Sustainable development of rural areas of the Yamalo-Nenets Autonomous Okrug

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Abstract. This article discusses the rural areas of the Yamalo-Nenets Autonomous Okrug, their features, current state and development opportunities. The author identifies a list of the main environmental problems that arise as a result of production activities, and suggests ways to solve them.

1. Introduction
Rural areas have a huge natural, demographic, economic, historical and cultural potential, which, if properly used, can create a high-quality standard of living for the living population [1].

The largest share of land in Russia falls on rural areas. The importance and role of rural areas is undeniable:

- Public goods, maximum preservation of the usual way of life and historical rural culture;
- Social control over the territory;
- The preservation of the scenic and unique landscapes;
- Raising the level and improving the quality of life of the rural population;
- Maintaining the ecological state of the ecosystem.

The main purpose of studying this topic is the regional features of the development of rural areas of the Yamalo-Nenets Autonomous District and the formation of proposals for their rational use [2]. The subject is the agricultural land of the district. The study was conducted on the basis of:

- Works of scientists on regional studies and territorial administration;
- Statistical data on Russia and the Yamalo-Nenets Autonomous Okrug;
- Regulatory and legal acts.

2. Materials and methods
The resource potential of the territory is understood as a set of natural and economic resources that form the basic part of the entire territory.

The territory of the Autonomous Okrug consists mainly of forest land (41%) and agricultural land (39.7%).

The largest volumes of industrial intervention in rural areas are observed in the Purovsky and Nadym districts. These districts account for 47% and 27%, respectively, of the total area of zones of indirect withdrawal of rural land for industrial development. The zone of indirect withdrawal of land...
for industrial development is the area of land that falls on the zones near main and field pipelines and other industrial facilities [3].

The dominant industry is reindeer husbandry. This region is a significant Russian center of reindeer husbandry.

Now the industry is experiencing an unregulated jump in the number of deer, at the expense of the private sector. As the observation shows, this threatens to reduce the productivity of pastures.

The problem of overgrazing is particularly acute in the Yamal, Priural'sky and Tazovsky districts, where the number of deer significantly exceeds the reindeer capacity of pastures table 1.

### Table 1. Modern development of the reindeer husbandry industry.

| District        | Pasture area, hectare | the amount of pasture on 1 deer hectare | Number of deer, heads | Optimal. reindeer capacity of pastures, heads | Excess (+) pastures, lack of (-), heads |
|-----------------|-----------------------|----------------------------------------|-----------------------|-----------------------------------------------|----------------------------------------|
| Shuryshkarsky   | 2 730 829             | 96.2                                   | 20 218               | 24 043                                        | +3 825                                 |
| Priural'sky     | 4 128 335             | 90.8                                   | 82 955               | 6 082                                         | -76 873                                |
| Yamal           | 10 601 574            | 87.1                                   | 287 052              | 109 365                                       | -177 687                               |
| Nadymsky        | 3 551 443             | 50.3                                   | 37 354               | 36 870                                        | -484                                   |
| Purovsky        | 5 683 784             | 50.8                                   | 25 218               | 39 157                                        | +13 939                                |
| Krasnoselkupsky | 2 054 842             | 66.0                                   | 2 777                | 17 830                                        | +15 053                                |
| Tazovsky        | 9 772 820             | 88.6                                   | 178 728              | 121 780                                       | -56 948                                |
| Total:          | 38 523 627            | -                                      | 634 302              | -                                             | -                                      |

The vast majority of the territory falls on the forest fund. Thanks to the forest resources, the territory is unique in its own way. It is here that wild, medicinal plants and berries that are valuable for health are concentrated. The forest is not only a source of construction, in the form of procurement of building materials, but also serves as a hunting resource.

The territory is represented by the richest mineral resources, including fuel and energy resources, ore and non-metallic minerals, natural building materials, underground fresh and mineral waters, thermal waters of deep structural horizons [4-5].

The growth and dominance of the oil and gas industry in this area has brought real benefits to the rural population: contributed to the growth of budget revenues in rural areas; improving the material and technical base of social institutions; development of transport infrastructure.

The indigenous population uses river ice, glaciers, and snow for drinking purposes. Surface water is the most accessible and real source of water supply for rural settlements of all districts of the district, except Purovsky. At the same time, intensive use of water resources for industrial and drinking purposes leads to a decrease in water quality. Fresh groundwater resources are extremely limited due to the predominantly continuous permafrost spread with a capacity of 250-500 m. Underground water here is in the solid phase [6-7].

