

Arctic and North. 2023. No. 51. Pp. 44–61

Original article

UDC [332.13:330.332:39](571.56)(045)

doi: 10.37482/issn2221-2698.2023.51.52

Industrial Development of the Territories of the Arctic Zone of Yakutia and Ethnological Expertise of Investment Projects

Evdokiya I. Burtseva^{1✉}, Dr. Sci. (Geogr.), Professor

Anatoliy N. Sleptsov², Cand. Sci. (Law), Professor

Anna N. Bysyina³

^{1,2,3} M.K. Ammosov North-Eastern Federal University, ul. Belinskogo, 58, Yakutsk, Russia

¹ burtseva1999@mail.ru ✉, ORCID: <https://orcid.org/0000-0002-8967-7602>

² uyandi@mail.ru, ORCID: <https://orcid.org/0000-0002-6207-1301>

³ ian.89@mail.ru, ORCID: <https://orcid.org/0000-0002-3695-4354>

Abstract. The purpose of the work is to assess the consequences of the industrial development of the territories of traditional nature management of the indigenous peoples of the North. In order to achieve the goal, the investment projects planned on the territory of the Arctic and considered in the ethnological expertise of the Yakutia are analyzed. The structure of the Yakutia economy is dominated by the mining industry. The Arctic and northern territories of Yakutia are characterized by high vulnerability to technogenic impacts. In 2012–2021, 39 investment business projects were considered in the republic's ethnological expertise, including 12 ones in the Arctic and northern regions. In order to improve the health and quality of life of indigenous peoples in the areas of industrial development, it is necessary to conclude a trilateral Cooperation Agreement between the project customer, state authorities and authorized representatives of indigenous peoples. In order to monitor the quality of life of indigenous peoples, it is necessary to adopt the Program of ethno-ecological monitoring in the territories of traditional nature management. The study was carried out using historical-geographical, analytical, synthetic, statistical methods. The results of the work can be applied by specialists of state structures, scientists, students.

Keywords: *indigenous peoples of the North, investment project, traditional nature management, mining industry, ethnological expertise*

Acknowledgments and funding

The article was prepared with the financial support of the Russian Foundation for Basic Research Grant No. 20-010-00252 “Economic and legal mechanisms for regulation and development of territories of traditional nature management in the context of industrial development of the Arctic”.

Introduction

Modern industrial development of the Arctic is the next stage in the exploitation of natural resources, mainly minerals and raw materials. Mining in the Arctic leads to an unavoidable intrusion into the lives of indigenous peoples. As a result of the development of industrial enterprises, along with all infrastructure facilities, the constant commissioning of new deposits, significant territories fall into their sphere of influence. The development of hydrocarbons is a striking example

* ©Burtseva E.I., Sleptsov A.N., Bysyina A.N., 2023

For citation: Burtseva E.I., Sleptsov A.N., Bysyina A.N. Industrial Development of the Territories of the Arctic Zone of Yakutia and Ethnological Expertise of Investment Projects. *Arktika i Sever* [Arctic and North], 2023, no. 51, pp. 52–72. DOI: 10.37482/issn2221-2698.2023.51.52

of this process [1, Popkov Yu.V.]. At the same time, indigenous peoples cannot count on fair, from their point of view, compensation for damage because the legal systems of states do not take into account the specifics of the traditional way of life of the natives when calculating the payment of damage.

From the economic point of view, the Arctic and northern regions are considered to be a region rich in mineral and raw materials, including hydrocarbons. Thus, the Arctic territory is now becoming demanded, but at the same time conflicting area, as previously unannounced claims for rights to Arctic possessions are emerging. According to many researchers, claims to the Arctic territory of Russia are based on the fact that the Arctic is the wealth of all mankind [2, Sleptsov A.N.; 3, Silkin V.Yu. and etc.]. At the same time, the biological resources of the Arctic used by indigenous peoples are very limited. According to [4, Poiseev I.I.], a new industrial step, focused only on profit without regard for ecological and social priorities, can cause an environmental crisis, which can deepen to catastrophic proportions.

Currently, 7 subjects (municipal entities) of the Russian Federation with direct access to the Arctic Ocean are classified as Arctic territories: Murmansk Oblast, Arkhangelsk Oblast, Nenets Autonomous Okrug, Komi Republic (Vorkuta city district), Yamalo-Nenets Autonomous Okrug, Krasnoyarsk Krai (Norilsk city district, Taimyrskiy Dolgano-Nenetskiy municipal district, Turukhanskiy district) and 5 uluses (districts) of the Republic of Sakha (Yakutia) (hereinafter – RS (Ya))¹.

The legislation of the RS (Y) includes 13 uluses into the Arctic zone: Abyyskiy, Allaikhovskiy, Anabarskiy, Bulunskiy, Verkhnekolymskiy, Verkhoyanskiy, Zhiganskiy, Momskiy, Nizhnekolymskiy, Olenekskiy, Srednekolymskiy, Ust'-Yanskiy, Eveno-Bvtantayskiy. Of these, 4 uluses have the status of a “national administrative-territorial ulus (district)” — Anabarskiy national Dolgan-Evenk, Zhiganskiy Evenk national, Olenekskiy Evenk national, Eveno-Bvtantayskiy national²; indigenous minorities of the North (Small Indigenous Peoples of the North, SIPN) live there.

According to the Russian legislation, the authorities establish territories of traditional nature use (TTNU)³ — specially protected areas for the traditional use of nature by the peoples of the North, where the activities of industrial companies are limited and possible only with the prior consent of the natives. The territories of these uluses refer to absolutely extreme discomfort zones for living. The average duration of the heating season exceeds 9 months. They are characterized by specific Arctic features: a) focal nature of industrial and economic development of the

¹ Ukaz Prezidenta Rossiyskoy Federatsii ot 02.05.2014 g. № 296 № «O sukhoputnykh territoriyakh Arkticheskoy zony Rossiyskoy Federatsii» [Decree of the President of the Russian Federation of 02.05.2014 No. 296 No. “On land territories of the Arctic zone of the Russian Federation”]. URL: <http://www.kremlin.ru/acts/bank/38377> (accessed 02 October 2022).

² Shtyrov V. A. Vosem' rayonov Yakutii vkluchat v sostav Arkticheskoy zony [Eight districts of Yakutia will be included in the Arctic zone]. URL: <http://yakutiakmns.org/archives/5410> (accessed 20 October 2022).

³ Postanovlenie Pravitel'stva RS (Ya) ot 22 iyunya 2006 g. N 267 «Ob utverzhdenii polozheniya o territoriyakh traditsionnogo prirodopol'zovaniya korennykh malochislennykh narodov Servera Respubliki Sakha (Yakutiya)» [Decree of the Government of the Republic of Sakha (Yakutia) dated June 22, 2006 N 267 "On approval of the regulation on the territories of traditional nature management of the indigenous peoples of the Server of the Republic of Sakha (Yakutia)"]. URL: <https://docs.cntd.ru/document/802070067> (accessed 02 October 2022).

territories, low population density; b) remoteness from industrial centers; c) dependence of the economic activities of the population on supplies of fuel, food, essential goods from the central regions of Russia [5, Burtseva E.I., Potravnyy I.M., Gassiy V.V. et al.].

