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ECONOMY OF THE ARCTIC "ISLANDS": THE CASE OF NENETS AND CHUKOTKA AUTONOMOUS DISTRICTS

The article discusses the economic phenomenon of Arctic "islands". These territories of the Russian Arctic are inaccessible to transport all year round and significantly differ from other regions of Russian and North European Arctic. The economy of these Arctic "islands" is examined by using the example of Nenets and Chukotka Autonomous Districts. Despite a significant "similarity of appearance" in terms of their economic and social parameters, at a closer look, these two regions show considerable internal differences. To identify them, the authors used a theoretical view of the Arctic economy as a unity of three sectors, including traditional sector, corporate (market) sector, and transfer-based (state) sector in a comparative analysis. Each sector has its key contradictions, structure and its own trajectory of evolution. The corporate sector in the economy of Nenets Autonomous District is significantly younger than the one in Chukotka, since the oil and gas development began there comparatively recently. A relatively long-standing gold mining operations in Chukotka allows to refer this Arctic region to the old industrial areas. The profitability of gold production there is significantly lower than the one of the Nenets oil. Therefore, the authors propose to refer the economy of Nenets Autonomous District to the rent-based model, while the economy of Chukotka Autonomous District is referred to the transfer-based model. The differences in the transfer-based sectors of the two Districts are affected not only by the variance in the amounts of regional budgets, but also by the urban structure of population settlement, which is centralized in Nenets Autonomous District and polycentric in Chukotka. This means that the areas of health care, culture in Nenets Autonomous District are mostly bound to Naryan-Mar, its capital, while social infrastructure facilities in Chukotka are substantially decentralized and scattered across the regional and district centers.

Keywords: Arctic economy, sector of the economy, traditional economy, landscape, natural asset, space, sustainable development, District structure, rent-based model, transfer-based model of economy

Introduction

The Arctic economy can be viewed as an interesting case of the regional economy of extreme spaces, which is characterized by the geographical remoteness of economic activities with regard to the main markets, isolation, small size of local markets, persisting traditional way of life of Northern indigenous minorities. However, it is not enough to simply dwell on the phenomenon of extreme economic environment, which was the focus of researchers for decades. It is very important to examine its effects, the results produced by the impact of physical and geographic factors of the landscape (landscape structure) and economic geography of business and population settlement activities (territorial structure of the economy) on the formation of very specific Arctic economic institutions. Their most important characteristic is a very strong stochasticity, uncertainty, which in a small Arctic economy shows itself in an extremely radical way, for example, in the form of physical abandonment of entire villages and even towns recognized later as "dead," abruptness in the arrival and departure of developmental waves of colonization.

Within this Arctic economy with a very specific nature, it is possible to identify two sharply contrasting cases of "island" and "mainland" territories. This means not only the islands in their strict geographical sense as spaces that are on all sides surrounded by sea or ocean. It is also about the "islands" in the economic sense as the areas of the Arctic without regular ground transportation links with the mainland, the metropolis. For example, such economic "island" is certainly Alaska, which has ground links with the neighboring Canada but has no direct land connection with the "mainland" USA [1].

In the Arctic "islands," all extreme, utmost characteristics of the Arctic economy appear in a more powerful and concentrated way. This is where their own reinforced forms of economic uncertainty apply and, as a result, their own special institutions to deal with it emerge, an integrated "island"

economic culture as a set of specific institutions for overcoming (or constructively coexisting with) the uncertainties.

Among all Arctic "islands" of Russia, the best case for comparison is the example of European Nenets Autonomous District and Asian Chukotka Autonomous District. Nenets Autonomous District (NAD) is part of Arkhangelsk Region, Chukotka Autonomous District (ChAD), left Magadan Region in 1992, and of the four Autonomous Districts of Russia, it is the only one that is not part of other subject of the Russian Federation.

The two Arctic regions were established at about the same time: Nenets Autonomous District in 1929, and Chukotka Autonomous District in 1930. The economy of the regions was initially based on the traditional management of natural resources, such as fishing and reindeer husbandry practiced by the aboriginal population. However, the beginning of industrial mining on placer gold deposits in Chukotka Autonomous District in the 1960s, and the start of the oil and gas production in Nenets Autonomous District 30 years later in the 1990s (the two events happened under the different models of development, the Soviet planning and the industrial model, and the Russian social and market model) signaled the drastic changes in the socio-economic development of the regions.