Currently, the main problems in the organization of water supply systems in rural areas are:

- Lack of centralized water supply systems in rural settlements;
- Low quality of underground water and high degree of its pollution in Purovsky and Nadymsky districts;
- Insufficient specific water consumption in sparsely populated rural settlements of Yamal, Shuryshkarsky, Tazovsky, Priural'sky districts;
- Significant deterioration of water pipes, distribution networks and water supply facilities.
The demographic component plays an integral role (Table 2).

| Indicators          | 1959 | 1970 | 1979 | 1989 | 2002 | 2017 |
|---------------------|------|------|------|------|------|------|
| The rural population| 64.8 | 57   | 49.6 | 22.1 | 16.6 | 15   |
| Urban population    | 35.2 | 43   | 50.4 | 77.9 | 83.4 | 85   |

The transport component YANAO focused on the requirements of the market performance oil and gas industry; the transportation network is poorly developed, does not create a single frame does not provide a permanent connection of rural settlements with each other and with district and regional centers. Between the districts differ significantly in the saturation of transport infrastructure [8].

Water transport is of great importance for the district, especially for those places where it is the only economically accessible means of communication. The operated inland waterways have a length of 11.8 thousand km.

Insufficient development of land and water transport, long distances between settlements make it necessary to use air communication. Air transport is the only way to deliver the population to the destination, for 12 rural localities, where more than 17 thousand people live.

And, of course, the main problem existing on the territory of the Yamal-Nenets Autonomous District is ecology. Over the past 5 years, there are about 25 points of contamination. Unnecessary and abandoned materials were found in the process of geological actions that were used in the search for oil products, the operation of specialized equipment, all this is idle and pollutes the environment and the territory that is important for the reindeer husbandry industry and for agriculture in general.

In most municipal areas, waste is completely or partially sent to landfills or landfills for their further disposal, waste processing is not carried out. As a result, a number of problematic points can be identified:

- A large amount of waste is not recycled, due to the lack of modern, specialized processing equipment, which leads to the non-use of secondary raw materials;
- There are a large number of uncontrolled landfills;
- Lack of necessary knowledge of the population in the field of ecology;
- Lack of necessary monitoring system.

Landfills near settlements, near residential buildings, garage cooperatives—all this is due to the illiteracy of the population in the field of environmental problems.

3. Results

Any dynamically developing territory has its positive and negative sides. To assess the current state of rural areas and develop development proposals, it is necessary to formulate precise characteristics that directly or indirectly affect the sustainable development of the territory. The assessment of the current state of rural areas of the Autonomous Okrug is presented in Table 3.

Based on the analysis, we can identify a number of environmental problems that exist in the area, which are presented in Figure 1.

The policy of sustainable development of rural areas of the Yamalo-Nenets Autonomous Okrug should be based on the strengths and directions of development of the territories, as well as on overcoming weaknesses and their further development.
Table 3. Assessment of the current state of rural areas of the Yamal-Nenets Autonomous District.

| Positive aspects | The negative side |
|------------------|-------------------|
| Unique natural resource potential of rural areas. Ensuring the fuel and energy complex of the country. Significant reserves of gas, oil and gas condensate. Rich biological resources. An important reindeer breeding center is located here. Rivers and lakes are provided with valuable fish. The growth of the indigenous population leading a traditional way of life. Activation of housing construction. Development of tourism business. Implementation of the state program for the development of agriculture and Gazprom's program aimed at reducing damage to the region's industries. Formation of modern infrastructure for the development of reindeer husbandry. | Distance of rural areas of the district from the main transport routes. Specific natural conditions, harsh winters, short summer season, lack of sunny days. Weather anomalies make their own adjustments to costs. For the population leading a traditional way of life, a vulnerable factor is the low ability to restore natural resources. Poor infrastructure development of rural areas of the district. Increase in the scale of industrial development of rural areas of the Yamalo-Nenets Autonomous Okrug due to the introduction of new fields into development. Environmental degradation. Reduction of reindeer herding productivity of pastures. The impressive decline in the number of people leading a traditional lifestyle is due to the rapidly developing industrial sector in the region. Difficulties with employment of the population. |

Figure 1. Environmental problems arising on the territory of the Yamal-Nenets Autonomous District.

