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**STRATEGIES OF YAMAL REINDEER HUSBANDRY: FROM
PRESERVATION TO SUSTAINABLE TECHNOLOGICAL
DEVELOPMENT**

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Abstract

Reindeer husbandry of the Yamal-Nenets Autonomous District is the economic basis for the vital activities of the indigenous peoples of the North leading a nomadic way of life. It is an essential element of the nutrition of the rural population and the resource basis of enterprises for the processing of reindeer products. The challenges of recent years have revealed a number of acute problems of reindeer husbandry and threats to the indigenous peoples connected with the industry, which led to research aimed at providing scientific support for the development of the concept of reindeer preservation in Yamalsky and Tazovsky regions of the district. Sustainable development is achieved with the successful coincidence of environmental, socio-economic and technological factors. Geobotanical research revealed extremely insignificant stocks of fodder. Sociological, economic and legal studies have revealed imbalances in the distribution of income between different levels of social and economic systems of the regional economy and their elements. The study of technological factors has shown that the development of market relations, the use of new equipment and technologies in northern reindeer husbandry stimulates the development of reindeer commodity production and is in conflict with the natural type of management, leading to property stratification of family farms. The study of the state of these factors allowed us to formulate three basic scenarios for the development of events in the industry: inertial, mosaic and integral. As a result of the research, seven most important processes steadily developing in time and affecting the industry were identified. .

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Keywords: Arctic, sustainable development, reindeer husbandry, indigenous peoples.



1. Introduction

Reindeer husbandry of the Yamal-Nenets Autonomous District is the economic basis for the vital activities of the indigenous peoples of the North leading a nomadic way of life (Golovnev & Osherenko, 2018). Reindeer production is a necessary element of nutrition for the population living in rural settlements (Lobanov, et al, 2017) and a resource basis for the economic activities of processing enterprises in the region. It is also exported (Layshev & Yuzhakov, 2018). Antler production is an object of procurement activities focused on Asian markets (Babin, 2006). Reindeer husbandry plays an ethno-preserving role for indigenous peoples and occupies an important place in the traditional culture and worldview of the Nenets (Muhachev, Kharyuchi, & Yuzhakov, 2010).

2. Problem Statement

The challenges of recent years have revealed a number of acute problems of reindeer husbandry and threats to the associated population, including the deterioration of the breed qualities of reindeer, an excessive loss in 2014 (Perevalova, 2015), manifestations of anthrax in 2016 (Yasyukevich, & Yasyukevich, 2016). The developing situation became the basis for the approval of a plan for the scientific and technical support of agricultural development. Within its framework research aimed at providing scientific support for the elaboration of a concept for the development of reindeer husbandry (concept) began. The main areas included in the research plan are: geobotanical assessment of reindeer pastures, study of the socio-economic factors of life of the indigenous peoples, economic, legal and environmental studies.

3. Research Questions

The subject of the research is the search for models for the preservation of tundra type of reindeer husbandry in Yamalsky and Tazovsky regions of the Yamal-Nenets Autonomous District for the long-run period, capable of ensuring the sustainable development of reindeer husbandry in the future. The study aimed at sustainable development is intended to ensure the search for such a regime of nature management, in which the satisfaction of the needs of current generations does not undermine the ability of future generations to meet their own needs (Report, 1987). The mode of exploitation of natural resources (reindeer pastures) should be coupled with social support, investment areas and institutional changes. Only in this case, the basic provisions of the concept will be able to start the process of economic and social changes that will ensure the sustainable development of the industry and assigned quality of life of various social groups for the long term. The validity of this goal-setting concept is associated with the international recognition of the rights of indigenous peoples (Declaration, 2007), a politically and legally established provision for the preservation and sustainable development of indigenous peoples of the North, Siberia and the Far East in the Russian Federation (Concept of indigenous peoples of the Russian Federation, 2009) and of the Yamal-Nenets Autonomous District (Concept of indigenous peoples of the Yamal-Nenets Autonomous District, 2009), attitude to reindeer husbandry as the main ethnic-preserving type of the traditional economic activities of indigenous peoples of the Yamal-Nenets Autonomous District.

4. Purpose of the Study

In view of the above, the purpose of the study is to develop scientifically grounded basic provisions of the concept of sustainable development of reindeer husbandry in the Yamal-Nenets Autonomous District aimed at preserving traditional economic sectors, the original habitat in the interests of present and future generations.

