing the level of housing prices.	X
	Increase in the demand for local goods and services, as well as the purchase of traditional craftwork items from indigenous communities.	X
	Development of local business	X
	Modernization and construction of social infrastructure objects.	X
Population migration	Increase in the number of labour migrants.	X
	Necessity to resettle local and indigenous population.	X
Demographic situation	Population growth and changes in its composition due to the increase in the number of migrant workers.	X
Education	Increase in the number of educational institutions and organizations providing educational services.	X
	Improving the availability, level and quality of educational services.	X
	Creating favorable conditions for obtaining general, professional and additional professional education, for professional development and retraining of local and indigenous population.	X
Public health	Increase in morbidity due to environmental pollution.	X
	Rising incidence of mental diseases due to the violation of traditional way of life.	X
	Construction of new and modernization of existing healthcare facilities.	X
	Improving the quality of medical services.	X
	Improving access to healthcare for local and indigenous population.	X
Public safety	Growing number of social and intercultural conflicts between indigenous and local population and labor migrants.	X
	Increase in the number of accidents caused by the construction and operation of infrastructure.	X
	Increase in crime rate.	X
Spiritual and cultural values	Damage to or loss of objects of spiritual, cultural, and cultural-and-historical heritage.	X
	Restriction or violation of access to objects of spiritual, cultural, and cultural-and-historical heritage.	X
	Violation of the original and traditional way of life, including the inability to implement traditional customs, perfom rituals and religious rites.	X
	Loss of indigenous languages.	X
Recreation resources	Restriction or termination of access to traditional recreation and tourism areas.	X

End of Table 2.

Social environment indicators	Impact factors	Degree of impact (point score)
Traditional crafts	Seizure and segmentation of lands of indigenous peoples.	X
	Reducing fish stocks and limiting opportunities for traditional and recreational fishing.	X
	Restriction of access to the places of gathering of wild plants.	X
	Restriction of access to hunting places.	
	Changing nomadic routes and feeding places for deer.	X
Social well-being	Increase in the level of social tension.	X
	Issues related to social adaptation of local and indigenous population to new socio-economic conditions.	X
	Increase in the level of concern and distrust among the population.	X

Discussion of results and conclusions

We have considered the aspects of the current assessment of the impact of the planned economic activity on the social environment, and they indicate that comprehensive studies of this problem are relevant both in scientific and theoretical and practical terms. Scientific analysis, definition of criteria, development of methods for its implementation play an important role in ensuring sustainable social development of territories in the process of economic activity and in preserving the conditions and quality of life. It is of particular importance to find a solution to this problem for the Arctic, the space of which is a complex combination of natural, social, historical, cultural, and spiritual levels of human existence. Consideration of all aspects of human life should be the basis for the development of methodologies and technologies for assessing and forecasting social risks.

The paper shows that traditionally the development of assessment has always gone from practice to theory [22], but no assessment practice can guarantee the safety of the planned activities without comprehensive theoretical studies of the system, which will be affected. This necessitates scientific research on the social structure and social dynamics of the Arctic region, as well as the features of traditional nature management and life [25].

In recent years, both in Russia and abroad, more and more fruitful scientific papers on various social aspects of the Northern and Arctic territories are published; nevertheless the analysis of the results of interviews and questionnaires has shown that determining the indicators of the Arctic social environment is one of the most serious problems in the development of specific methods and technologies for forecasting social impact. One of the ways to solve this problem, in our opinion, is to take into account global and Russian experience in scientific and applied research and involve experts and practitioners from such scientific fields as sociology, anthropology, ethnology, geography, economics and ecology.

The second problem we try to tackle in our paper is related to the development of a methodology for forecasting social impact on the basis of the matrix method, which can be used to assess the current state and forecast possible changes in the social system and which can become the basis for making socially significant decisions on the implementation of the investment project. Despite the existing shortcomings of the proposed methodology, it can be taken as a basis for the development of common approaches and methodologies

for assessing social impact, which in turn can be used by public authorities and companies to develop general recommendations for the sustainable development of the Arctic region, as well as decision-making in the field of environmental protection and preservation of favorable living conditions of the local Arctic population.