As of January 31, 2018, the register of TTNUs of local importance included 54 municipalities of the RS (Ya). In the conditions of active industrial development of the natural resources of the Russian Arctic, the creation of the TTNU plays an important role in protecting the interests and rights, preserving the original habitat of the indigenous peoples of the North, and can serve as a certain deterrent for industrial enterprises [6, Potravnyy I.M., Gassiy V.V., Afanasyev S.M.].

Literature review and research methodology

According to A.A. Tranin [7], industrial expansion increases not only the anthropogenic impact of mining companies on the vulnerable ecosystem of the North, but also creates many conflict situations in relations with the aboriginal population. As one of the options for solving the problems of traditional natural resource use by indigenous peoples, he suggests an approach, well-known in international practice: a combination of certain types of specially protected natural areas (SPNA) and TTNU. In some cases, as in the USA and Canada, they are included in national parks, biosphere reserves, etc., in others, as in Russia, they are classified as specially protected areas.

Industrial development of TTNU abroad is often accompanied by the emergence of conflict situations [8, Stephenson S.R.]. Conflicts can also arise in conditions of resource depletion and exhaustion, closure of industrial enterprises, which is associated with the problem of employment, elimination of accumulated damage and provision of environmental conditions for the population [9, Gengut I., Alnukina E., Davaakhuu N., Potravnyy I.]. In some countries, where such projects are implemented, certain experience has been gained in concluding agreements between mining companies and indigenous peoples on providing compensation [10, Sosa I., Keenan K.]. The Republic of Sakha (Yakutia), as one of the leading regions in terms of legal support of the rights of the indigenous peoples of the North, is also of particular interest to foreign researchers. The problems of traditional nature management in the Arctic regions, in particular in the RS (Ya), have been studied in many works, among which the works of foreign authors can be mentioned: [11, Fondahl et al.; 12 Wilson et al.; 13, Balzer et al.].

Yakutia is included in four geographical zones: Arctic desert, tundra, forest-tundra and taiga forests [14, Pakhomova L.S., Savvinova A.N.]. According to the results of the 2010 census, the number of 5 indigenous peoples (Evens, Evenks, Chukchi, Yukagirs, Dolgans) in the republic is 39936 people. According to the geographical areas of traditional nature management, the Evenks amounted to 21008 people, the Evens — 15071 people (Table 1).

Table 1
Geographical zoning of the territory of traditional nature use of the Republic of Sakha (Yakutia)

Geographical zones	Subzones	Evenks	Evens	Total
Tundra	Typical (tundra)	124	2545	2669
Forest-tundra	Tundra-northern taiga	3055	1497	4552
Total		3179	4042	7221

Taiga	Northwestern taiga	5479	71	5550
	Northeastern taiga	2282	4808	7090
	Total	7761	4879	12640
	Central Yakut alas-middle taiga	4410	4978	9388
	Western middle taiga	1173	436	1609
	Southwestern middle taiga	1289	303	1592
	Southern mountain taiga	3196	433	3629
Total		10068	6150	16218
Total for RS(Ya)		21008	15071	36079

For natural and economic zoning, the factor intensity index (ИИФ, FTI) recommended by E.I. Burtseva was used [15], which is calculated as the share of the indicator in the republic average. The index is quite free from subjectivity, it represents a deviation from the average state of the object in relative terms and is determined by the formula:

$$ИИФ_i = \frac{a_i}{M}$$

where: a_i – the absolute value of the i -th indicator; M – the absolute average value of the set of indicators. Subsequently, using the FTI, the territory of the Republic of Sakha (Yakutia) was zoned according to the vulnerability of natural complexes to anthropogenic impacts (Table 2) [16, Burtseva E.I. et al.].

Table 2

Natural and economic zoning of the territory of the Republic of Sakha (Yakutia) according to the vulnerability of natural complexes to anthropogenic impacts

Natural and economic zones/subzones		Zones		Subzones	
Zones	Subzones	FTI	Level of vulnerability	FTI	Level of vulnerability
Subarctic tundra-northern taiga	Typical	3.43	Extremely high	3.43	Extremely high
Northern taiga	Northwestern plain	1.18	High	1.10	High
	North-Eastern mountain-taiga			1.15	High
	North-Eastern lake-taiga			1.31	Very high
Middle taiga	Western	0.95	Medium	0.89	Medium
	Central			0.85	Medium
	Southwestern			0.88	Medium
	Southern			1.17	High

On the territory of the Republic of Sakha (Yakutia), 3 zones and 8 subzones of resistance of natural complexes to technogenic impacts have been identified. In general, on the territory of the Republic, the vulnerability of subzones to anthropogenic impacts increases from south to north by 2–3 times; in the Subarctic tundra-northern taiga zone, the vulnerability of natural complexes to technogenic impacts is extremely high, in north taiga – very high.

As noted by V.A. Kryukov [17], a distinctive feature of the “high latitude economy” is that it consists of two types of environmental management: the traditional activities of the indigenous people of the North and the Arctic and the development of natural resources, cities and settle-

ments. On the territory of Yakutia, indigenous minorities account for 4.2% of the total population of the republic and specialize mainly in traditional industries: reindeer herding, hunting, fishing and gathering wild plants [18]. Table 3 presents the natural and economic zones of Yakutia by their specialization.

Table 3

Natural and economic zones of the territory of Yakutia and their specialization by economic sectors

Natural and economic zones by background sector	Specialization of territories by sectors of the economy
Arctic tundra-farming-reindeer-breeding	Reindeer breeding, fishing and hunting, diamond-tin-gold mining
North-Western northern taiga reindeer-breeding	Reindeer breeding, fishing and hunting, local development of the diamond mining industry
North-Eastern lake-taiga reindeer-breeding-horse-breeding-cattle-breeding	Reindeer breeding, fishing, local development of the coal mining industry
North-Eastern mountain-taiga reindeer-breeding-horse-breeding-cattle-breeding	Animal husbandry, horse breeding, reindeer breeding, fishing, local development of the gold mining industry
Western middle taiga horse-breeding-cattle-breeding	Gas and diamond mining industry, animal husbandry, horse breeding, hunting, poultry farming
Central alas-middle taiga agricultural-cattle-breeding	Animal husbandry, horse breeding, reindeer breeding, fishing, agriculture, local development of the coal mining industry
Southwestern middle taiga agricultural-cattle-breeding	Forestry, oil industry, hunting, animal husbandry, horse breeding, agriculture
Southern mountain-taiga agricultural-trading-reindeer-breeding	Gold, coal mining, transportation hub, reindeer herding, hunting, agriculture

Traditional natural resource management

The Arctic has long been inhabited by the indigenous peoples of Russia, including Dolgans, Evens, Evenks, Yukagirs and Chukchi. More than half of the SIPN live in the Arctic zone of Russia, two thirds of them — outside urban areas [19, Pavlenko V.I., Petrov A., Kutsenko S.Yu., et al.]. In the Arctic uluses of the RS (Ya), the number of permanent population as of January 01, 2020 was 67652 people, 41355 of them (61.1%) — rural population. The population density of 0.04 persons/km² is the lowest in Russia. The uluses are characterized by a low standard of living of the population, for example, the ratio of average per capita income to the subsistence minimum decreased from 244% in 2007 to 167% in 2019 (the last place among the territories of the Russian Arctic). At the same time, the population with incomes below the subsistence level decreased from 25.6% in 2007 to 17.9% in 2019, which is the highest indicator in the Russian Arctic and significantly higher compared to the Russian Federation as a whole [20, Kovshov A.A., Novikova Yu.A., Fedorov V.N., et al.].

