Strategy for the sustainable development of indigenous peoples of the Arctic: problems and prospects in the context of new industrial development

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Abstract. The depletion of natural mineral resources in traditional places of production entails a gradual shift in the industrial exploitation of new deposits in previously inaccessible northern territories. An example of this is the expansion of hydrocarbon production in the northern seas, the gradual movement of the mining industries of diamonds, tin, gold and other minerals to higher northern latitudes. The development of electronics, the hyperbolic expansion of digitalization all over the world entail a corresponding increase in the consumption of raw materials and materials with unique properties by the electronic industry. In turn, this leads to the search and development of previously inaccessible, economically extremely costly, unique in their locations deposits of rare earth metals. The history of the development of mineral deposits in the northern territories in the former Soviet Union has demonstrated the profound social, environmental and economic consequences of the erroneous approaches of those years. Complexity in the development of the northern territories should consist in taking into account and implementing the social, environmental and economic aspects (directions) of industrial development and preventing their imbalance. Previously, production interests prevailed, mining was carried out in an extremely costly, inefficient, extensive way. The state approach of the Soviet Union consisted in arranging a full-fledged new city or settlement. The economic consequences are also very vast and significant. It turns out that on one territory there are two models: the first is an industrial model, and the second is a model of traditional residence of local residents. The task is to harmonize the interaction of these two models, which actually exist at the present time, and create such new Strategies for the socio-economic development of the regions of the Arctic zone, where this harmonization was originally provided.

1. Introduction
With the depletion of natural mineral resources in traditional mining sites, the industrial exploitation of new territories is gradually moving to previously inaccessible northern territories. An example of this is the expansion of hydrocarbon production in the northern seas, the gradual movement of the mining industries of diamonds, tin, gold and other minerals to higher northern latitudes. The scientific and technological revolution, the continuous increase in the efficiency of mining technologies, make it
possible now, despite the high costs of developing new mineral deposits, to generate sufficient profits. In large volumes, completely new needs arise, such as a wide range of rare-earth metals, which were previously consumed in very scanty volumes. The development of electronics, the hyperbolic expansion of digitalization all over the world entail a corresponding increase in the consumption of raw materials and materials with unique properties by the electronic industry. In turn, this leads to the search and development of previously inaccessible, economically extremely costly, unique in their locations deposits of rare earth metals.

2. Research methodology
The history of the development of mineral deposits in the northern territories in the former Soviet Union has demonstrated the profound social, environmental and economic consequences of the erroneous approaches of those years. There was no integrated approach. In our opinion, the complexity in the development of the northern territories should consist in taking into account and implementing the social, environmental and economic aspects (directions) of industrial development and preventing their imbalance. Previously, production interests prevailed, mining was carried out in an extremely costly, inefficient, extensive way. The state approach of the Soviet Union was to equip a full-fledged new city or settlement for the numerous personnel of the mine or mine.

The social problems of this approach have been and are being manifested at present as characteristic of a city oriented towards servicing only one type of industrial production. The lack of a harmonious social structure was manifested in such important indicators as the number of working population, gender and age composition, provision of comfortable housing, schools, hospitals, kindergartens, social facilities for the elderly and others. Subsequently, such single-industry towns focused only on servicing a given industrial production were obtained with a deformed social infrastructure. In the case of depletion of raw materials reserves: oil, coal, ore mined, with a decrease in production volumes due to changes in market conditions for raw materials on world markets, more than once there was a need to close such cities and settlements.

The environmental problems of such territories are very serious, at the present time, neither the forces nor the funds are enough to completely eliminate the consequences of such an unfriendly attitude to the environment. Such problems occur, starting from Svalbard, the Kola Peninsula, on the islands of the seas of the Arctic Ocean, in many northern regions of Russia, up to Chukotka. Many remains of the northern villages and places of temporary stay of the expeditions remain abandoned, large volumes of the remains of housing, equipment, a huge number of barrels and fuel tanks, metal structures are not utilized. Collection and disposal work has been started and has been carried out only in the last few years.