5. Research Methods

The study is based on the presentation of northern reindeer husbandry as a unique ecosystem, the core of which is formed by the triad “reindeer pastures and natural landscapes of the North” - “reindeer and reindeer herds” - “family farms and their associations”. People protect the reindeer, the reindeer gives everything necessary for human life, pastures provide for the livelihood of the reindeer, but they require careful attitude on the part of people. From this point of view, not only a reindeer as an agricultural animal, but also the state of reindeer pastures, the institute of the traditional family and traditional grazing technologies become factors of preservation and sustainable development of reindeer husbandry as a type of economic activity. Family farms are a backbone element, around which both the traditional economic activities of indigenous peoples and the activities of reindeer herding enterprises are formed (Detter, 2017). Sustainable development is achieved only with the successful coincidence of three factors: environmental, socio-economic and technological (Lebedev, Kovalev, & Kokovin, 2018).

6. Findings

The environmental factor was studied during geobotanical research using field methods and the method of interpretation of space photographs in the laboratory. As a result, in 2018, data were obtained on the number of reindeer that pastures could feed in the territory of Yamalsky and Tazovsky regions, according to which the stocks of fodder remaining in the regions are extremely insignificant (Ermohina, 2018). Reindeer feed on biological reserves, the time until the end of which is inversely proportional to the number of reindeer grazing on these pastures. Lack of feed leads to mass excessive loss from exhaustion in the winter-spring period, which can only be prevented by reducing the number of livestock on the trampled pastures. However, reducing the number of livestock to the actual number of reindeer that pastures could feed leads to the loss of income and employment among a large number of the population, about eight thousand people. The resolution of this contradiction forms the main problematics of research on the scientific support of the concept, namely, the determination of the possibilities and models for the preservation of tundra type of reindeer husbandry and ensuring social stability. According to the results of environmental studies, the negative impact of the development of the territory by the enterprises of the oil and gas complex and unfavorable veterinary and ecological situation were revealed (Agbalyan, 2014). In this regard, the preservation and restoration of tundra ecosystems to the extent necessary to maintain sustainable reindeer husbandry, on the one hand, and restrictions on the use of ecosystems by society, on the other hand, are considered as two sides of one task.

In the course of sociological, economic and legal research, negative socio-economic factors for the sustainable development of reindeer husbandry were identified, this is, first of all, a high level of social and material inequality, disparities in income distribution between different levels of social and economic

systems of the regional economy and their elements (Detter, 2017). Reindeer farms have different possibilities depending on the places (routes) of migration, the number of reindeer, the availability and amount of state and municipal support, technological, material and technical support, the possibility of selling reindeer products (Kibenko, Zuev, & Sukhova, 2017). As a result, the low income level of the members of the majority of family farms, sufficient for subsistence farming, does not provide a lifting potential for transferring part of them to settled living, leads to an increase in the number of reindeer herders, number of reindeer and increased load on pastures. According to statistics, the average income level of the rural population is two times less than the average in the Yamal-Nenets Autonomous District. More than 40 percent of the poor in the Yamal-Nenets Autonomous District are concentrated in rural areas, mostly from the number of indigenous peoples leading the traditional way of life. Individuals from the personal reindeer farms are self-employed and are often outside the legal framework of civil, tax, veterinary and pension legislation (Filant, 2017). The fact is that economic inequalities cannot be eliminated only by an increase in the cost of production, a radical modernization of the institutions for the organization of reindeer-breeding activity is necessary. On the other hand, material and everyday minimalism is typical for nomadic reindeer herders, and comparing their standard of living with the average regional level is not quite correct. Taking into account the above, the economic sustainability of reindeer husbandry can be achieved only with effective government management of the industry. Only state institutions pursuing a scientifically based and verified policy can use the favorable factors of sustainable development in the interests of the industry and the indigenous population.

Scientific and technological factors are closely related to socio-economic factors of sustainable development. The development of market relations and the use of new technology in reindeer husbandry stimulate the development of commercial reindeer husbandry, come into conflict with the natural type of economy and lead to property stratification of family farms (Detter, 2017). The consequence of increasing the number of reindeer by individual farms is the reduction of opportunities for the continuation of the traditional way of life by other farms; farms with a small number of reindeer are being forced out of the tundra. Thus, the one-sided introduction of innovations into the traditional way of life and economy of the indigenous peoples leads to extensive pasture exploitation and is in contradiction with the basic principle of sustainable development – concern for future generations. Technological and cultural innovations change the traditional way of life. Researchers note the transformation of the institution of traditional nomadic family, young girls and women do not want to return to the tundra, and without a woman traditional grazing technology is impossible (Kibenko, Zuev, & Sukhova, 2017). In order to preserve traditional culture and lifestyle of indigenous peoples, the introduction of new equipment and technologies into the traditional type of economy should be more balanced. On the other hand, technological backwardness of the industrial complex focused on reindeer products should be noted, and as a result, the shortfall of part of the income from endocrine-enzyme, antler and other raw materials derived from reindeer. The reason for the development of unfavorable factors was also a decrease in the volume of veterinary and zootechnic activities in reindeer farms as a result of a drop in the level of competences of the people employed in the industry.

