

**CDSSES 2020****IV International Scientific Conference "Competitiveness and the development of socio-economic systems" dedicated to the memory of Alexander Tatarkin****INSTITUTIONAL TRANSFORMATION IN REINDEER HERDING INDUSTRY BASED ON ECONOMIC BEHAVIOR**

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**Abstract**

Paper analyzes systemic studies of the traditional economic activity and way of life of the indigenous small-numbered peoples of the North. Research into the Reindeer Herding Industry has been conducted in order to gain information on their management and to develop a socially-oriented strategy conducive to overcoming the accumulated problems. Institutional transformation is a mechanism through which the accumulated problems of herding can be addressed, and the industry can be shifted from a pattern of regression towards evolutionary development. Institutional transformation is based in the ethnic and economic features of the reindeer herding family and ancestral households and directed towards correcting the defects of the legal system and the system of herding management. The conflict between the needs of family and ancestral farms, the resources of the traditional economy, and the established institutions pose challenges – ideological (political), social, economic, and ecological – to the system of management. The organizational model for institutional transformation in the reindeer herding industry is founded on the confirmation of the private farm as the primary legal form of organization for reindeer herding, supplemented by competence centers, reindeer herding parks, the legal, organizational entity of the agricultural consumer cooperative, and novel measures of state support for family and traditional households. These findings indicate a connection between the problems of reindeer herding, indigenous peoples, and national settlements. Accordingly, projects aimed at solving the problems in the spheres of the traditional way of life must function jointly on the social, ecological, and economic levels.

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*Keywords:* Agricultural consumer cooperative, economic activity, indigenous small-numbered peoples of the North, institutional transformation, traditional reindeer herding



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## 1. Introduction

Research into the problems of reindeer herding in the North, caused by several adverse developments which occurred in the Yamalo-Nenets Autonomous District (YNAD, Yamal, the region), has inspired numerous novel and essential works engaging with scientific areas concerned with traditional industries and indigenous peoples. Among those are the spheres of comprehensive ecological monitoring of the native lands of the indigenous small-numbered peoples of the North (ISNP, the indigenous population), of the historical and cultural/spiritual features of YNAD reindeer herding, of monitoring the health, traditional diet, and quality of life of the indigenous population, of the economic and legal situation of the ISNP, of economic and legal research, of herding technologies, etc.

The paper aims to locate possible and accessible models for the institutional transformation of Northern reindeer herding, taking into account the specific features of the indigenous population's economic behaviour. The purpose of institutional transformation is the increased economic efficiency of Northern reindeer herding, beginning with its basic elements and ending with management and control systems.

Institutional transformation determines how societies develop over time, and thus serve as the key to understanding historical change. Consequently, as they proceed towards their goal organizations act as the driving agents of institutional transformation (Detter et al., 2020).

Institutional transformation requires the targeted (purposeful) alteration of the formal and informal rules of economic activity. On the list of institutional transformations are the shift in forms of ownership and organizational/legal forms of organizations, the development of institutions for regulating the market and the economy, the establishment of a system of vocational training for workers prepared for the innovative growth of production.

When it comes to organizations that have sufficient productive potential and are able to adapt to the market conditions, but suffer temporary difficulties, it is advisable to conduct consistent and active work towards their remediation and governmental support (Ermokhina, 2018).

For the purposes of this paper:

institutional transformation is understood as a process of economic reform directed at the alignment of economic, technological, and cultural features of reindeer herding family and ancestral households with the forms of economic organization that function in a market economy, as well as the establishment of rules and regulations which guarantee favourable conditions for the activities of family and ancestral households (Bezverkhaya & Maksyukov, 2013, pp. 45).

To formulate rules and regulations that can ensure favourable conditions for the functioning and development of reindeer herding, it is imperative to develop a deeper understanding of the industry's underlying processes.