The economic consequences are also very vast and significant. It turns out that on one territory there are two models: the first is an industrial model, and the second is a model of traditional residence of local residents. The task is to harmonize the interaction of these two models, which actually exist at the present time, and create such new Strategies for the socio-economic development of the regions of the Arctic zone, where this harmonization was originally envisaged.

The industrial economic model is based on the extraction of underground minerals that, without processing, or with minimal preparation (oil, gas, diamonds) or with processing in other regions (gold, silver, tin, other metals) are sold in capital or foreign exchanges and markets, consumed there. This model is also characterized by the fact that it consumes very little, or does not consume the products of local agriculture, local industry at all. As a rule, due to local climatic conditions, local industry is absent, or its production in volumes is minimal.

The second economic model is the traditional residence of a few local residents. The industrial development of their territory of traditional residence should not limit the realization of the natural (upon the birth of a person) and legitimate interests of local residents in work, natural crafts and types of traditional economic activity, in the management of traditional folk beliefs, rites and customs.

Among the natural and legitimate interests of local residents in their work, and in the types of traditional economic activity, it is necessary to include reindeer husbandry, livestock raising, horse
breeding, haymaking, harvesting of firewood, ice, cattle grazing, and horse shading in winter. This also includes the collection of wild onions, herbs, all kinds of wild berries.

Among the traditional natural crafts include hunting, spring and autumn duck hunting, fishing, including historical folk methods (ice seines, Kuyuur, peaks). Winter fur trade also belongs to this kind of activity.

The reference of traditional folk beliefs, rites and customs includes seasonal holidays of reindeer herders, summer holiday Ysyakh, various rituals of worship of spirits, Bayanay (hunting spirit), tanha, worship of sacred and sacred places, trees and others.

The situation is aggravated by the fact that, due to the extremely low activity and slow reproducibility of the Arctic flora and fauna, huge territories are required to maintain a cycle of natural productivity, such as reindeer husbandry. From the point of view of industrial development, such territories, which are actually necessary for the life cycle of deer herds and the livelihoods of a small local population, are completely deserted, with zero estimated value.

Legislative support of the above natural and legal rights of rural residents of the Republic of Sakha (Yakutia) is clearly not enough. Currently, all the Arctic regions of Russia are implementing strategic management. The current strategies of the Yamal-Nenets, Nenets and Chukotka Autonomous Districts are oriented to 2030, the Republic of Sakha (Yakutia) - until 2030 and with a vision until 2050, the Arkhangelsk Region and the Komi Republic (in the part of Vorkuta) are valid for the period until 2035 of the year. All strategic documents of the Arctic subjects of the Russian Federation are united by the development of territories on the basis of new industrial development. In the strategy for socio-economic development of the Murmansk region until 2025, the main condition for improving the quality of life of the population are the projects of PJSC NOVATEK and PJSC NK Rosneft, the implementation of which will contribute to the formation of a technological cluster for the production and processing of hydrocarbons in the Arctic zone of the Russian Federation.

The target scenario for the socio-economic development of the Yamal-Nenets Autonomous Okrug is based primarily on the development of gas production in the region. The main investments will be related to the retrofitting of existing oil fields and an increase in their oil recovery, involvement in the development of deep-seated reserves located in traditional oil production areas of the Autonomous Okrug. These measures will help maintain oil production at the achieved level.

The accelerated development and diversification of the economy of the Nenets Autonomous Okrug will be achieved through the implementation of the following investment projects:

- an increase in oil production by 3 million tons per year to 20 million tons;
- "listing" of gas fields;
- construction and launch of production of liquefied natural gas;
- construction and launch of an oil refinery;
- construction of a deep sea port along the Northern Sea Route;
- construction of the railway to the deep sea port.