The traditions of comparing people of Chukotka and Nenets tundra existed for a long time. For example, in his book "The Arctic Ethno-Ecology" [2], I. Krupnik compared the energy balance of the Chukchi and Nenets reindeer herders of the 1920s using data from rural household registers and Circumpolar census. The novelty of our approach is in a comprehensive comparison of the entire Arctic economy, and not just its traditional sector and the traditional management of natural resources, which have been examined by physical geographers and ethnologists.

Common Characteristics of Two Arctic Districts

The commonality that makes it appropriate to compare these two Arctic regions (Table 1) lies in the similar number of population (one of the least populated regions in Russia), about 30 % of which are Northern indigenous minorities (NIM); extremely low population density; underdeveloped road network; share of working pensioners which is almost twice the national average; high level of average per capita income which is ensured by northern coefficients and allowances but, however, does not give a significant advantage in terms of the purchasing power given the higher cost of living in the Arctic. Both districts have one of the lowest indicators of life expectancy at birth. They have a comparable level of urbanization (65–66 %). There is a comparable number of domesticated reindeer: Chukotka Autonomous District has 200,000 reindeer; Nenets Autonomous District has 176,000 reindeer (2013–2014), which can be viewed as indicating a similar size of the traditional economy.

Table 1

General characteristics of Nenets and Chukotka Autonomous Districts

Indicator (2013)	NAD	ChAD
Share of NIM in the total population, %	27.6	34.7
Road density, km of roads per 10,000 km^2 of the surface area	1.2	1.0
Share of working pensioners, as a percentage of their total number, average value for men and women, %	61.4 (34.1)*	62.5 (34.1)
Monthly per capita income, rubles	66,276 (1)	52,695 (4)
Subsistence minimum established in the regions of the Russian Federation for Q4 2013 (rank in the Russian Federation)	15,517 (1)	14,766 (2)
Purchasing power of average per capita income (number of subsistence minimums**), units (average for the Russian Federation)	4.3 (3.5)	3.6 (3.5)
Life expectancy at birth, years*** (rank in the Russian Federation)	65.76 (80)	62.11 (82)

* The values in the parentheses indicate the average values for Russia or rank of the area among the Russian regions.

** Relative to subsistence minimum established for Q4 2013.

*** Average in the Russian Federation, 70.76 years.

The broken rhythm of economic dynamics in both Arctic "islands" is well demonstrated by the high volatility of the annual fluctuations in the indices describing the physical volume of GRP. For example, over the last 15 years, the Arctic economic "islands" of Chukotka and Nenets Autonomous Districts experienced both the years of super high economic growth and years of disastrous recession.

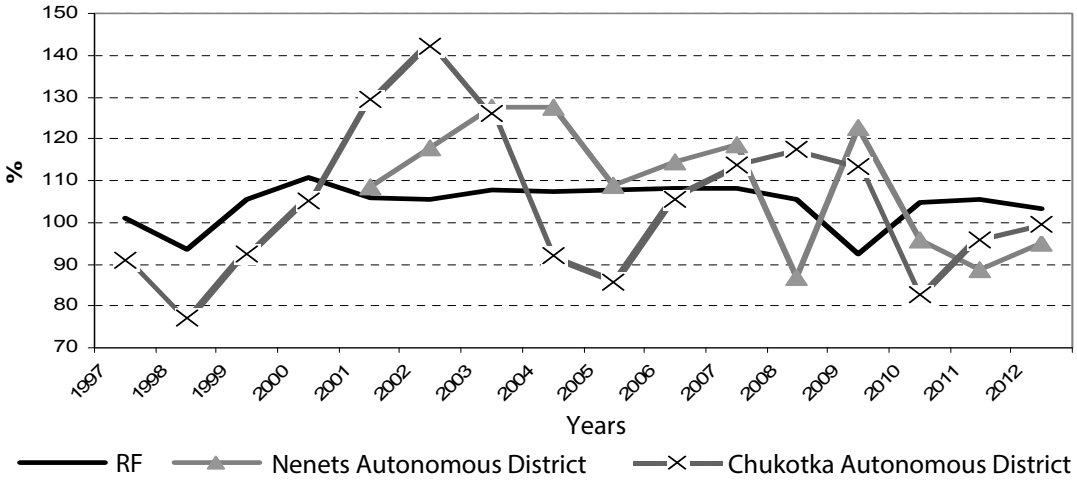

Fig. 1. *The unstable dynamics of the physical volume of GRP in the Arctic "islands"*

If we compare these figures, for example, with the dynamics of Russia's GDP, the latter is much more even, without such extreme fluctuations (Fig. 1, Table 2).

Of course, the main reason for Russia's relative stability is its significantly larger economy, which dwarfs the regional economies of the Arctic "islands." But this does not explain all of it. The resource- and nature-dependent Arctic economies and, in particular, the Arctic "islands," are fundamentally characterized by the figures that significantly throw off the average values.