Other urgent problems of the indigenous peoples of the Arctic zone are:

- providing the population with quality water; the solution of which is related to the implementation of measures of the federal project “Clean Water”;

- tendency of the permanent population reduction due to migration outflow;
- high level of unemployment;
- insufficient number of doctors of all specialties;
- increased risk of alcoholism and tuberculosis [21, Naberezhnaya A.T.].

The main ethno-preserving sector of the traditional nature management of the indigenous peoples of the North is reindeer herding, its associated industries are hunting, fishing and gathering wild herbs. Reindeer husbandry in Yakutia appeared first in the taiga and northern taiga zones, and later — in the tundra zone. By the end of the 19th century, domestic reindeer breeding covered almost the entire territory of Yakutia [22, Kurilyuk A.D.].

According to V.A. Tishkov and co-authors [23], there are a number of acute social problems among SIPN associated with the industrial development of the TTNU:

- a) health care organization in remote areas of the Russian Arctic, which is associated with the nomadic lifestyle of the population;
- b) alcoholism, which is one of the causes of increased mortality and low life expectancy;
- c) issues of ethnic languages, which have been replaced by the dominant language, mainly Russian.

For the long-term development goals of the Russian Arctic, the authors consider it necessary to establish a partnership between all participants in nature management and economic activity under the state control and the presence of the activity of the natives themselves.

Mining industry

The industrial development of the arctic and northern regions of Yakutia began in 1935 with the development of coal in the Verkhnekolymskiy ulus. The development of a tin deposit was carried out in the Verkhoyanskiy (beginning in 1941) and Ust-Yanskiy (beginning in 1952) uluses. Diamond mining began in the early 1960s: the Aikhal mine in the Mirninskiy district (1961), the diamond placer in the Anabarskiy, Zhiganskiy and Olenekskiye uluses (1994). Gold mining was carried out in the lower reaches of the Yana River: the Kular gold mine (1963) in the Ust-Yanskiy ulus, the northernmost mine in the country (Table 4).

Currently, diamond mining remains one of the main branches of the mining industry of the republic. Until the 1980s, diamond mining was carried out only in the Mirninskiy district. In 1998, OJSC Almazy Anabara (Anabarskiy ulus) was established to mine the world's largest diamond placer of the Ebelyakh River. In 2004, the enterprise was transformed into JSC Anabar, a subsidiary of ALROSA. Today, the company is one of the largest industrial enterprises in the Republic of Sakha (Yakutia) and one of the major payers to the republic's budget.

Table 4

Development of mineral deposits in the Arctic zone of Yakutia

Minerals	Year of development	District
Coal	1935	Verkhnekolymskiy
Tin	1941	Verkhoyanskiy
Tin	1952	Ust-Yanskiy

Almaz (Aikhal mine)	1961	Mirninskiy
Gold	1963	Ust-Yanskiy, Kular mine
Diamond (placer deposits)	1994	Anabarskiy, Zhiganskiy Olenekskiy
Fields currently being developed ¹		
Coal	CJSC "Zyryanskiy coal mine"	Verkhnekolymskiy
Diamond (placer)	"Ebelyakh"	Anabarskiy
Gold (placer)	"Vyun", "Sentachan"	Verkhoyanskiy

The gold mining industry in the Arctic developed in the Soviet era in Ust-Yanskiy (Kularzolo-to MPP) and Verkhoyanskiy (Adychankiy placer) uluses, tin-mining industry — in Ust-Yanskiy (Dep-utatskiy MPP) ulus [24, Efremov E.I., Nikiforova V.V.]. Currently, alluvial gold is mined in the Arctic uluses by Yanzoloto LLC, the Plamy miners artel, Novaya LLC, Orion Group+ LLC, Zolotoy Region LLC in the Verkhoyanskiy district and others; diamond mining — Almazy Anabara in the Mirninskiy district, coal — Zyryanskiy mine in the Verkhnekolymskiy ulus [25, Nikiforova V.V.].

Today, as a result of the activities of industrial facilities in the Arctic, an unfavorable environmental situation has developed. For example, the water bodies of the Lena River basin in 2019 in the area of the Neelova Bay (delta of the Lena River), the basins of the Anabar, Indigirka, Kolyma rivers were assessed as 3rd "a" and "b" pollution classes ("polluted" and "very polluted") ⁴.

In general, the industrial development of the TTNU has a negative impact on the livelihoods of the indigenous peoples: the area of reindeer pastures, hunting and fishing resources are reducing, environmental pollution is occurring, which causes deterioration in the health and quality of life. On the other hand, the development of industry in the TTNU plays an important role in the socio-economic development of tribal communities, the creation of conditions for a decent life for indigenous peoples, and the preservation of their culture and language. In other words, it is necessary to objectively compare and evaluate all aspects of the interaction of mining companies with the tribal communities of the indigenous peoples of the North, with local and regional authorities [5, Burtseva et al.].

Ethnological expertise

In 2010, the law of the Republic of Sakha (Yakutia) "On ethnological expertise in places of traditional residence and traditional economic activities of the peoples of the Republic of Sakha (Yakutia)" ⁵ was issued. It is so far the only one in Russia. The concept of "ethnological expertise" is

⁴ Gosudarstvennyy doklad o sostoyanii i okhrane okruzhayushchey sredy Respubliki Sakha (Yakutiya) v 2019 godu [State report on the state and protection of the environment of the Republic of Sakha (Yakutia) in 2019]. Government of the Rep. Sakha (Yakutia), Ministry of Ecology Rep. Sakha (Yakutia)], 2020. 660 p. URL: <https://minpriroda.sakha.gov.ru/uploads/ckfinder/userfiles/2021/04/13/files/%D0%93%D0%94%20-2019.pdf> (accessed 02 October 2022).