- Increase in the number of emissions by stationary units, and the existing cleaning system does not cope properly;
- An annual increase in equipment required for the industry, which also leads to air pollution;
- Pollution of water bodies, since the region is located in a certain climatic zone, the surface of water bodies is not capable of rapid self-cleaning, the situation is also aggravated by the fact that there are abandoned ships and even some of the submerged ships.

4. Discussion

The development of a strategy for sustainable development of the territory of the Yamalo-Nenets Autonomous Okrug involves the formulation of the mission of the rural territories of the Autonomous Okrug.

The mission reflects the role of the rural areas of the district. Therefore, the mission statement of rural areas is based on taking into account their unique specifics in the regional economy.

As a result of the strategic development of rural areas of the district, the following idea of the mission of rural areas was formed [9-10].

Rural areas of the district are the territory of a harmonious combination of industrial and traditional development, where comfortable living conditions for the entire population are provided.
Agriculture of the district can be developed in housing construction, housing and communal services, as well as in reindeer husbandry and fishing.

The housing sector is like a point where there is a great demand-thousands of residents of rural settlements of the Autonomous Okrug want to improve their housing conditions. This sector can provide the greatest socio-economic impact, which will affect the positive demographic dynamics and improve the life support of the population.

Reindeer husbandry and fishing should become important areas of rural economic growth. The main vectors of development of reindeer husbandry are the growth of production and employment in the industry, the deepening of processing of venison and the development of livestock breeding.

The priority tasks of the development of fisheries are to ensure the correct and scrupulous use of aquatic biological resources, the development of artificial reproduction of resources and the development of fish processing industries.

5. Conclusion
The analysis made it possible to form risks that can directly or indirectly affect this territory.

As it turned out, the main risks of the development of the regional sector are determined by the dependence on the oil and gas state and external characteristics in relation to the studied territory.

Active industrial activity, which is now developing in the territory, brings large-scale changes in the activities of the indigenous inhabitants of the region, which, of course, affects the culture and preservation of the identity of the people, and subsequently the disappearance of partially or completely original traditions.

Modern transport infrastructure hinders the development of the district, and this is also not a simple energy component. The energy deficit makes its own adjustments to the development of the region.

A certain dissonance is observed between the oil and gas industry and the rural one. If agriculture has little economic efficiency, then the growth of the oil and gas sector is indisputable, thereby leading to the redirection of budget funds to a certain area.

The attractiveness of the studied territory allows us to determine a number of competitive advantages in comparison with other territories, these are special, not similar to other natural resources, which deserves scientific and economic attention in the development and development of the north.

The district has a large reserve base of gas, oil, coal and other minerals, which is an indisputable fact of the region's attractiveness, it will provide the territory with strong financial stability and constant sale of petroleum products.

The development of new fields in the Polar Urals will entail skilled workers who have extensive experience in the development of new territories, and their knowledge and abilities will be useful in the development of new fields located on the Yamal Peninsula of the Yamal shelf.

Another advantage of the territory is its proximity to the Northern Sea Route. The Northern Sea Route will open up new horizons to the world market, as the center of reindeer husbandry is concentrated here.

The catch in the river resources of whitefish is a significant part of the overall structure of Russia. And the sale of reindeer husbandry products is rightfully considered a delicacy on the world market.

The district has one of the largest gas transmission lines that delivers gas to the Russian and European markets.

In recent years, the territory has seen support for the agricultural sector from the state, an increase in the income of the population in the agricultural sector. Employment of the population in the field is promoted by the support of local authorities, the main task is to preserve the identity of crafts and the territory. After all, due to its dissimilarity to other regions, Yamal attracts with its uniqueness, which means that support and development of rural areas is simply necessary here.

The environmental situation on the territory of the Yamal-Nenets Autonomous District can be assessed as satisfactory.
In the process of production activities of oil industries, there is a breakthrough of oil, which leads to a violation not only of soil occurrence, relief, but also pollution of water bodies and adjacent territories. To prevent these situations, it is necessary to monitor the quality and reliability of pipeline systems and transport.

A number of environmental problems that arise as a result of production activities require immediate solutions, both from the regional authorities and from the municipality. Ways to solve environmental problems are shown in figure 2.

Figure 2. Ways to solve environmental problems.

The Yamalo-Nenets Autonomous Okrug is a unique region with its own traditions and foundations. It has its own advantages and disadvantages, as well as other dynamically developing territories, but we can say for sure that this is the territory of the future, which has huge opportunities and resources, and the main task of the region is to use and preserve them efficiently.

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