Table 2

The dynamics of the physical volume of GRP in constant prices for 2001–2013 (as a percentage of the previous year)

Number of years when the growth rate, %	Nenets Autonomous District	Chukotka Autonomous District	RF
more than 10	6	6	0
more than 5	8	7	9
more than 3	8	7	11
less than 100	5	5	1

In our further comparison of Nenets and Chukotka Autonomous Districts, we use the idea of Lee Husky, an economist from Alaska, on the three-sector nature of the Arctic economy [3], which, in turn, is based on the earlier dual-sector model of economy described by Arthur Lewis: in developing countries, there is a modern sector (European industrial enclave islands, platforms) and traditional sector of indigenous population. The modern sector is associated with urban life, modern industry, and the use of advanced technology. The traditional sector is associated with rural life, agriculture, legacy institutions and technologies, such as the communal ownership of land. In 1979, Arthur Lewis won the Nobel Prize for his works in the field of economic development [4].

The three-sector model of the Arctic economy includes the traditional economy of historically existing activities aimed at self-sufficiency and domestic market, enclave economy [5], in which the market sector of extractive industries is associated with external markets, transfer-based (state) economy that is closely linked to budgetary transfers and subsidies from the state-organized redistribution mechanisms but not from the markets.

Each of these economies relies on its own specific forms of integration of business entities: in the traditional sector, this includes the principles of reciprocity (giving and giving in return); in the market sector, the market-based exchange; in the transfer-based sector, the principles of permanent redistribution. In the Arctic spaces, all three sectors of the economy can exist separately, but they often co-exist with each other, interact at the level of the individual households, ethnic village or region. The institutions of one sector are exposed to, are permeable to the institutions of other sectors and are often subjected to "cross-breeding."

At a closer look, the similar "island-like" economic and geographical position of the two Arctic Districts, the similarity of external quantitative parameters describing their economic development reveal profound qualitative differences between them across all sectors of the Arctic economy.

Translation

Traditional Sector: The Role of Landscape and Geopolitical Differences

On the one hand, the simplicity of the landscape structure of Nenets Autonomous District is determined by completely undistorted zone change of the tundra to forest-tundra and taiga from north to south and with smooth limiting borders formed in the west by the Russian Plate and, in the east, by the Ural Mountainous Country. The landscape micro-zones of Nenets Autonomous District change across five meridional profiles:

1. Pechora micro-zone:
— Tundra;
— Forest-tundra.
2. Timan micro-zone:
— Tundra;
— Forest-tundra;
— Extreme North taiga.
3. Kanin micro-zone:
— Tundra;
— Forest-tundra;
— Extreme North taiga.
4. Vaygach tundra micro-zone.
5. Pay-Khoy tundra micro-zone.

Under the impact of understandable zonal rhythm and "fuzzy" boundaries, there are several separate small landscape provinces within the Nenets "island" that are relatively homogeneous in terms of their genesis (geological history), topography, soil and climate ecosystems and have very unclear boundaries between each other. For centuries, these provinces have been the "nursing landscape" for Nenets large herd reindeer husbandry, which is highly specialized and poorly integrated with traditional trades (fishing, hunting, trapping).

On the other hand, in Chukotka Autonomous District, most of the territory is occupied by mountain ranges (Anadyr, Anyuy, etc.) and highlands (Anadyr, Chukotka, Koryak and Anyuy). The orographic factors greatly complicate the landscape structure of the District. Its geographical position as the "shore of two oceans" creates conditions for unstable and very dynamic interaction between various climatic trends. Nowhere in Russia is the "landsea" dichotomy in the traditional sector expressed as clearly as in the District: the length of the coastline and the surface area here are bigger than in any other Arctic territory of Russia.

In addition, the surface area of Chukotka Autonomous District is four times larger than the one of Nenets Autonomous District, which explains the exceptional landscape diversity of Chukotka spaces (plains, mountainous landscapes) compared to the Nenets tundra. In a very aggregate way, it is possible to identify four large and completely different landscape "blocks" within the District.

This includes the Arctic coastal tundra area of large herd reindeer husbandry (which has similarities with the Nenets reindeer husbandry) with a very weak link of reindeer husbandry and fur trade with the sea, traditionally strong nomadic Chukchi farms, their later collectivization and transition to sedentary life, the actual absence of stationary system of rural settlement. To some extent, only this area can be considered an analog of Nenets tundra.