⁵ Zakon Respubliki Sakha (Yakutiya) «Ob etnologicheskoy ekspertize v mestakh traditsionnogo prozhivaniya i traditsionnoy khozyaystvennoy deyatel'nosti i na territoriyakh traditsionnogo prirodopol'zovaniya korennykh malochislennykh narodov Severa Respubliki Sakha (Yakutiya)» ot 14 aprelya 2010 g. N 820-Z- N 537-IV [Law of the Republic of Sakha (Yakutia) "On ethnological expertise in places of traditional residence and traditional economic activity and in

defined in Article 1 of the Federal Law of April 30, 1999, No. 82-FZ⁶ as “a scientific study of the impact of changes in the native habitat of small peoples and the socio-cultural situation on the development of an ethnic group”. The objects of the state ethnological expertise of the RS (Y) are: 1) normative legal acts, materials and other documentation on the implementation of the planned economic and other activities in the places of traditional residence and traditional economic activities of small peoples; 2) small peoples located in the zone of influence of the planned economic and other activities; 3) original habitat of small peoples; 4) socio-cultural situation in the zone of influence of the planned economic and other activities [26].

The procedure of ethnological expertise consists of the following main stages:

1. Development of the document “Ethnological Environmental Impact Assessment (EEIA) in the places of residence and economic activity of the indigenous peoples of the North”.
2. Ethnological expertise of projects. The expert commission includes representatives from different specialties: biologists, economists, hydrologists, ichthyologists, sociologists, lawyers, etc.
3. Public hearings. Participants of public hearings: representatives of industrial companies, representatives of indigenous peoples of the North, developers of the EEIA, members of the expert commission, representatives of public organizations and government agencies, etc.
4. Conclusion of the expert commission. The final decision on the permission or prohibition of the planned economic activity of industrial companies on the TTNU is made by the Government of the Republic of Sakha (Yakutia).

For 2012–2021, 39 investment business projects were considered in the ethnological expertise of the Republic of Sakha (Yakutia), including 12 projects in the Arctic and northern regions. The ranking of projects by natural and economic zones showed that the largest number of investment projects were considered in the Southern mountain-taiga agricultural-trading-reindeer breeding zone — 19 projects, the Western horse-breeding and cattle-breeding zone is in 2nd place — 6 projects, 2 zones are in 3rd place: Arctic tundra commercial and reindeer breeding zone — 5 projects and the North-Eastern mountain-taiga reindeer-breeding-horse-breeding-cattle breeding zone — 5 projects, North-Western northern taiga commercial and reindeer breeding zone is on the 4th place — 2 projects, as well as the Central Alas-middle taiga agricultural-horse-breeding-cattle-breeding — 2 projects. Tables 5–6 present investment projects in the Arctic natural and economic zone, considered in the ethnological expertise of the RS (Y) for 2015–2021.

the territories of traditional nature management of the indigenous peoples of the North of the Republic of Sakha (Yakutia)” dated April 14, 2010 N 820-Z-N 537-IV]. URL: <https://base.garant.ru/26716249/> (accessed 02 October 2022).

⁶ Federal'nyy Zakon «O garantiyakh prav korennykh malochislennykh narodov Rossiyskoy Federatsii» (s izmeneniyami i dopolneniyami) ot 30 aprelya 1999 g. № 82-FZ [Federal Law “On guarantees of the rights of indigenous minorities of the Russian Federation” (with amendments and additions) dated April 30, 1999 No. 82-FZ]. URL: http://www.consultant.ru/document/cons_doc_LAW_22928/ (accessed 02 October 2022).

Table 5

Investment projects in the Arctic tundra-commercial-reindeer-breeding zone of Republic of Sakha (Yakutia)

District	Project	Economic entity	Year of expertise	Beneficiaries	Amount of compensation, roubles
Bulunskiy, Anabarskiy	Complex geological and geophysical works in the area of the junction of the Lena-Tunguska oil and gas fields and Laptevskaya oil and gas fields. Exploration and production	SSC FSUGE "Yuzhmorgeologiya" — Russian Federation, M.	2015	8 beneficiaries	5 930 102
	Exploration and production of alluvial gold in the area of the Suor Uyalah creek mining site (<i>see the text for the full name of the project</i>).	ADC LLC 2018	2020	1 beneficiary	952 935
Ust-Yanskiy	Exploration and production of alluvial gold of the "Achchyg creek deposits. Kumakh-Yuryue and Pravyy-Kumakh-Yuryue" and others (<i>the full name of the project is in the text</i>).	Janzoloto LLC 06.06.2019	2020	2 beneficiaries	5 057 303
Anabarskiy	Development of a placer diamond deposit of the Ebelyakh River of the Anabarskiy ulus.	Almazy Anabara JSC	2021	1 beneficiary	4 119 905
Bulunskiy	Mining of alluvial diamonds in the area of the Molodo River mining sites on the territory of the Bulunskiy ulus within the licensed site Yaku 15887 KE	Almazy Anabara JSC	2021	4 beneficiaries	218 992 802
Total					288 424 047

The first project considered in the ethnological expertise for the Arctic tundra-commercial-reindeer-breeding zone (2015) is "Comprehensive geological and geophysical work in the junction of the Lena-Tunguska oil and gas field and the Laptev potential oil and gas field" in Bulunskiy, Anabarskiy and Ust-Yanskiy uluses. Eight tribal communities will be affected by the geological and geophysical works (Agricultural Cooperative Nomadic Clan Community "Wottaakh-Khaya", Agricultural Cooperative Nomadic Clan Community "Ulakhan-Kyuel", Clan Community Indigenous Minorities "Uelya", Clan Community Indigenous Minorities "Terpyai", Municipal Unitary Reindeer Herding And Fishery Enterprise "Arktika", Municipal Unitary Reindeer Herding And Fishery Enterprise "Named after Ilya Spiridonov", Municipal Unitary Enterprise "Taymyl'skiy", Peasant Farm Enterprise "Skrybykin I.G.").

The comments of the expert commission mainly relate to the assessment of the amount of damage caused to the tribal communities of the indigenous peoples of the North: the calculations were made on the basis of outdated materials (1980s) without geo-botanical research, there are many inaccuracies in the calculations, etc. Extraction of rare-earth metals at the Tomtorskoe deposit, which has inferred resources of over 150 million tons of ore, is planned to start in 2027⁷.

In 2020, 2 investment projects were considered in ethnological expertise:

1. "Exploration and mining of alluvial gold in the mining area of the Suor-Uyalakh creek: Kristall, Sdvig, Krotkiy, Mamonya, Ulakhan-Yuryuye, Alenka on the territory of the Ust-Yansky municipal district of the Republic of Sakha (Yakutia) within the license area YAKU 05277 BE". Information about the deposits: a) the Kristall deposit was discovered in 1972, currently partially depleted; b) Suor-Uyalaakh (opened in 1963); c) Sdvig creek (prospecting work was carried out in 1982–1985); d) Krotkiy creek (opened in 1970); e) Mamonya creek (1983–1984); e) Ulakhan-Yuryuye creek (opened in 1963); g) Alenka creek deposit was discovered in 1963 and given for commercial development to Kularzoloto plant.