In Chukotka, a long-term development program for the Chaun-Bilibino industrial zone of advanced development has been developed.

Supporting industrial development projects will also be implemented in the Republic of Sakha (Yakutia), including the development of the world's largest rare earth deposit in the Olenek Evenki National Region.

The analysis of strategic documents of the Arctic subjects of the Russian Federation to one extent or another contains strategic guidelines for the development of the indigenous peoples of the Arctic and Subarctic, as new industrial projects will be deployed in territories originally owned by the indigenous population.

At the same time, the strategic guidelines of the socio-economic development of the indigenous peoples of the North and their traditional activities often come into direct conflict with the development of new industry projects. On the one hand, new industrial development will tighten the
breakthrough development of engineering infrastructure, electric power industry, transport accessibility, social infrastructure will be significantly transformed in those areas and territories that in the post-Soviet era did not receive their proper development.

On the other hand, the development and support of the traditional industries of the peoples of the North and the Arctic is damaged in the form of the loss of deer pastures, disruption of the migration of wild deer, depletion of hunting grounds, and damage to the fragile ecology of the North.

Moreover, in the strategic documents of the Arctic regions of Russia, the development of indigenous peoples is often considered not in conjunction with industrial projects, but separately.

So, in the regions an institutional environment has been formed that regulates the development of the indigenous peoples of the North, institutes of civil society are created, social support is provided, aimed at improving the level and quality of life.

At the present stage of development of the Arctic territories, it is necessary to ensure the complexity of development both at the regional and municipal levels, united on the basis of various approaches.

An analysis of the Strategies and Programs for the socio-economic development of the Arctic regions and municipalities (districts) of the Russian Federation shows the insufficiency and or lack of complexity.

For example, the "Strategy for the socio-economic development of the Olenek National District until 2032" requires further improvement and adjustment. An example of the Olenyok district is very characteristic of the new socio-economic and legal conditions. The region, vast in territory (over 318.1 thousand sq. Km, population of thousands, people, sq. Km per person), should be considered as part of the new economic zoning (division), as one of the 7 regions of the Western Economic Region of the Republic Sakha (Yakutia). Recent studies [1] emphasize that one of the most important tasks of economic and social geography is a comprehensive study of economic regions and their more detailed expression (Leizerovich, 1997) [2], based on a number of works that have left the walls of the Sakha Institute of Regional Economics (Yakutia), based on qualitatively new, different approaches (Gavrilyeva, 2000; Gnatyuk, Prisyazhny, 1999; Fedorova, Mostakhova, Shishigina, 1999; and others) [3-10].

As part of the analysis of the prospects and possible scenarios for the harmonious, sustainable development of the economic region, the Development Strategy of an individual region is a local task, and the development strategy of an entire economic region and its infrastructure is a global task. Such a global task, which already determines at the planning stage the harmonization of social, environmental and economic components, is truly complex.

Next, we consider the local and global tasks.

A. The local problem. The existing Strategy for the socio-economic development of the Olenek National District until 2032 is traditional (approved on December 27, 2018). The Strategy does not have an intensive development option due to the absence in the Task for the Development of a Strategy for the Creation of Development Kernels and broad drivers that would cover all spheres of the population’s life. Program Developer, NEFU named after M.K. Ammosova, (expert-consulting center of the IPPE, director associate professor, candidate of social sciences Romanova O.D.), did not receive a proper response to her proposals from the ulus administration and the ministries of the Government of the Republic of Sakha (Yakutia) due to the lack of facilities and directions they proposed development in the current program documents of relevant ministries and departments. Opening of the multidisciplinary college "Oleneksky" - with the creation on its basis of a laboratory of innovative technologies in the field of reindeer husbandry with a digital base for all reindeer husbandry farms in the Republic of Sakha (Yakutia); - with the creation of laboratory sites of industrial research institutes for the study of new types of feed, monitoring the health of the deer population, adapting the industry to climate change, testing building materials and vehicles in the cold; did not receive support. Proposals for real subsidizing of air tickets, active construction of housing for
the population and specialists, and other proposals are excluded from the draft ulus development program with reference to the absence of these points in the existing Republican Programs.