## 2. Problem Statement

On the one hand, the climate, ecology, over-grazing, and pasture degradation, the development of the territory by the energy industry, the ban on the fishing of valuable species, all serve to lower the profitability of the traditional economy of the indigenous population. On the other, we observe an

increase in the population living in the traditional economy, its growing needs, and the desire for a higher quality of life as a result of cultural and technological innovations. This conflict poses three challenges to the bodies of government and local self-government:

- ideological (political);
- social;
- economic.

### **3. Research Questions**

The study is grounded in an analysis of the pros and cons of various organizational and legal forms (OLFs) for herding as applied to status, the socio-economic conditions of the indigenous population, the economic and legal consequences of their implementation. The results of the study are foundational for future managerial decisions, as it is precisely the organizational form of herding activity which determines the existing legal position of family and ancestral households as well as the position they will occupy as a result of the transformations, the resources they will need, and the consequences this may have.

### **4. Purpose of the Study**

This paper aims to locate possible and accessible models for institutional transformation of Northern reindeer herding, taking into account the specific features of the economic behavior of the indigenous population. Institutional transformation represents a core development which will, in many ways, define all reform in the industry. The purpose of institutional transformation is the increased economic efficiency of Northern reindeer herding, beginning with its basic elements and ending with the systems of management and control.

### **5. Research Methods**

The informational and empirical basis for the study consisted of legal documents, data from the Federal State Statistics Service, information obtained from executive bodies of government, municipal agencies, data provided by for-profit and non-profit organizations, information from open-access sources, as well as the findings of scientific studies, analytical reviews detailing the conditions and problems of Northern reindeer herding and related fields, empirical data.

Deer herding institutions being investigated:

- formal and informal restrictions set by the economic behaviour of herders which affect the choice of formations and the attitude towards them;
- governmental strategies and mechanisms of state (municipal) support for herders;
- markets for herding products and pricing;
- ecological environmental limitations of the system;
- legislative forms of organization of reindeer herding activity.

## 6. Findings

Northern reindeer herding in the YNAD has until now functioned following traditional methods. Among the technological innovations which have impacted the modes of production, scholars cite the “snowmobile revolution”, satellite and mobile connection, various everyday household innovations (Golovnyov et al., 2014), the modern flow of knowledge. The above changes set the ISNP apart from certain indigenous peoples, such as some African peoples who strive to preserve their traditional way of life with no transformation.

Table 1 illustrates the structure of the reindeer herding industry of the YNAD at the start of 2019.

**Table 1.** Structure of YNAD reindeer herding industry

Indicators	Households of all categories	Agricultural organizations	Private farms and individual entrepreneurs	Private households
Size of the herd for different property types, 1000s <sup>1</sup>	876,31	238,32	9,81	628,17
Number of households and families of citizens involved in agricultural production	6813	106 <sup>2</sup>	28 <sup>3</sup>	6679 <sup>4</sup>

Reindeer herding agricultural organizations, in the form of municipal enterprises, joint-stock companies, societies with limited responsibility, and local ISNP communities, are models for the organization of herding activity. However, the herding activity itself is carried out by hired herders with their own herd and traditional family, without which traditional herding technologies are impossible.

The grazing of the reindeer belonging to the agricultural organizations is overseen by family and ancestral reindeer herding households which are primarily interested in breeding their own reindeer, rather than in the reindeer of the organizations (Yuzhakov & Mukhachev, 2011).

Agricultural organizations essentially become procurement agents rather than producers of agricultural products, as evidenced by the proportion of deer that is put to slaughter in agricultural organizations: up to 40% of the herd, which should inevitably lead to its dwindling. This does not occur, however, because half of the products is purchased from family and ancestral households.