Another block is the "internal" tundra and partly forest-tundra traditional trade and reindeer herding area of Anadyr river basin (small herd reindeer husbandry, trapping, hunting, fishing) with the centers of dairy farming and vegetable growing that have highly multivariate and multi-ethnic agriculture and traditional trade economy of indigenous people and migrant settlers.

The third block is the traditional trade and reindeer husbandry area of Eastern Chukotka, which combines hunting of large marine mammals and medium (small) herd (risky) reindeer husbandry that is absolutely not self-sufficient alone but can be economically viable only in close integration with traditional trades.

Finally, the last landscape block is an internal area Omolon—Bilibino, where the medium herd reindeer husbandry, that is historically conducted primarily for transportation purposes, is closely integrated with the traditional trades around the inland waters rich in fish and hunting for wild reindeer and sable.

Only in the first area, the traditional farming is specialized in large herd reindeer husbandry, while in the other three, it is integrated and includes reindeer husbandry and various traditional trades.

Translation

Such "blurred" boundaries between zones, weak compartmentalization of landscapes in Nenets tundra are in contrast with very strong (sharp) orographic differentiation of Chukotka space[1]. To this natural factor, the fundamental differences in the geopolitical position of the two Districts are added: the borderline location of Chukotka AD and "internal" location of Nenets AD.

The integral result produced by the variance in spatial attributes of these two Arctic "islands" was different evolution in space and time made by the traditional economy of Chukotka and Nenets tundra, as it was first manifested in particular aspects of the collectivization in the 1930s–1950s and, later, in the privatization process of the 1990s–12000s. With the support of the Soviet Committee of the North in the 1930s, Nenets Autonomous District became a sort of testing ground for all innovations in terms of national and territorial zoning [6]. At the same time, there was no geopolitical pressure to force a very swift "transition to settled way of life" on free reindeer herders. For that reason, the area preserved the "kulak" economy of private large herd reindeer husbandry for a long time, the pace of collectivization were extremely slow and approach to it was soft. This is evidenced by an amazing example of nomadic community Yamb-to, which was something absolutely unthinkable in Chukotka.

During collectivization, wealthy herders from Bolshezemelskaya tundra joined by the herders of medium means fled with their reindeer beyond the Ural Mountains. Nenets did not allow to "collectivize" themselves and continued their traditional private reindeer husbandry until the early 1990s, when the Nenets nomadic community Yamb-to was discovered and its activities were "legalized." The fact that they managed to remain "invisible" for decades can also be explained by the absence of controlling regional centers in Nenets Autonomous District.

On the other hand, in Chukotka Autonomous District, the closeness of the Eskimo and Chukchi coastal villages to the settlements of Alaskan Eskimos at the time of military confrontation between the USSR and the United States prompted the Soviet government to enforce very swiftly and harshly the transition of Chukchi nomads to the settled way of life which, in fact, destroyed the traditional economy of Chukchi reindeer husbandry in the process of collectivization and established large collective state farms in the area of agriculture and traditional trades, as well as strong controlling administrative centers in the rapidly created eight districts of Chukotka. Nowhere else in the Russian Arctic, the process of creating the Soviet state farms in the traditional economy was as profound as in Chukotka.

No wonder that at such turning point as the privatization of the 1990s the world's largest population of domesticated reindeer owned by Chukotka state farms very quickly dropped by four to five times. After the fracture caused by collectivization and the subsequent industrial expansion of reindeer husbandry in Chukotka in an attempt to make it a ubiquitous commodity industry without taking into account the natural landscape limits in terms of food resources and climatic conditions, the collapse was inevitable, but it caused nevertheless a surprisingly severe and fast drop in the livestock. As it had been before the collectivization, the Chukotka reindeer husbandry justifiably concentrated in "commodity" zone of the Arctic tundra again.

Other areas experienced the collapse of historical and economically very important links between the coastal and tundra population. In Chukotka, both in Soviet and pre-Soviet times, the reindeer husbandry, and sea fishery were strongly linked to each other as equal partnership activities, and this link played an exceptional role in maintaining the stability of traditional economy for the nomads and settled population. It was interrupted only for a decade by harsh collectivization, but later was re-established again in the structural shell of collective and state farms. Today, however, the products of sea fishery are almost not imported into the tundra, or such imports come with long interruptions. Probably, this link will be gradually restored both within the tribal communities, and as a result of a traditional exchange between the nomads and settled population.