Proposals for the development of the Task for adjusting the SR Strategy of the Olenek National District could be based on the most comprehensive approach. It would be appropriate:

1. To carry out the adjustment of the documents for the territorial development of the ulus (district) (Geplan ulus), taking into account new investment programs for the development of the Tomtor rare-earth metal deposit, as well as other infrastructure projects for the construction of new roads, power lines, industrial towns.

2. To carry out the adjustment of the General Plan of the Olenyok village, with a detailed development of the draft planning and land surveying of the new quarter for innovative residential buildings of various designs and engineering support, including new public facilities, landfills, solid waste, according to new standards, and others.

3. The same is true for the villages of Kharyalakh, Zhilinda. The master plan of the village should be adjusted. Eyik. In the updated program of socio-economic development of the ulus, to provide funds for R&D on projects of effective residential buildings. With such an integrated approach, it will be possible to effectively implement the developments of scientists and specialists of ITI NEFU in real construction projects.

After reaching a basic agreement with the Administration of the ulus, it is possible to proceed with the development of calendar plans for areas of work.

B. The global challenge. This can be formulated as "Justification, design of the main infrastructure facilities of Mirny - Yuryung-Khaya as the basis for the development of the Western Economic Region."

Currently, approaches to the development of the North-West of Yakutia are local, short-term, highly departmental and do not meet the long-term development objectives of the Republic of Sakha (Yakutia) as a whole. We can say that the existing approaches are not sufficiently correlated with the Programs “2020”, “2030 with a vision until 2050” and other documents, they do not logically supplement and develop them.

We would believe that a comprehensive approach, designed for the prospect of 10-15 years, that is, until 2030 and beyond, would create wide opportunities for interested and effective cooperation with existing and potential investors to implement this global task.

1. It is necessary to build a 220 kV transmission line Mirny - Yuryung-Khaya. The Aikhal - Udachny section, with the reconstruction of a single-circuit into a double-chain, was accepted for construction and should be completed by 2023. Customer: PJSC Yakutskenergo. The length of the line is 99.3 km. The cost of construction and installation works is 4,273.7 million rubles. Including design and survey work - 71.49288 million rubles (1.67% of construction and installation works). The cost of construction and installation work 1 km is 43,038 thousand rubles, with the cost of reconstruction of the necessary periphery.

Distance Udachny-Saskylah in a straight line 622 km, on the highway 866 km. We take the length of the transmission line of the high-voltage line 220 kV equal to 850 km. In comparable prices, the costs will amount to 36,582.3 million rubles.

The Saskylakh-Yuryung-Khaya section, performed by a 110-kV overhead line with a length of 120 km, will cost approximately (35 million rubles / km), 4,200 million rubles.

It is necessary to provide electricity to the mining complex in Tomtor. We will take the 220 kV OHL line from Ebelakh to Tomtor, 120 km away. The construction cost is 51,645.6 million rubles. The Tomtor project is estimated by investors at 30 billion rubles, including a significant part of the cost goes to energy supply.

Total cost of electricity supply is 50,220.56 million rubles.

At the same time, it can be noted that the project for the new construction of 2 single-circuit lines of VL-110 kV Pevek-Bilibino, 491 km long, provides for costs of 18,420 million rubles, according to the 2018 project. (1 km of networks costs 37,515 thousand rubles).
According to the Decree of the Head of the RS (Y) “On the Scheme and Program for the Development of the Electric Power Industry of the RS (Y) for 2018-22” dated April 23, 2018, No. 2515, the cascade of Vilyui and Svetlinskaya HPPs have a reserve of 238 MW. Taking into account the part of reserves that is not used for technological reasons, the total available reserve is 399 MW. Naturally, for the prospect of up to 10 years or more, it is necessary to implement the construction of electric networks provided for by the Decree combining the Western and Central energy districts with the construction of a small gas-fired power plant in the vicinity of Vilyuiisk, due to the expected increase in consumption in the Western energy district, relevant during the period of estimated low water availability the river Vilyui.