The large number of such households is peculiar to the YNAD (Kibenko & Sukhova, 2020). In selling herding products, they essentially perform commercial activities, but do not gain entrepreneurs' status in any of the forms approved by civil legislation. Nevertheless, they do not represent a “true small business” (Loginov et al., 2019, pp. 763-779). Moreover, the choice is determined by the indigenous population's worldview, environmental conditions, ethatus, and epopulation's worldviewevels (Loginov et al., 2017, pp. 396-409). Independent herding is invariably linked with the sale of a portion of the

<sup>1</sup>Rosstat online resource. <https://www.fedstat.ru/indicator/31325>. Date of request 08.06.2020 .

<sup>2</sup>Rosstat online resource. <https://www.fedstat.ru/indicator/58109>. Date of request 08.06.2020

<sup>3</sup>Rosstat online resource. <https://www.fedstat.ru/indicator/38125>. Date of request 08.06.2020

products, which automatically makes the herders entrepreneurs according to the current legislation (Loktev & Zuyev, 2017). The justification for treating the family and ancestral household as an enterprise is provided by the research of Russian scholars, which suggests a methodological toolkit for analyzing, planning, and creating the conditions for conducting traditional economy activity as entrepreneurial activity (Martynova, 2018, pp. 252).

The institutional disarray of this state of affairs was made more acute by negative signals from the industry, thereby prompting the current study. Systemic over-grazing has caused significant harm to the Tundra districts of Yamala (Yamalsky, Tazovsky districts, the Northern part of the Priuralsky district), and has placed these territories on the brink of an ecological disaster. The profound transformation in the vegetation cover of the Tundra, the exacerbation of deflation processes, and the increase in sand outcrops cause immense harm to the ecosystems (Novikova, 2019, pp. 7).

Where in the 90s the projected grazing capacity in the Yamalsky district in the winter season was 110,000, today it is 6,500; the Tazovsky grazing capacity was 131,000 where now there is sufficient feed for 3,200; only 600 reindeer can graze in the Tundra region of the Priuralsky district. Hundreds of thousands of deer feed on biological resources (Pilyasov & Kibenko, 2020). Without drastic measures, catastrophe may occur in the next five years. Hopes for fenced-in herding in the Taiga zone as an alternative to Tundra herding have turns out to be overly optimistic. Exacerbates the conflict between the possibility of preserving the traditional way of life for family and ancestral households and the continued activity of the processing facilities supplied by deer products. Three models of development of herding in the YNAD were formulated back in 2017 (Loktev & Zuyev, 2017):

- 1) traditional;
- 2) industrial;
- 3) natural.

Increased stress on grazing grounds as a result of deer population growth has been observed since the 80s. A change in strategy in 2016 towards waste-free processing of the deer products was essentially symbolic due to the lack of available technologies and markets. Demand for both young and older deer antlers has been another powerful driver of increasing the reindeer population among family and ancestral households (Loginov et al., 2019, pp. 763-779).

“The tragedy of communal property” or, as it is called in the Yamal, “the early bird catches the pastures,” has arrived, and it can neither be entirely explained away by climate change, the development of the oil and gas industry, or fires, nor be reduced to the “ethno-professionalism” of the herders (Wright, 2017).

Choice of the traditional model can reduce the scale of the negative consequences, though it will not prevent them altogether. This conclusion aligns, in many ways, with the conclusions of the European “Reindeer Management in Northernmost Europe” study, which acknowledges that reindeer management should be regarded as the traditional way of life of the indigenous population in sub-Arctic regions .

The cumulative costs of producing 1 kilogram of venison is over a thousand rubles, and the budget pays more than 600 rubles for each additional produced kilogram. This was the situation in 2016, and the industry’s tendency to work at a loss has not altered. Several conclusions may be drawn from this:

1) when the region sells venison on Russian and global markets it subsidizes other countries and regions of Russia;

2) state support for the industry in the interests of increasing the volume of production (as per the industrial model) practically means that the degradation of the grazing grounds is financed by the budget, i.e. the region invests in the destruction of the pastures;

3) efforts to increase production lead to increased loss-making in the industry and, accordingly, to increased state subsidies, even as the region does not control the sale of antlers – whose profits can reach a billion rubles a year – at all (on the economic level);

4) multi-million investments in the industrial model of herding made in the past 20 years have not shown and never will show any payoff, as price-wise the region receives less in various products than it invests. The evolution of traditional herding into the industrial model has rendered the industry economically inefficient.