The key task of the traditional sector in the Arctic "islands" of Nenets and Chukotka Districts is to ensure the security (especially food security) of the local peripheral indigenous communities in ethnic villages and nomad camps amid severe external economic uncertainty, which is always inherent to the modern Arctic. The sustainable development of traditional economy (and justified modernization of technical means that it uses) requires a source of cash income, which it does not always have. This explains why the integration of traditional, basically often non-cash sector and cash-based corporate

[1] The boundaries between landscape zones are always blurred and visible only on large spaces in contrast to very distinctive orographic boundaries.

and transfer-based sectors is a necessary factor. On the one hand, cash income is used to purchase the equipment required for traditional trades and reindeer husbandry. On the other hand, traditional livelihood may play a compensatory role in the periods of insufficient cash income and difficulties with the imports of food products.

On the one hand, the development of corporate sector in Nenets AD following the recent onset of pioneering oil and gas exploration, small size of the Nenets tundra compared to Chukotka spaces, and commodity nature of Nenets large herd reindeer husbandry determine the greater ease of integrating its traditional sector into the corporate and transfer-based sectors at the District level (through the transfer redistribution from "strong" sectors to the "weak" sectors) compared to Chukotka. On the other hand, Chukotka AD has few areas for commodity reindeer husbandry, there are isolated mining corporate entities and, therefore, it is more expedient to ensure there that the traditional and monetary economies are integrated at the level of ethnic villages and individual households rather than at the level of the District. This should come as the combination, within one family, of cash-based and traditional employment by individual family members, time (seasons) of work, calendar schedule or integration in the form of opportunity to establish the sales (exchange) of products from traditional trades and reindeer husbandry against the equipment and snowmobiles for reindeer herders and traditional tradesmen within the Arctic micro-economy of individual ethnic village.

Corporate (Resource-Based, Market) Sector: Role of Distinctions in the Rent Power of the Key Natural Asset

It is the resource-based sector that ensures the link between remote Arctic areas with the global economy and global resource markets. A favorable global economic environment brings to life previously "dormant" natural assets of the Arctic. On the contrary, the collapse of global prices for essential resources postpones the prospects of mega-projects in the Arctic for an indefinite time.

It is the resource sector, with its potential for generating the main income of the Arctic economy that determines the fundamental division of all Arctic territories into rent-based and transfer-based economies. These two models significantly differ by the "tonus" of their development, social and economic behavior of regional authorities and population, living standards and migration intensity. The model of the rent-based economy includes the calculations of possible guarantees for ensuring the highest level of human security and protection, and substantial risks of instability.

In the rent-based economy, the main income is generated by extraction of highly profitable resource; then this generated income either ensures extensive intra-regional redistribution of all main financial resources or, to a substantial extent, is alienated by resource companies and federal authorities, which afterwards return the withdrawn part of the rent in the form of investments or cash grants. In the rent-based model, the maximum development is in the corporate sector.

In the transfer-based economy, given the low profitability or substantial depletion of deposit fields, the income from extracted natural resources is insufficient, and the main income is generated through the transfers received from higher-level budgets. Such economy is dominated by traditional and public sectors, while the market is significantly less developed under the impact of traditional Arctic barriers in the form of small markets, high transportation costs, lack of investments and entrepreneurial energy of people, etc.

The main danger of the rent-based model is the ease of slipping into the simple consumption of miraculously acquired wealth, the temptation of building the development exclusively on the exports of the unique resource while ignoring other sectors of the economy that require time and investment ("Dutch disease"). [7]

Such situation can be controlled with relatively strong institutions regulating the processes of extraction, transportation, sale and distribution of economic rent.

The fair distribution of economic rent (super profits from the resource) requires to balance the interests of all parties involved in the Arctic economy, including resource companies and corporations, various associations of indigenous people, budgets of regional and central authorities, environmental agencies.

This allows to realize, with a fairly good quality, the basic functions of rent payments, such as the collection of income to the regional and federal budgets; impact on the period and pace of mining the deposit field (which makes it more sustainable), compensation of public costs (services) incurred in the exploration of deposit field and extraction of resources, compensation for the loss of non-renewable

resources (public assets) for the next generations, various payments to the budget of the region for environmental damage.

There are two schemes (direct and indirect) for collecting the rent in the interests of Arctic regions, where it was originally generated in the extraction of unique resources. The most attractive for the Arctic regions is the direct scheme for collecting economic rent. It can be implemented after restricting the regional ownership rights, that is, the control over natural resources, which can be observed, for example, in the state of Alaska.

Both modes of ownership, including purely federal ownership and joint ownership by the center and the regions, cannot ensure sufficiently strong rights to natural resources on the part of the Arctic regions, and this is the case when it is possible to implement an indirect redistribution scheme, which is typical of the Russian and Canadian models. In this scheme, the main rent income is initially received by corporations and the central government, and then a part of it is returned to the territory of extraction. As demonstrated by the experience of foreign Arctic and northern regions, in the interests of stable development after the exhaustion of deposit field a part of the resource rent coming to the region can be accumulated, for example, in a special fund of future generations, as it was implemented in Alaska [8].