2. It is necessary to transfer settlements in this strategic direction Mirny-Yuryung-Khaya to gas fuel by creating liquefied gas warehouses. The use of liquefied gas is more efficient, environmentally friendly, more convenient for household consumption in food preparation and heating, especially with depletion of forests near the tundra zone, suitable for harvesting firewood for domestic consumption. Liquefied gas supplies will be organized from gas producing companies of YATEC and Western Yakutia. This task is of great social importance, will entail a multiplier effect in improving the quality and standard of living of the population.

Currently, there are 8 boiler houses in the Anabar district, all of them use gas condensate. There are 8 boiler houses in the Oleneksky District, of which 7 are for crude oil, 1 is a boiler for gas condensate.

Estimated, the total heat generation capacity in the Olenek and Anabar regions, taking into account the prospects, can be taken equal to 100 MW. The costs of transferring boiler houses to liquefied gas may be accepted in the amount of 500.00 million rubles. Reconstruction of existing and construction of new liquefied gas warehouses may cost 300.00 million rubles. Gasification of the population may be within (approximately 2500 households) 250.00 million rubles.

In the future, deliveries of liquefied gas can be organized from the port of Sabetta, from the Yamal LNG enterprise, with the development of a fleet of gas carriers with a relatively small tank capacity intended for coastal consumers of the Arctic coast.

Total for the program: 51270.56 million rubles.

3. Conclusions

In the strategic documents of the Arctic regions of Russia, the development of the indigenous peoples of the North is considered separately, and not in conjunction with industrial projects.

The institutional environment that normatively regulates the development of the indigenous peoples of the North is not effective enough, although civil society institutions are created and operate, social support is provided to improve the level and quality of life.

At present, in the Arctic territories it is necessary to ensure comprehensive development both at the regional and municipal levels, and in individual industrial clusters.

Strategies and Programs for the socio-economic development of the Arctic regions and municipalities (districts) of the Russian Federation demonstrate insufficiency and / or lack of complexity.

Based on the foregoing, cooperation between the Federal Research Center of the Academy of Sciences of the Russian Federation in Yakutsk, the Academy of Sciences of the Republic of Sakha (Yakutia), and Northeast Federal University named after M.K. Ammosov with the following key investors:

1. PJSC Yakutskenergo;
2. YATEC;
3. ALROSA;
4. ROSTEH (LLC East Engineering);
5. ROSTEKH (RT-Global Resources LLC);
6. Rosavtodor;
7. Oil and gas producing enterprises of the West Yakut industrial railway;
8. LLC Anabarneftegaz;
9. OAO NK Rosneft;
10. PJSC NOVATEK.

Currently, based on the above local and global objectives, it is difficult for investors to offer R&D and the probable results of R&D, which would clearly interest investors in calculating the short-term effect. Probably, investor interest would be higher when calculating for the long term. Perhaps the range of global tasks allows us to plan cooperation for the long term. An analysis is possible from the point of view of the creation and development of the Anabar or Olenek-Anabar mining clusters.

The social, environmental and economic consequences of traditional Soviet approaches to the development of the Arctic territories are very extensive. An analysis of the current Strategies and Programs for the Development of the Arctic regions of Russia shows that the old approaches have not yet been completely eradicated. It still turns out that in one territory there are two models: the first is the industrial model, and the second is the model of traditional residence of local residents. The task is to harmonize the interaction of these two models, which actually exist at the present time, and create such new Strategies for the socio-economic development of the regions of the Arctic zone, where this harmonization was originally envisaged.

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