One tribal community of the Nomadic Clan Community of Indigenous Minorities of the North of the Evens "Omoloy" will be affected by the industrial enterprise. The amount of compensation for the development of gold amounted to 952,935 rubles. The economic entity is ADK LLC, 2018. According to the design and estimate documentation, the project is expected to use the alluvial gold mining method by processing the accumulated waste (sludge pits), as well as the shaft method. The proposed approach to the processing of technogenic placers, together with the use of technologies for the transition to a method of mining on pillars, allows not only to provide additional volumes of valuable metal, but also makes it possible to reclaim previously disturbed lands and significantly reduce the technogenic impact on the native habitat of the peoples of the North [27].

2. "Exploration and mining of alluvial gold deposits "Achchygy-Kumakh-Yuryue and Pravyy-Kumakh-Yuryue creeks", "Taryng-Yuryakh creek, right tributary of the Sygyndzha creek (Uyandino river basin)" and "Khonikukichan creek, left tributary of the Taring-Yuryakh river in the Ust-Yanskiy ulus"". Two beneficiaries will be affected by the enterprise: the Silyannyakhskiy National Nasleg Municipality and the Nyoolten Nomadic Clan Community of the Indigenous Minorities. The amount of compensation is 5,057,303 rubles. The economic entity is Yanzoloto LLC. Mining technology: open pit with repeated ripping, hilling and thawing of sands in permafrost conditions.

For a period of 7 years, 71.0 hectares of forest fund lands are withdrawn on the territory of the municipality "Silyannyakhskiy national nasleg" for the development of placer gold reserves of the deposits "Achchygy-Kumakh-Yuryue and Pravyy-Kumakh-Yuryue creeks". The total number

⁷

Tomtor

(deposit).

URL:

[https://ru.wikipedia.org/wiki/%D0%A2%D0%BE%D0%BC%D1%82%D0%BE%D1%80_\(%D0%BC%D0%B5%D1%81%D1%82%D0%BE%D1%80%D0%BE%D0%B6%D0%B4%D0%B5%D0%BD%D0%B8%D0%B5\)](https://ru.wikipedia.org/wiki/%D0%A2%D0%BE%D0%BC%D1%82%D0%BE%D1%80_(%D0%BC%D0%B5%D1%81%D1%82%D0%BE%D1%80%D0%BE%D0%B6%D0%B4%D0%B5%D0%BD%D0%B8%D0%B5)) (accessed 02 October 2022).

of domestic deer in the municipality “Ust-Yanskiy ulus” amounted to 24203 heads at the beginning of 2019. Two farms are engaged in reindeer breeding: the agricultural consumer cooperative “Taba-Yana” and the agricultural production cooperative nomadic tribal community “Omoloy and K”.

In 2021, 2 investment projects were considered in the ethnological expertise:

1. Project “Development of a placer diamond deposit of the Ebelyakh River of the Anabarskiy ulus of the Republic of Sakha (Yakutia)”. The Anabar National (Dolgan-Evenki) ulus will be affected by the industrial enterprise. The amount of compensation is 4,119,905 rubles, which will be received by the Anabar National (Dolgan-Evenki) ulus. The economic entity is Almazy Anabara JSC.

The Anabar ulus is a historically established territory of the settlement of Dolgans, Evenks, Evens and Yukaghirs. Traditionally, the inhabitants of the ulus are engaged in reindeer herding, hunting and fishing. In 2019, the number of deer in the Anabarskiy ulus was 17682 heads, of which 14576 were in agricultural enterprises, and 3106 — in tribal communities.

The main hunting resources in the nasleg are elk, wild reindeer and sable. Tribal communities are engaged in hunting for commercial meat, which is a product of their own consumption. In addition, the main direction of hunting for members of the community is fur trade (for sable). This is the only source of income for clan communities. The period of validity of the conclusion of the Expert Commission of Ethnological Expertise on the materials of the EEIA is 5 years.

2. Project “Extraction of alluvial diamonds in the Molodo River mining areas in Bulunskiy ulus within the licence area of Yaku 15887 KE”. Four enterprises will be affected by the industrial enterprise: MUE “Bulunskoe”, APC “Algys”, APC “Bayanay”, APC “Chekurovka”. The amount of compensation is 10,944,168 rubles per year in equal shares of $\frac{1}{4}$ in the form of a lump sum payment in prices at the end of 2016, for 20 years — 218,992,802 rubles. The economic entity is Almazy Anabara JSC. The license expires on June 30, 2035.

The beneficiaries of compensation payments as a result of damage to the original habitat of the indigenous peoples of the North are MUE “Bulunskoe”, APC “Algys”, APC “Bayanay”, APC “Chekurovka”. The payer of compensations to associations of small peoples under the project “Extraction of alluvial diamonds in the Molodo River mining areas in Bulunskiy ulus within the licence area of Yaku 15887 KE” is Almazy Anabara JSC.

The total amount of compensation in the Arctic zone for the violation of natural complexes for 5 projects amounted to 288,424,047 rubles, while the largest amount of compensation was 218,992,802 rubles. They accounted for the extraction of alluvial diamonds in the area of the Molodo Bulunskiy ulus. The economic entity is Almazy Anabara JSC.

In 2016, 2 investment projects were considered in the North-Western north-taiga commercial and reindeer breeding zone: “Development of the Verkhne-Munskoe deposit” and “Development of a placer diamond deposit in the Bolshaya Kuonamka and Talakhtakh rivers area” (Table 6).

Table 6

Projects of the North-Western north-taiga commercial and reindeer breeding zone of high vulnerability

District	Project	Economic entity	Year of expertise	Beneficiaries	Amount of compensation, roubles
Olenekskiy	Development of the Verkhne-Munskoe deposit	ALROSA (PJSC)	2016	2 beneficiaries	23 985 130
Olenekskiy	Development of a placer diamond deposit in the Bolshaya Kuonamka and Talakhtakh rivers area	Nizhne-Lenskoe JSC	2016	2 beneficiaries	4 186 000
Total					28 171 130

1. Project *“Development of the Verkhne-Munskoe deposit”* was considered in the ethnological expertise in 2016. The economic entity is PJSC ALROSA. Two enterprises — MUE “Zhilindinskiy” and MUE “Olenekskiy” — will be affected by the industrial facility. The amount of compensation for the period of operation is 23,985,130 rubles in 2016 prices. The development of the unique Verkhne-Munskoe diamond deposit in Yakutia is a strategic diamond mining project of the ALROSA Group. The deposit is located in the Olenekskiy ulus, 180 km from the Udachnyy MPP, and consists of 4 kimberlite pipes. The field is one of the largest discovered in recent years. The field is being developed by the ALROSA group. The deposit was commissioned on October 31, 2018. It is planned to be developed by open pit method.

The first version of the EEIA contained gross errors, for example, certified documents of the Clan Nomadic Community “Amin” (“Amga”) of the Aldanskiy district were used to estimate market prices for products of traditional nature management, and their use resulted for the Olenekskiy ulus in gross errors both in terms of species (presence of bighorn sheep, wapiti, cedar, which are not found in the Olenekskiy ulus) and real market prices of wild-growing, hunting and fishing resources. Only after correction of the comments, the expert commission gave a positive conclusion.