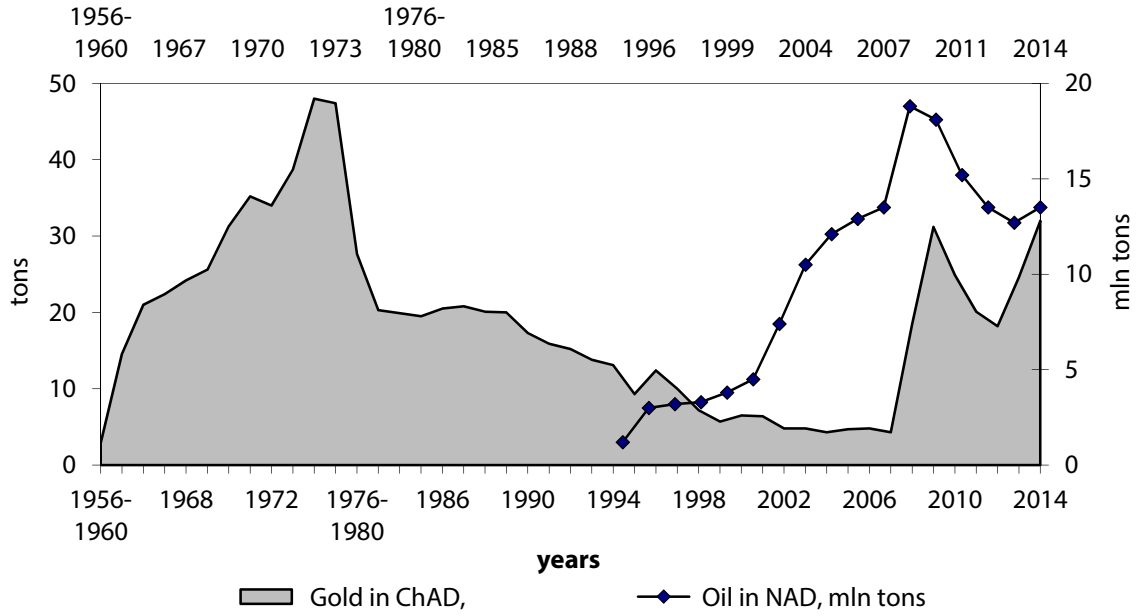

Fig. 2. *The comparison of production volumes by the corporate sector of economy in ChAD and NAD (based on the data from the State Archive of Magadan Region, The Strategy for Developing the Arctic Zone of the Russian Federation and Ensuring the National Security, and other sources (State Archive of the Magadan Region, archival fund 264, series 1, file 27, sheet 45; Gold Mining. Retrieved from: http://zolotodb.ru/; www.adm-nao.ru (access date: 4/5/2016); Arctic Outpost. Retrieved from: http://mediator-rus.com/images/portfolio/reklama/NAO_Neftegaz_04.pdf (access date: 4/22/2016); The Strategy for Developing the Arctic Zone of the Russian Federation and Ensuring the National Security in the Period until 2020 / The Ministry of Economic Development of Murmansk Region. Retrieved from: https://minec.gov-murman.ru/ activities/strat_ plan/arkticzone/ (date of access: 5/10/2016); Neftegas.RU / NAO enters the world. Retrieved from: http://neftegaz.ru/news/ view/7775 (date of access: 4/20/2016). (in Russian)), as well as [10–12])*

In the last two decades, the economy of Nenets Autonomous District has been developing under the rent-based model, while in Chukotka Autonomous District under the transfer-based model. The key role in the development of these two Arctic "islands" under absolutely different models was played by the particular properties of their natural assets and stages of their exploitation. At their extraction, the hydrocarbons assets of Nenets AD create 1.5–2 times more value added compared to the gold extracted in Chukotka[2].

It is also important to take into account the life cycle stage of the main resource deposit fields. The pioneer stage is usually characterized by the maximum profitability, rapid growth of production volumes and, accordingly, lower unit costs. However, the stage of natural asset depletion is accompanied

[2] Gross value added created during the extraction of oil and gas: 0.69 rubles / 1ruble of products (compare to gold: 0.48 rubles / 1 ruble).

by increasing problems associated with high production costs in the Arctic, the high cost of living and construction in stationary settlements.