In order to receive government subsidies herding organizations were forced to sell their product at reduced prices. State support of this type is guided by the interests of state institutions, rather than of family and ancestral households, which has led to the failure of state policy in the development of the industry (Loginov et al., 2019, pp. 763-779).

According to the new regulations 2019, processing plants will purchase venison from all types of organizations and from family and ancestral households at almost twice the old price: 450 rubles for a kilo. It is claimed that the measure will be a positive inducement for herders to increase meat quality. Meanwhile, the price of Yamal venison will not change for the consumer.<sup>4</sup> Slaughterhouses will receive subsidies to compensate for the high purchase costs of the meat.

Table 2 shows that most households have small herds (up to 200 animals) and thus do not have a production surplus and cannot sell more produce to receive a higher revenue (or, at least, any possible increase would be negligible) and illustrates the groups of family and ancestral households based on available herd sizes.

**Table 2.** Groups of family and ancestral households based on available herd sizes

<b>Number of families with 0-50 reindeer</b>	<b>Number of families with 51-100 reindeer</b>	<b>Number of families with 101-200 reindeer</b>	<b>Number of families with 201-300 reindeer</b>	<b>Number of families with 301-500 reindeer</b>	<b>Number of families with 501-1000 reindeer</b>	<b>Number of families with 1001 or more reindeer</b>
2852	495	589	346	309	141	17

Large-herd households will not have any incentive to increase meat sales as they receive greater profits from smaller herd sizes, but neither will they choose to reduce their herds: therein lies their insurance from livestock mortality, as well as their antler sales revenue.

We arrive at the main conflict which arises in the herding industry and in the Tundra with its indigenous population. On the one hand, the climate, ecology, over-grazing, and pasture degradation, the

<sup>44</sup>Online resource of the YANAO government: <https://www.yanao.ru/presscenter/news/18566/>. Date of access 08.06.2020

development of the territory by the energy industry, the ban on the fishing of valuable species, all serve to lower the profitability of the traditional economy of the indigenous population. On the other, we observe an increase in the population living in the traditional economy, its growing needs, and the desire for a higher quality of life as a result of cultural and technological innovations. But it is not feasible to improve quality of life through the traditional economy, and the quality of education does not permit a change in the social trajectory, which results in discontent, deprivation, social protest, etc. This conflict poses three challenges to the bodies of government and local self-government:

- 1) ideological (political);
- 2) social;
- 3) economic.

The 2020s become a point of existential choice and a moment of transition from one mode of herding practice to another (Zuev et al., 2018).

Other negative consequences can be envisioned according to David Wright's theory that cattle-breeding accelerates destruction and climate change in unbalanced ecosystems, as occurred with the desertification of the Sahara 8000-4500 years ago. Wright argues that people are potential agents of largescale vegetation changes which can then lead to the crossing of ecologically significant thresholds.<sup>5</sup>

The study is grounded in an analysis of the pros and cons of various organizational and legal forms (OLFs) for herding as applied to status, the economic and legal consequences of their implementation. The results of the study are foundational for future managerial decisions.

Organizational and legal forms included in the study are private herding households (PHH), private supplemental households (PSH), local ISNP communities, individual entrepreneurs (IE), private farms (PF), production cooperatives (collective farms), societies with limited liability (SLL), municipal enterprises (ME). Table 3 outlines the criteria used in comparing the pros and cons of various OLFs.