References

1. *Prioritety Rossii v Arktike. Spetsial'nyi doklad k mezhdunarodnomu forumu tekhnologicheskogo razvitiya "Tekhnoprom-2016"* [Russia's Priorities in the Arctic. Special Report at the International Forum for Technological Development "Technoprom-2016"]. Novosibirsk, 2016. 64 p.
2. *Arctic Business Forum Yearbook 2016.* Compiled and edited by Timo Rautajoki. Lapland Chamber of Commerce. Rovaniemi, 2016. 198 p.
3. Rudenko D.Yu. Analysis of demographic processes in the Russian Arctic. *MIR (Modernizatsiya. Innovatsii. Razvitie)=MID (Modernization. Innovation. Development)*, 2015, vol. 6, no. 4, pp. 51-57. DOI: 10.18184/2079-4665.2015.6.4.51.57. (In Russian).
4. Polovinkin V.N. Human resources – the main problem of development of the North. *Arktika: ekologiya i ekonomika=Arctic: Ecology and Economy,* 2013, no. 4 (12), pp. 26-31. (In Russian).
5. Vinogradova S.N., Masloboev V.A. Mining in the traditional territories of the indigenous peoples of the North: features, problems, mechanisms of regulation. *Arktika: ekologiya i ekonomika=Arctic: Ecology and Economy,* 2015, no. 2 (18), pp. 96-103. (In Russian).
6. Laverov N.P., Bogoyavlenskii V.I., Bogoyavlenskii I.V. Fundamental aspects of rational development of oil and gas resources in the Arctic and in the Russian shelf: strategy, prospects and problems. *Arktika: ekologiya i ekonomika=Arctic: Ecology and Economy,* 2016, no. 2 (22), pp. 4-13. (In Russian).
7. Barrow C.J. *Social Impact Assessment: An Introduction*. London: Arnold, 2000. 244 p.
8. Vanclay F. Conceptualising social impacts. *Environmental Impact Assessment Review*, 2002, no. 22(3), pp. 183-211.
9. Becker H.A., Vanclay F. *The International Handbook of Social Impact Assessment*. Cheltenham, UK: Edward Elgar, 2003. 352 p.
10. *Social Impact Assessment*. International Association for Impact Assessment. Available at: http://www.iaia.org.
11. Environmental and social framework document. *World Bank*. Available at: https://consultations.worldbank.org (accessed: 22.03.2018).
12. Koivurova T., Lesser P., Bickford S., Kankaanpää P., Nenasheva M. *Environmental Impact Assessment in the Arctic. A Guide to the Best Practice.* Edward Elgar Publishing, Inc., 2016. 311 p.
13. Gulakov I., Vanclay F. Social impact assessment in the Russian Federation: does it meet the key values of democracy and civil society? *Impact Assessment and Project Appraisal*, 2018, vol. 36, no. 6, pp. 494-505. DOI: 10.1080/14615517.2018.1507111.
14. Ryabukhina E.V. *Otsenka vozdeistviya na okruzhayushchuyu sredu* [Environmental Impact Assessment]. Yaroslavl: YarGU, 2010. 175 p.
15. Lokosov V.V., Ryumina E.V., Ul'yanov V.V. Population quality and regional economy: direct and indirect correlation. *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz=Economic and Social Changes: Facts, Trends, Forecast*, 2018, vol. 11, no. 1, pp. 32-42. DOI: 10.15838/esc.2018.1.55.2. (In Russian).
16. Anikevich A.G., Elizarov S.A., Yuris S.A. Methodology for assessing the socio-economic consequences of the implementation of strategic management decisions at the regional level *Vestnik GGTU im. P.O. Sukhogo=Bulletin of Sukhoi State Technical University of Gomel*, 2001, no. 3-4, pp. 100-107. (In Russian).
17. Novikova N.I., Stepanov V.V. Indicators of the quality of life of indigenous peoples of the North of the Sakhalin Oblast. In: *Issledovaniya po prikladnoi i neotlozhnoi etnologii* [Researches on Applied and Urgent Etnology]. Moscow: IEA RAN, 2010. Vol. 217. Pp.1-43. (In Russian).

18. Shmal' A.G. *Faktory ekologicheskoi opasnosti i ekologicheskie riski* [Triggers of Environmental Hazards and Environmental risks]. Bronnitsy: IKTs BNTV, 2010. 191 p.
19. Dregalo A.A., Ul'yanovskii V.I. *Sotsiokul'turnaya dinamika sotsial'nogo prostranstva Severa* [Sosio-Cultural Dynamics of the Socila Space of the North]. Arkhangel'sk: SAFU, 2017. 252 p.
20. Matveev A.N., Samusenok V.P., Yur'ev A.L. *Otsenka vozdeistviya na okruzhayushchuyu sredu* [Environmental Impact Assessment]. Irkutsk: Izd-vo Irkut. gos. un-ta, 2007. 179 p.
21. Pitul'ko V.M. (Ed.). *Ekologicheskaya ekspertiza* [Environmental Assessment]. Moscow: Akademiya, 2010. 528 p.
22. Vizgalov D.V. *Metody otsenki munitsipal'nykh programm* [Methods for Assessing Municipal Programs]. Moscow: Fond "Institut ekonomiki goroda", 2004. 108 p.
23. Minakir P.A., Leonov S.N. Problems of forecasting the development of the Arctic regions of the Far East. *Arktika: ekologiya i ekonomika=Arctic: Ecology and Economy,* 2015, no. 1 (17), pp. 10-17. (In Russian).
24. Neveikina N.V. Indicators of socio-economic development of the region. *Regional'naya ekonomika: teoriya i praktika=Regional Economy: Theory and Practice,* 2013, no. 23 (302), pp. 16-27. (In Russian).
25. Tishkov V.A. (Ed.). *Rossiiskaya Arktika: korennye narody i promyshlennoe osvoenie* [Russian Arctic: Indigenous Peoples and Industrial Development]. Moscow: Saint Petersburg: Nestor-Istoriya, 2016. 272 p.

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