If we compare Nenets and Chukotka Autonomous Districts, it would be easy to identify the fundamental differences both in the properties of a key natural asset of the corporate sector, and in the stages of its extraction (Fig. 2).

The first socio-economic survey of the area (present-day territory of Nenets Autonomous District) was prepared as early as in the 19th century. It was the most comprehensive study of that time and was published in the paper titled "The Scientific Observations During a Trip to Pechora Region" following the geological and geographical research expedition led by A. A. Keyserling and P. I. Krusenstern. Along with a detailed hydrographic description, the survey included the information collected on forest and fishery resources, commerce of the local population, some sources of mineral raw materials, etc. [9].

However, almost the entire 20th century, Nenets Autonomous District was associated primarily with the activities in the area of agriculture and traditional trades and persisted as such. The active phase of large-scale oil and gas development begun only in the last 25 years. In terms of its economic age, the basic sector of Nenets Autonomous District is still quite young, which can be seen in the growing dynamics of oil production, the presence of large companies and high profitability of major resource development sites.

As for Chukotka, its accession to Russia in the 16th century contributed to the development of reindeer husbandry in its territory. Expansion of American industrialists and traders in this region began in the middle of 19th century and was increasing in the subsequent period. In the early 20th century, the Eskimos and Chukchi were at the stage of clan-based society but, under the impact of trade with Russians and Americans, this society was going through the process of property and social differentiation [13].

The active pioneering economic development of ChAD in the 20th century was started primarily by the efforts of the Chief Directorate of the Northern Sea Route (known as "GUSMP") in the 1930s, and it acquired a large scale with the discovery of gold in the 1960s. After half a century of operation, the gold mining industry in Chukotka passed the stage of rapid growth and is currently at the stage of maturity. After peak volumes of production and a sharp downturn, it entered into the second period of growth and stabilization of volumes with the transition to ore deposits, and the desire of the region to diversify its resource base [14, 15], which is typical of old industrial areas.

The birth of the gold mining industry in Chukotka Autonomous District could be traced to the discovery of rich placer gold deposits in the early 1960s, for the development of which large processing plants were build. The peak of production (more than 36 tons) was achieved in 1974 following the development of Ryveem river placer, which was unique in terms of its deposits. In the later period, the volume of production began to decline and stayed at the level of 1519 tons until the early 1990s. With the depletion of placer deposits, only small prospectors' teams were working on some minor sites and, in the early 2000s, the production fell to the levels below 5 tons. This was the sign that the industry made a transition to the period of maturity, which, in the gold mining regions, is usually accompanied with the shift of focus from placer to the ore mining, and it also happened in ChAD.

The 2000s marked the beginning of the development of gold and silver deposit Kupol by Kinross Gold, a Canadian company (the deposits accounts for about 20 % of the gold production in Russia), and then came the turn of such deposits as Mayskoye and Valunistoye [16]. The production volume exceeded 20 tons for the first time over the past 20 years, since 2008. There are plans to resume the production of tin in Pyrkakay stockwork deposits in Chaun district, the largest in Russia, and set up at the same site the accompanying extraction of tungsten, the demand for which is supported by the rising consumption in China. There are also plans to develop the second economic support zone of Chukotka in Baim ore field (Peschanka copper deposit) in Bilibino district (the license is granted to Baimskaya Mining Company LLC).

In Nenets AD, the first commercial oil production began in 1984 as a trial operation in Kharyaga oil field, the largest in the District. 1985 marked the launch of the trial operation in Peschanoozerskoye oil and gas condensate field at the Kolguev Island; and, in 1994, the first oil was extracted in Ardalinskoye oil field. The future prospects for the industry are associated with the further development of hydrocarbon fields, in particular, with the development of Northern Territories group of deposits, to build a major export-oriented oil and gas base in the north of the Timan-Pechora oil and gas province and the Arctic

sea shelf[3]. Even without the shelf, the recoverable oil reserves are 1.1 billion tons, and the free gas reserves are more than 520 billion cubic meters[4].

In NAD, the oil and gas production is still in its "young" age stage: the volumes continue to increase, highly profitable fields are being developed by major Russian companies, such as Lukoil and Rosneft; Polyarnoye Siyaniye, a Russian-American company; Total Exploration & Production Russia, a French company; Rusvietpetro Joint Venture Company; Alliance Oil Company; and others[5] [17].

The key differences between the rent-based (in Nenets AD) and transfer-based (in Chukotka AD) models of the Arctic economy resulting from the differences in the type of the main natural asset and the stage of its operation are clearly seen when comparing the statistics of two Districts (Table 3). Nenets AD exceeds Chukotka AD by four times in terms of the Gross Regional Product, by five times in terms of the production value, and by six times in terms of the investment value.