**Table 3.** Institutional features of implementing various organizational and legal forms in Northern reindeer herding

Criteria	PHH	PF
Status of the herder in the household (organization)	Individual	Head of the PF, member of the PF, without formal work agreement, personal labor participation
Legislation regarding the herder in the OLF	Exists outside the legal framework	Commercial activity, agricultural producer
Alignment with the family and ancestral household economy	In alignment	In alignment

<sup>5</sup>The head of the hydrometeorological center of Russia told RIA NOVOSTI that in the region of Western Siberia, near the Ob Bay, the average temperature in May – June 2020 is nine degrees, this is a unique situation and a very rare event. In Salekhard, the deviation from the norm is about eight degrees, in the North of Western Siberia, the anomaly was +8 or more. The territory where the anomaly +6 was observed is larger, it includes the Ob Bay, the Yamalo-Nenets Autonomous district and the Tyumen region. [https://ria.ru/20200607/1572578389.html?utm\\_source=yxnews&utm\\_medium=desktop&utm\\_referrer=https%3A%2F%2Fyandex.ru%2Fnews](https://ria.ru/20200607/1572578389.html?utm_source=yxnews&utm_medium=desktop&utm_referrer=https%3A%2F%2Fyandex.ru%2Fnews). Date of access 08.06.2020.

Ownership of reindeer	Individual, informally distributed among the members of the family	Private, distributed among the members of the family based on an agreement
Employment	Unemployed	Employed, from age 16 a family member may join the PF
Taxes	Does not pay	5 years release from IIT, payment to pension and medical fund (36,000 rubles)
Transaction costs	None	None
State retirement plan	None	Yes
Medical insurance	None	Yes
Statistical records	None, existing systems of record-keeping are not applicable	Yes
Data credibility	Low	High, comes under personal responsibility
Manageability	Low	High
Land in use	Not provided	Possible, depending on deer numbers
Opportunity for pasture rotation	None	In the event of agricultural cooperative formation
Fish quotas	Not provided	Provided
State support measures	Not applicable	As to agricultural producers and small entrepreneurs, also others

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### Discussion

Pros and cons for the region and the household	<p><b>Pros:</b> none for the region, relative freedom for the household</p> <p><b>Cons:</b> hidden employment, lack of insurance, lack of right to support and resources, uncontrollable pasture rotation, impossibility of defending the interests of the household in court</p>	<p><b>Pros:</b> full employment, insurance, right to support and resources, legalized record, channels of management</p> <p><b>Cons:</b> need for accounting and tax payment, stronger oversight</p>
Mechanisms for resolving negative consequences	Legalization through a single OLF	Creation of competence centers which can perform all legally required actions without the personal involvement of the head of household

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As the analysis of the pros and cons of various OLFs has indicated, the form that ensures a legal status, most closely resembles the traditional herding way of life, provides full employment, eliminates all grey schemes, minimizes tax payments and transaction costs, ensures inclusion in all mechanisms of state support, and increases the incentive for herders to achieve good results and accede to oversight of both herd numbers and pasture use on the part of the government is the private farm.

The IE model formalizes the legal position of the household, creates channels of management, and ensures employment, but the need for tax and fee payments out of the wage fund of the members of the family and ancestral household increases transaction costs, motivates grey salaries, hidden employment, tax evasion.

Joint stock companies and SLLs are a mechanism that facilitates grazing of private deer not belonging to the nomad population. Concurrently, herders would observe a significant increase in transaction costs, a decline in economic efficiency, and increased oversight.

Municipal enterprises represent the most reliable means of management, but incur even greater transaction costs, and the optimization of taxes is impossible. Due to the passing of the Federal Law from 27 December 2019 No. 485-FZ "On amending Federal Law 'On state and municipal unitary enterprises,'" municipal enterprises must be liquidated.

The following are some further elements of the organizational model for institutional transformation in the herding industry in relation to the legalization of family and ancestral households:

1. Taking into account the specific features of traditional reindeer herding, namely its distance from administrative centers for the larger part of the year, lack of means of communication, poor communication and competences, family and traditional households who have been registered as entrepreneurs by the state will encounter difficulties remaining in the legal framework.