The development of the concept sets the task of identifying opportunities, threats and models for the preservation of tundra reindeer husbandry in Yamalsky and Tazovsky regions of Yamal for the period

2019-2030, taking into account the actual state of factors of sustainable development. Therefore, in the course of the research the main problems of tundra reindeer husbandry were summarized and formulated: excess of the number of reindeer over the number of reindeer that pastures could feed (overgrazing), actual absence of forage reserve in the tundra subzones; development of the territory by oil and gas companies, infrastructure construction, environmental risks; veterinary restrictions due to pasture conditions, toughening of veterinary legislation; unreliability of accounting data on the number of reindeer, subjects of reindeer husbandry and migration routes necessary for managing reindeer herding; shadow economic processes in reindeer husbandry; inefficient herd structure, problems with sales and supply of reindeer herders; unprofitability of reindeer herders organizations; low incomes of reindeer herders and, as a result, low level of well-being of family farms, low labor and social mobility; inefficient distribution of subsidies and compensation payments; inefficiency of legislative regulation of the industry; multiplicity of subjects of management of the industry, adoption of uncoordinated decisions (management inefficiency).

Research has allowed to formulate three possible scenarios for the development of events in reindeer husbandry:

- inertial – preservation of existing management methods, the industry is completely dependent on government subsidies, not more than half of the turnover of reindeer products is controlled, self-employment, lack of new technologies and competencies, inefficiency of the industry, strengthening of market relations in the reindeer herders' community leads to social stratification (rich – poor), lack of pastures leads to excessive loss of reindeer, social instability;

- mosaic – non-system implementation of several projects, solution of some problems, manual control generally not solving the main problems of reindeer husbandry, not providing an increase in the standard of living for most of the reindeer herders, periodic excess loss;

- integral – creating conditions for reindeer herding for the largest number of indigenous peoples, taking into account the actual the number of reindeer that pastures could feed, reducing inequality among reindeer herders, transition to sustainable technological development, formation of raw materials base for the processing industry. The integral scenario is considered as the main one and provides for the development of a roadmap for the preservation of reindeer husbandry. But even in this scenario, the likelihood of adverse processes and incidents in reindeer husbandry remains.

Considering the presence of a large number of stakeholders in relation to reindeer husbandry (reindeer herders and their family members, public organizations of reindeer herders, the rural population, non-governmental organizations of the indigenous peoples, enterprises processing and selling products of reindeer husbandry, oil and gas complex, state and municipal authorities in various areas of government, supervisory authorities, scientific and educational organizations), which often have contradictory views and interests, the formation of the concept should be accompanied by public discussion of scientific results and suggestions. The format of such communication is strategic sessions (foresight sessions) according to the Rapid Foresight methodology (Peskov, Luksha, Kozharinov, & Savchuk, 2017), during which opinions are determined and participants agree on their positions regarding industry problems and their solutions, a forecast is made describing the main possible events and factors that will affect the industry.

Seven most important trends, steadily developing in time and affecting the industry, were selected for discussion:

- climatic changes, including the increase in average annual temperatures, their influence on the state of pastures and the conditions of reindeer grazing in tundra subzones;
- active development of the oil and gas complex and transport infrastructure;
- worsening of the epizootic situation on reindeer pastures;
- degradation of reindeer pastures;
- an increase in the number of subjects of reindeer husbandry;
- reduction in the production of meat products by the subjects of reindeer husbandry;
- the effectiveness of regional policy in the field of reindeer husbandry and state support measures.

7. Conclusion

The discussion of the trends took place in the framework of the foresight session on October 18–19, 2018 with the support of the Government of the Yamal-Nenets Autonomous District. Results of the research performed by the team of authors of the Arctic Research Center working on the concept have been successfully tested. Revealing the positions of the parties concerned regarding the identified trends allows creating a concept and a roadmap that take into account long-term challenges and threats, provide a system of projects and consistent actions, introduction of modern technologies and increase of competencies to make it possible for the industry to move from preservation strategy to sustainable technological development, and subsequently to intensify the processes of sustainable development in the environment of indigenous peoples of the North. At the same time, taking into account that the results of scientific activity turning into a practical field are refracted in the institutional environment of society, we should expect the emergence of new (other) strategies of stakeholders that differ from the theoretically grounded recommendations of the scientific and expert community. The last statement raises the question of the need to create institutions of expert control over the implementation of the results of scientific activity in the socio-economic relations of society.

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