Table 3

The comparison of indicators in the two models of Arctic economy

Data for 2013	Nenets Autonomous District	Chukotka Autonomous District
	Rent-based economy	Transfer-based economy
Total GRP, billion rubles	171.8	47.0
Per capita GRP, million rubles	4.0	0.9
Total investments, billion rubles	60.1	10.4
Natural resource extraction, billion rubles	176.7	34.1
Share of extractive industries in the volume of locally produced and shipped goods, works performed and services provided by local labor, %	98.0	75.5
Share of extractive industries in the GRP, %	71.0	35.2

The table is based on data from such statistical compilations as the Regions of Russia, National Accounts in Russia in 2006–2013, and the regional supplements to such statistical compilations as the Russian Industry, Small Businesses in Russia, Labor and Employment in Russia, Transport and Communications in Russia, and other.

Transfer-Based (Public) Sector: Authorities and Social Sphere

The transfer-based sector of the Arctic sector includes the budget-funded sphere and social sphere, as well as the sphere of services. In the extreme conditions of the Arctic, the social sphere (education, health care, culture) has a fundamentally different function than in the well-settled regions of Russia. It builds a protective living environment, mitigates (neutralizes) the effects of harsh natural factors. This was true for the plan-based model of the North development, and it remains so in the new market conditions.

Each of the three blocks of the social sphere in Nenets and Chukotka Autonomous Districts has its own distinct specifics clearly seen in the period of radical economic transformation. The health care should be recognized as the most "elite" sector in terms of qualifications of its "core" formed by the doctors of main medical specialties, level of payment of their colleagues in the budget-funded sector, and in terms of the capital intensity of the central district hospitals. The health care in Nenets AD is substantially less developed than in Chukotka AD, which can be explained, first of all, by personnel problems. It is much easier to ensure an acceptable level of equipment in the hospitals and outpatient clinics only in Naryan-Mar than in all district centers of Chukotka. As for the training of medical personnel, it was traditionally located in Arkhangelsk, which historically served the District. But given its remoteness from Magadan, Chukotka has developed over the decades its own medical service.

[3] Arctic outpost. Retrieved from: http://mediator-rus.com/images/portfolio/reklama/NAO_Neftegaz_04.pdf (date of access: 22/4/2016).

[4] Nenets Autonomous District. (2014). Expert, 34 (August 18–24). Retrieved from: http://mediator-rus.com/images/portfolio/NAO-August-2014.pdf (date of access: 12/3/2016).

[5] Nenets Autonomous District. Retrieved from: www.adm-nao.ru (date of access: 11/5/2016); The Strategy of Socio-Economic Development of the Nenets Autonomous District until 2030. (2008–2009). North-West Center for Strategic Research Foundation. Naryan-Mar. 105 p. (in Russian).

In the sphere of education, Nenets AD has the best positions in the North and in the Arctic, and is ahead of Chukotka in terms of formal indicators. In the sphere of culture, its positions are average, but they are the best in terms of the development and use of libraries.

The less populated is the settlement, the more universal is the use of social infrastructure facilities ranging from "regular" functional sites to the clubs (meetings of interest groups) and reserve shelters (in the case of frequent force majeure events). The Arctic villages are the most likely to experience the interchange in the use of various budget-funded institutions (for example, a school may be relocated to the hospital after a fire), and the movement of employees to various positions within the budget-funded sector.

Conclusion

Traditionally in the USSR the Arctic and the North were viewed together (with the Arctic being "absorbed" by the North). However, a more detailed look at the phenomenon of the Arctic economy and its essential characteristics proves its important specific features that distinguish it from the northern economy.

The main and fundamental characteristic of the Arctic and its economy is the fact that they have a much less stationary, uncertain nature, and significant risks that permeate all three sectors of the economy (traditional, corporate, and transfer-based). For traditional sector, the uncertainty can be verified in the "ups and downs" of annual dynamics of reindeer populations, volumes of fish and marine mammals caught or hunted in the course of traditional trades. For corporate sector, it can be seen in the eventuality of sudden scaling down of works that may happen at any stage under the impact of unfavorable global economic environment and a general depletion of natural resources. For transfer-based sector, the uncertainty means frequent mass closure affecting dozens of single-industry villages and settlements built over the decades.

Within the Arctic economy, there is a very clear distinction between the territories of "mainland" and "island" Arctic. Over the many past decades, the "island" model of Arctic economy has been implemented by Nenets and Chukotka Autonomous Districts. Despite their many similarities, in fact, these are two different models of the "island" Arctic economy.

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