2. Investment project *“Development of an alluvial diamond deposit in the promising area “Bolshaya Kuonamka and Talakhtakh rivers”* was considered in the ethnological expert review in 2016, the economic entity JSC Nizhne-Lenskoe. Two enterprises — MUE “Zhilindinskiy” and MUE “Olenekskiy” — will be affected by the industrial facility. The amount of annual damage is 4,186,000 rubles.

The calculation of the losses of the indigenous minorities is mainly based on the data of the Olenekskiy ulus administration (the book value of the deer, the purchase value of hunting and commercial species), rather than on market prices, as recommended in the Methodology (2009). At the same time, the production and economic indicators of tribal communities (the cost of production, material and technical costs for maintaining traditional types of nature management) are not sufficiently used; for this reason the amount of losses of the indigenous peoples is underesti-

mated. One of the positive results of the work is a geobotanical survey of the current state of productivity of reindeer pastures in 2015. In previous works submitted for ethnological expertise, the losses of the indigenous peoples of the North were calculated on the basis of materials from the 1980s–1990s. After correction of the comments of the experts, the work received a positive conclusion.

In the North-Eastern mountain-taiga zone, 4 investment projects were considered in ethnological expertise: 3 projects for Verkhoyanskiy ulus, 1 — for Momskiy ulus. Projects considered in ethnological expertise:

1. Project “Concentration plant for processing gold-antimony ore of the Sentachan deposit” was considered in the ethnological expertise in 2019. The amount of compensation for the construction period is 1,234,453 rubles, for the operation period (10 years) — 3,827,190 rubles, total — 5,061,643 rubles. The municipality “Tabalakhskiy nasleg” will receive the compensation. The economic entity is Zvezda JSC, 2018. As of January 01, 2017, 168 Evens live here, as well as 3 representatives of the Evenks, including 94 men, 77 women, united in 48 families. The main place of compact residence of the Evenks of Verkhoyanskiy district is the village of Ulakhan-Kyuyel Tababa of the Tabalakhskiy nasleg.

The Sentachan gold-antimony deposit is characterized by rich ores with an antimony content of 24.6%, gold 38.2 g/t and silver 13.4 g/t. Antimony reserves by category C1 amount to 171.6 thousand tons, in category C2 — 22.9 thousand tons, off-balance reserves — 32.2 thousand tons. The project provides for the processing of ores at the Sentachan deposit (Table 7) according to the technological scheme: a) gravitational enrichment of ore with the withdrawal of the primary gold concentrate; b) flotation enrichment of gravity tailings. The final products are gold-bearing ingots (Dore gold), meeting the requirements of TU 117-2-7-75, in the amount of 0.87 kg per day. Black gold bars are sold to the refinery. In the preliminary Conclusion, the experts gave quite a lot of comments on the EEIA, which were partially corrected, but there are a number of remarks that are recommended to be resolved during ethnological monitoring, which should be conducted every 5 years.

Table 7

Projects of the North-Eastern mountain-taiga reindeer-breeding-horse-breeding-cattle breeding zone with relatively high vulnerability

District	Project	Economic entity	Year of expertise	Beneficiaries	Amount of compensation, rubles
Verkhoyanskiy	Concentration plant for processing gold-antimony ore of the Sentachan deposit	Zvezda JSC	2019	1 beneficiary	5 061 643

Verkhoyanskiy	Exploration and production of a mining and processing enterprise on the basis of the Vyun gold deposit, Republic of Sakha (Yakutia)	Dalzoloto LLC	2020	1 beneficiary	5 763 585
Momskiy	Development of a placer gold deposit in the upper reaches of the Artyk river with tributaries of Udarnik creek, Mars creek, Shpat creek, Fart creek, Pioneer creek, Zayem creek	Vostok LLC 2019 752062,17	2020	3 beneficiaries	15 521 983
Verkhoyanskiy	Opening and processing of the deep horizons of the Sentachan deposit	Zvezda JSC	2021	2 beneficiaries	8 713 379
Total					35 060 590

2. Project “Exploration and production of a mining and processing enterprise on the basis of the Vyun gold deposit, Republic of Sakha (Yakutia)” was considered in the ethnological expertise in 2020. The amount of compensation is 5,763,585 rubles, which should be received by 1 beneficiary: integrated agricultural production company “Khara Salaa Community”. The economic entity is Dalzoloto LLC. The site of extraction and processing complex of gold-quartz ores of the Vyun deposit is located at the TTNU of local significance “Tabalakhskiy” of the Verkhoyanskiy district of the Republic of Sakha (Yakutia). There is one registered nomadic clan community on the territory of the Tabalakhskiy nasleg — the IAPC Khara-Salaa, the main activity of which is deer breeding. The tribal communities receive their main income from sable hunting and subsidies to support domestic reindeer breeding. Geological survey, mining and processing of gold-quartz ore at the Vyun deposit is carried out by Dalzoloto LLC.

3. Project “Opening and processing of the deep horizons of the Sentachan deposit” on the territory of the Verkhoyanskiy district of the Republic of Sakha (Yakutia)” was considered in the ethnological expertise in 2021. The amount of compensation is 8,713,379 rubles; it should be received by 2 tribal communities: IAPC “Khara Salaa Community”, ACPC Indigenous Minorities “Talba-Taba”. The economic entity is Zvezda JSC.

The Sentachan field was discovered in 1969. In 1970–1980, geological exploration of the deposit was carried out. From 1989 to 1995, it was industrially exploited by the Yakutzoloto Production Association. Open pit mining was carried out in the period 1989–1992, underground mining — in 1993–1995. In 2005, JSC Zvezda resumed underground mining at the field. Currently, there are reindeer pastures of Khara-Salaa Community farming company and Talba-Taba Indigenous Minority farming company near the Sentachan field. They are located to the east of the

Sentachan field. The cartographic material tentatively shows the boundaries of the land plot used as reindeer pastures by the Khara-Salaa Community.

4. Project “Development of a placer gold deposit in the upper reaches of the Artyk river with tributaries of Udarnik creek, Mars creek, Shpat creek, Fart creek, Pioneer creek, Zayem creek, Gnezdovoy creek, Djukchan creek by open pit method” in Momskiy ulus was considered in the ethnological expertise in 2020. The amount of compensation is 15,521,982.99 rubles, which should be received by 3 tribal communities: Clan Nomadic Community of the Indigenous Minorities (Evens) “Kukuin”, Clan Nomadic Community of the Indigenous Minorities (Evens) “Sarkichan”, Clan Nomadic Community of the Indigenous Minorities (Evens) named after S.G. Sleptsov. The economic entity is Vostok LLC. It carries out work on geological study, exploration and production of minerals on the territory of the licensed area YAKU 05465 BR with an area of 19.33 sq. km.