2. The need to cut reindeer numbers to environmental norms poses the challenge of regulating pasture rotation, which can be resolved through collective use of grazing grounds based on the principles of self-regulations, namely by uniting herding households of the PF or IE forms into agricultural consumer cooperatives (ACC).

3. Special measures of state support are imperative, both social and economic. Social measures must provide a source of income for the household as deer numbers are reduced to optimal levels: differential nomadic.

4. Meeting these objects will also require a changed approach to measures of state support and to regulating the entire herding industry, namely the exclusion of inefficient organizations from the list of entities receiving state support, as they create unequal conditions for herding families and communities since they lack their own herds.

5. A significant measure restricting the growth of deer numbers will be the introduction of limits on the collection and sale of young and older deer antlers, veterinary regulation, and limits on meat production in accordance with established ecological norms of any given herding district.

## 7. Conclusion

The research results make it possible to formulate the main points:

1) The disparity between the traditional way of life and the institutional matrix of state institutions has pushed family and ancestral homes not included in organized herding enterprises outside the legislative framework of Russia – a defect of the legal system and of the system of herding management which caused the “free herding” phenomenon.

2) The regional system management for a long time has used strategies and mechanisms for herding support that do not correspond either to the natural resource capacity of the district or to the features of technological and cultural ways of life. The economic and institutional inefficiency of the herding industry betrays the low quality of industry management, which hints at the need for the reform of management institutions.

3) Innovations in deer product market regulations and price formation may lead to ambiguous outcomes, and unevenly affect the incomes of private herders, incentives for improving meat quality, and in-/decreasing herd sizes. The economic instability of herding organizations will grow, which, suggests an unfavorable forecast for 2020-2021.

4) Conflict between the needs of family and ancestral households and the resource capacity of the traditional economy becomes ever more acute.

5) Stable development for traditional industries is only possible through a balanced relationship between humans and nature (herders and pastures), short- and long-term herding revenue (herd sizes), individual and collective forms of herding organizations (individual, private, social, cooperative).

6) It is necessary to improve the quality of life in national villages, and create opportunities for employment in industries which retain links to the ecosystem but which are typical for a postindustrial society. Accordingly, projects aimed at solving problems in the sphere of traditional economic activity and the traditional way of life must be comprehensive, and function on the social, ecological, and economic levels.

Based on research results some recommendations were formulated:

1. Conditions must be created to facilitate the adaptation of herding activity to the Russian legislation. More specifically, conditions must be created for accounting, reporting, tax payment, as well as other legally required actions connected to the legislation of Russia.

2. The need to cut reindeer numbers to environmental norms poses the challenge of regulating pasture rotation, which can be resolved through collective use of grazing grounds based on the principles of self-regulations, namely by uniting herding households of the PF or IE forms into agricultural consumer cooperatives (ACC). Herding households which join the ACC gain the right to pasture use in accordance with established routes of migration.

3. The need to cut reindeer numbers to environmental norms poses, additionally, the challenge of ensuring the financial and economic welfare of the part of the indigenous population dependent on the traditional economy in the event of reindeer population reduction. Social measures must provide a source of income for the household as deer numbers are reduced to optimal levels: differential nomadic. Economic measures must compensate for taxes and other required payments into the budget tied to the

legalization of the household, as well as promote the development of the household through grants and subsidies.

4. Meeting these objects will also require a changed approach to measures of state support and to regulating the entire herding industry. Private enterprises must also be eliminated, as they aid the industrial model of herding, which will not permit them to become agricultural producers due to their lack of land.

5. A significant measure restricting the growth of deer numbers will be the introduction of limits on the collection and sale of young and older deer antlers, veterinary regulation, and limits on meat production in accordance with established ecological norms of any given herding district.

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