The Ulakhan-Chistaiskiy national nasleg is the largest reindeer herding site in the municipality “Momskiy district”. Historically, reindeer breeding is a priority type of traditional farming in the village of Sasyr. Reindeer herding farms of various forms of ownership operate in the village: Bukchan LLC, CNC Erikkit, CNC IM (Evens) named after S.G. Sleptsov, CNC IM (Evens) “Sarkichan” and others.

The total amount of losses to small peoples in the territory of the planned economic activity for geological study, prospecting, evaluation of minerals, mining in the Artyk River basin will be 15,521,983 rubles, including a one-time payment to CNC IM (Evens) “Kukuin” — 5,173,994.33 rubles; CNC IM (Evens) “Sarkichan” — 5,173,994.33 rubles; CNC IM (Evens) named after S.G. Sleptsov — 5,173,994.33 rubles. In total, in the North-Eastern mountain-taiga reindeer-breeding-horse-breeding-cattle breeding zone, compensation for the losses of the indigenous peoples of the North amounted to 43,967,447.99 rubles.

Conclusion

The implementation of major investment projects in the Arctic zone of the Republic of Sakha (Yakutia) will have a significant impact on the development of territories: both positive and negative. Positive impact of industrial development of the TTNU:

a) Russia pays special attention to ensuring environmental safety: the national project “Clean Country” currently includes an action to eliminate the tailing dump of the Kular gold processing plant in the Ust-Yansk ulus. Work is underway to include the measure “Cleaning the territory of the village of Tiksi in Bulunskiy ulus from accumulated scrap metal”.

b) The republic has a high ecological potential: Mount Pobeda (3003 m), the highest peak in the north-east of Siberia, is located in the Momskiy ulus, and the tourist projects “Verkhoyansk — the Pole of Cold of the Northern Hemisphere”, “Conquerors of Cold” are being implemented in the Verkhoyansk district. The special feature of the region is the Arctic cruise along the Lena River to the Arctic Ocean “Yakutsk — Tiksi — Yakutsk”, which is in demand among foreign tourists.

Negative impact of industrial development of the TTNU:

a) The planned industrial development of the Arctic zone, which is characterized by a high vulnerability of natural complexes to technogenic impacts and low assimilation capacity, can cause large-scale disturbances of the land surface, pollution of the original habitat of the indigenous peoples of the North.

b) The depletion and exhaustion of natural resources for the traditional types of nature management on the territory of the TTNU as a result of exploration and extraction of minerals can cause conflict situations between indigenous peoples and industrial enterprises.

Measures to improve the environmental and socio-economic situation in the territories of residence and traditional activities of the indigenous peoples of the North:

a) in order to protect the rights and interests of the indigenous population, the law "On Ethnological Expertise" is in force, so far the only one in Russia.

b) in order to compensate the social damage of the indigenous peoples, it is necessary to conclude a tripartite agreement on cooperation and promotion of the sustainable development of the indigenous peoples in the area of influence of the project between the project customer, state authorities of the Republic of Sakha (Yakutia) and authorized representatives of the indigenous peoples for the improvement of the quality of life of the indigenous peoples in the form of cash or other social measures.

c) in order to recalculate the normative indicators of damage assessment and to specify the extent of damage, both environmental and socio-economic, it is necessary to adopt the Program of ethno-ecological monitoring to conduct surveys in the areas of industrial development of the TTNU every 5 years on the basis of certain indicators.

Measures for the implementation of a unified state policy for the development of the Arctic zone of the Republic of Sakha (Yakutia)⁸:

- promotion of the creation of social infrastructure, including transport infrastructure;
- development of the economy of renewable natural resources;
- introduction of advanced technologies, development of international cooperation.
- ensuring environmental safety.

References

1. Popkov Yu.V. Korennye narody Severa v usloviyakh globalizatsii [Indigenous Peoples of the North in the Context of Globalization]. *Vek globalizatsii* [Age of Globalization], 2014, iss. 1 (13), pp. 111–123.
2. Sleptsov A.N. Etnologicheskaya ekspertiza v mestakh traditsionnogo prozhivaniya i traditsionnoy khozyaystvennoy deyatel'nosti narodov severa: regional'nyy opyt pravovogo regulirovaniya i pravoprimeritel'noy praktiki [Ethnological Expertise at the Places of Traditional Habitat and Traditional Economic Activity of the Peoples of the North: Regional Experience of Legal Regulation and Practice]. *Evraziyskiy yuridicheskiy zhurnal* [Eurasian Law Journal], 2013, no. 12 (67), pp. 71–75.

⁸ Ukaz glavy respubliki Sakha (Yakutia) ot 14 avgusta 2020 goda N 1377 «Strategiya sotsial'no-ekonomicheskogo razvitiya Arkticheskoy zony Respubliki Sakha (Yakutia) na period do 2035 goda» [Decree of the head of the Republic of Sakha (Yakutia) dated August 14, 2020 N 1377 "Strategy for the socio-economic development of the Arctic zone of the Republic of Sakha (Yakutia) for the period up to 2035"]. URL: <https://www.sakha.gov.ru/news/front/view/id/3204989> (accessed 31 September 2022).

3. Silkin V.Yu., Tokarev A.N., Shmat V.V. Osvoenie Arktiki: vremya riskovat'? [Arctic Exploration: Time to Take Risks?]. *Eko [Eco]*, 2019, no. 43 (4), pp. 27–55. DOI: 10.30680/ECO0131-7652-2013-4-27-55
4. Poiseev I.I. Nravstvennye aspekty arkticheskogo prirodopol'zovaniya [Moral Aspects of Arctic Environmental Management (Russia, Yakutsk)]. *Problemy sovremennoy ekonomiki. Evraziyskiy mezhdunarodnyy nauchno-analiticheskiy zhurnal* [Problems of Modern Economic. Eurasian International Scientific-Analytical Edition], 2015, no. 1 (153), pp. 253–256.
5. Burtseva E.I., Potravnyy I.M., Gassiy V.V. et al. *Ekonomika traditsionnogo prirodopol'zovaniya: vzaimodeystvie korennykh narodov Severa i biznesa v rossiyskoy Arktike: monografiya* [Economics of Traditional Nature Management: Interaction of Indigenous Peoples of the North and Business in the Russian Arctic]. Moscow, Ekonomika Publ., 2019, 314 p. (In Russ.)
6. Afanasyev S.M., Gassiy V.V., Potravnyy I.M. Territorii traditsionnogo prirodopol'zovaniya: ogranicheniya razvitiya ili potentsial ekonomicheskogo rosta? [Territories of Traditional Nature: Development Limits or Economic Growth Factors?]. *Arktika: ekologiya i ekonomika* [Arctic: Ecology and Economy], 2017, no. 2 (26), pp. 4–16.
7. Tranin A.A. *Territorii traditsionnogo prirodopol'zovaniya malochislennykh narodov Severa (Problemy i perspektivy): monografiya* [Territories of Traditional Nature Use of the Small Peoples of the North (Problems and Prospects)]. Moscow, ISL RAS Publ., 2010, 88 p. (In Russ.)
8. Stephenson S.R. Confronting Borders in the Arctic. *Journal of Borderlands Studies*, 2018, iss. 2, vol. 33, pp. 183–190. DOI: 10.1080/08865655.2017.1302812
9. Gengut I., Davaakhuu N., Alynkina E., Potravnyy I. Environmental Costs Management of the Project: The Experience of Russia and Mongolia. *Baltic Journal of Real Estate Economics and Construction Management*, 2015, vol. 3, pp. 140–150. DOI: 10.1515/bjreecm-2015-0014
10. Sosa I., Keenan K. Impact Benefit Agreements between Aboriginal Communities and Mining Companies: Their Use in Canada: Report. *Canadian Environmental Law Association*, 2001, 29 p.
11. Fondahl G., Espiritu A., Ivanova A. Russia's Arctic Regions and Policies. In: *The Palgrave Handbook on Arctic Policy and Politics*. Basingstoke, Palgrave Publ., 2020, pp. 195–216. DOI: 10.1007/978-3-030-20557-7
12. Wilson G., Fondahl G., Hansen K.G. Governance for Arctic Sustainability. In: *Arctic Sustainability, Key Methodologies and Knowledge Domains. A Synthesis of Knowledge 1*. London, Routledge, 2020, 22 p.
13. Balzer M. Indigeneity, Land and Activism in Siberia. In: *Land, Indigenous People and Conflict*. London, Routledge, 2016, pp. 9–27.
14. Pakhomova L.S., Savvinova A.N. *Slovar'-spravochnik geograficheskikh nazvaniy Respubliki Sakha (Yakutiya). I chast'* [Dictionary-Directory of Geographical Names of the Republic of Sakha (Yakutia). Part I]. Yakutsk, Nikiforov A.M. Publ., 2019, 132 p. (In Russ.)
15. Burtseva E.I. *Geoekologicheskie aspekty razvitiya Yakutii: monografiya* [Geoecological Aspects of the Development of Yakutia]. Novosibirsk, Nauka Publ., 2006, 270 p. (In Russ.)
16. Burtseva E.I., Nogovitsyn R.R., Fedorov S.P., Barashkov N.A., Makarova G.D., Terentyeva M.V. Ekologo-ekonomicheskie aspekty upravleniya prirodopol'zovaniem v usloviyakh Kraynego Severa [Ecological and Economic Aspects of Environmental Management in the Conditions of the Far North]. *Natsional'nye interesy: priority i bezopasnost'* [National Interests: Priorities and Security], 2011, no. 40 (133), pp. 40–52.
17. Kryukov V.A. Severnaya kolliziya «prostranstva — vremeni» [The Northern Collision of "Space — Time"]. *EKO [Eco]*, 2016, no. 3, pp. 2–5.
18. Burtseva E., Sleptsov A., Bysyina A., Fedorova A., Dyachkovskii G. Mining and Indigenous Peoples of the North: Assessment and Development Prospects. *Resources*, 2020, vol. 9, no. 8, p. 95. DOI: 10.3390/resources9080095
19. Pavlenko V.I., Petrov A., Kutsenko S.Yu., Dettler G.F. Korennye malochislennye narody rossiyskoy Arktiki (problemy i perspektivy razvitiya) [Indigenous Peoples of the Russian Arctic (Problems and Development Prospects)]. *Ekologiya cheloveka* [Human Ecology], 2019, no. 1, pp. 26–33.
20. Kovshov A.A., Novikova Yu.A., Fedorov V.N., Tikhonova N.A. Sotsial'no-ekonomicheskii portret i mediko-demograficheskaya kharakteristika arkticheskikh territoriy Respubliki Sakha (Yakutiya) [Socio-Economic Portrait and Medical and Demographic Characteristics of the Arctic Territories of the Republic of Sakha (Yakutia)]. *Rossiyskaya Arktika* [Russian Arctic], 2021, no. 2 (13), pp. 105–117. DOI: 10.24412/2658-4255-2021-2-105-117

21. Naberezhnaya A.T. Problemy povysheniya urovnya zhizni naseleniya arkticheskikh rayonov Yakutii [Increasing the Level of Life of the Arctic Population in Yakutia (Russia, Yakutsk)]. *Problemy sovremennoy ekonomiki. Evraziyskiy mezhdunarodnyy nauchno-analiticheskiy zhurnal* [Problems of Modern Economic. Eurasian International Scientific-Analytical Edition], 2015, no. 1 (53), pp. 241–244.
22. Kurilyuk A.D. *Olenevodstvo Yakutskoy ASSR* [Reindeer Husbandry of the Yakut ASSR]. Yakutsk, Yakutsk Publ., 1982, 159 p. (In Russ.)
23. Tishkov V.A., ed. *Rossiyskaya Arktika: korennyye narody i promyshlennoe osvoenie: monografiya* [The Russian Arctic: Indigenous Peoples and Industrial Development]. Moscow, Saint Petersburg, Nestor-Istoriya, 2016, 272 p. (In Russ.)
24. Efremov E.I., Nikiforova V.V. *Otraslevye osobennosti i territorial'nye aspekty razvitiya syr'evoy ekonomiki Respubliki Sakha (Yakutiya): monografiya* [Sectoral Features and Territorial Aspects of the Development of the Raw Materials Economy of the Republic of Sakha (Yakutia)]. Saint Petersburg, Renome Publ., 2014, 223 p. (In Russ.)
25. Nikiforova V.V. Reytingovaya otsenka proizvodstvennogo potentsiala bazovykh otrasley nedropol'zovaniya munitsipal'nykh rayonov Respubliki Sakha (Yakutiya) [Rating Assessment of the Production Potential of the Basic Subsurface Use Industries of the Municipal Districts of the Republic of Sakha (Yakutia)]. *Sbornik trudov V vserossiyskoy nauchno-prakticheskoy konferentsii* [Proc. 5th All-Russ. Sci. and Pract. Conf.], 2019, Yakutsk, pp. 116–123.
26. Sleptsov A.N. Ethnological Expertise in Yakutia: Regional Experience of Legal Regulation and Enforcement. *The Northern Review*, 2015, vol. 39, pp. 88–97.
27. Potravnyy I.M., Velichenko V.V. Perspektivy vovlecheniya resursov tekhnogennykh mestorozhdeniy pri dobyche zolota na primere Ust'-Yanskogo rayona Yakutii [The Prospects of Involving of Resources of Technogenic Deposits Extraction of Gold by the Example of Ust-Yanskiy District of Yakutia]. *Ekonomika Vostoka Rossii* [Economics of Russian East], 2017, no. 2 (8), pp. 72–78.

*The article was submitted 29.10.2022; approved after reviewing 20.12.2022;
accepted for publication 26.12.2022*

Contribution of the authors: the authors contributed equally to this article

The authors declare no conflicts of interests