

# *Financial resources of the Arctic Territories new industrialisation*

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**Abstract** — In recent years, interest in the development of the Arctic territories in scientific literature has significantly increased, due to the new industrialization of the polar areas, based on large-scale projects for the extraction of hydrocarbons. At the same time, the issues of sources of financing such investments, their interrelations with the formation of the added value of the Arctic territories, are not given enough attention. In this paper, on the basis of the methodology for building the international System of National Accounts, a methodological approach is presented for determining the financial sources of the industrialization of the Arctic territories of Russia according to the institutional sectors of the Corporation, Public Administration and Households. The grouping of sectors according to incomes and expenditures shows which sources can industrialize the Arctic territories, and which sectors contribute to capital outflow / inflow, as well as how secondary education and income distribution takes place. All the data obtained on indicators of the movement of financial resources in the sectors of the Arctic territories are used to build a common matrix of formation and use of value added. The authors have formed the balance sheets of the movement of financial resources of the Arctic territories for 2011-2014, identified key parameters of the possibilities of industrialization, in the context of the regions of the Russian Arctic. Based on the author's calculations for the formation of the net lending / borrowing balances of institutional sectors of the economy, four types of financing for the industrial development of the Arctic municipalities were conventionally singled out: self-sufficient territories of the Arctic, characterized by a strong industrial base; financially redundant municipalities, with an abnormally high outflow of financial resources; financially attractive territories; budget-oriented areas, where the source of industrialization are government resources.

**Keywords**—*system of national accounts; Arctic territories; institutional sectors; municipalities*

## I. INTRODUCTION

Currently, in search of new hydrocarbon deposits, Russia is actively developing the Arctic space relying on the integrated development of new territories. Given the difficult natural and climatic conditions, the weak population of the territory and limited transport accessibility, the development

of the Arctic region is impossible without the formation of the new industrialization program, consisting in state support for the construction of infrastructure, the provision of incentives to businesses, the development of new cities and towns. At the same time, the Arctic region in its entirety generates a fairly large amount of the value in the developed territories and the issues of its use efficiency are studied rather poorly. Since the financial development of the Arctic territories of the Russian Federation has been one of the conditions for the effective industrial development of this region, it is necessary to take into account the specifics of the Arctic territories and their differentiation, to determine in more detail the possibilities and prospects for financial support for the implementation of programs and projects for industrial, social and infrastructure development of the territories. In this regard, the decisions currently being taken on the industrial development of the Arctic regions to a small extent rely on the final “effect” of their implementation, due to the lack of methodological approaches to assessing the impact of allocated funds on the formation of value added territories.

## II. LITERATURE REVIEW

In the world literature the problems of the development of the Arctic territories are considered through the prism of the economic and social development of this region, the largest number of publications is devoted to the economic feasibility of the Northern Sea Route in comparison with other routes of cargo transportation [1-4]. Also, another research topic in this paper is the assessment of the standard of living of the population living in the Arctic (polar) territories [5] and the impact of the economic activity of the industrial sector on the standard of living of local communities [6,7]. Research on sustainable development (as a ratio of social, economic and ecological equilibrium) of the Arctic territories [7-10] is quite popular, which give the fragility of the nature of the polar latitudes.

Part of the papers are devoted to discussing the management of the global Arctic space, where the main focus is on the industrialization of the polar areas in terms of hydrocarbon production [11-15].

At the same time, affecting certain areas of development of the Arctic territories, researchers practically do not consider the movement of financial flows, limited to the study of the formation of value added regions, which are fully or partially included in the circumpolar zone [16-18]. The main reason for the lack of such papers is the underdevelopment of statistical data in Russia and the world, related both to the regional and municipal level in general, and to the Arctic region in particular.

The formation of financial balances of territories is possible on the basis of the methodology for constructing the international System of National Accounts (SNA), which is a generally accepted standard for displaying the flows of formation, distribution and use of value added, which form the financial basis for the industrialization of territories. At the same time, at the territorial level there is a significant amount of information and methodological limitations in the construction of "classical" SNA accounts [19, 20].

### III. RESEARCH METHODOLOGY

As the object of our study we used the regions and municipalities of the Russian Federation, mainly located in the Arctic Circle. Thus, the objects of the research financial development of Arctic territories identified 219 municipalities, including: Murmansk region - 34, Arkhangelsk (including Nenets Autonomous District) - 21, Republic of Komi - 2, Yamalo-Nenets Autonomous District - 26, Krasnoyarsk region - 10, Republic Yakutia - 104, Chukotka Autonomous District - 22 [20].

The methodological basis for the construction of accounts of the Arctic territories is the sectorial principle of the construction of the balance sheets of the System of National Accounts [19]. In this case, grouping the sectors by income and expenditure, the authors show, which sources have the Arctic territory, and which sectors contribute to the outflow / influx of capital, as well as the secondary education and income distribution.

Using the sectional principle of the formation and use of income, the most difficult task for building an account of the "Corporation" of municipalities of the Arctic territories is the allocation of added value from economic activities in the sector. In general, commercial organizations of all forms of ownership, including financial ones, are included in the "Corporation" sector. Due to the limited data, we decided to slightly modify the methodology for calculating the indicators of the use of value added by corporations, which, incidentally, does not violate the basic principles of SNA construction. To ensure the comparability of balance sheets, the use of value added (GVA) in the "Corporation" sector is considered through the following indicators:

- A. *Remuneration of employees. Calculated according to the SNA methodology, as the wage fund of all employees of large and medium-sized organizations. The source of data here was the data of municipalities on the accrued salary in the territory in the context of economic activities, which adjusted for the remuneration of the public administration's labor.*
- B. *Taxes in all levels of the budget system. Unlike net production taxes, which do not take into account all payments by enterprises to the budget, the authors use the gross tax collection indicator from the territory to show capital outflows / inflows through the budget system. Data sources - The Federal Tax and Revenue Service, which publishes publicly available taxes and fees by territory and in the context of specific types of taxes.*
- C. *Gross fixed capital formation. This indicator conditionally shows the use of gross mixed incomes of enterprises. This is either the inflow of capital (the use of depreciation and profits, plus external sources of financing), or its outflow (withdrawal of the part of depreciation deductions and profits). There are practically no problems with data sources in the municipal statistics, this indicator is displayed quite correctly.*

For the "Public administration" sector, within the framework of the formed system of balance ratios of the financial flows of municipalities, the resources are payments (tax and non-tax) coming from other institutional sectors of the territory. The use of funds is carried out through various payments related to budget activities.

Thus, the institutional sector "Public Administration" forms a number of interrelated accounts, reflecting both the structure of tax revenues from the territories according to the SNA classification and the expenses incurred by all structural divisions of the sector in terms of value added generation. In fact, the difference between the receipts of all payments from other sectors and the expenses incurred from all sources constitute the net lending / borrowing ratio of the institutional sector "Public Administration".

In the resource part of this sector, we display the indicator calculated by us for the "Corporation" sector, that is, taxes to all levels of the budget system, as well as taxes on income received from households. Spending money budget, according to the classification of the SNA, is in three points:

- 1) *Compensation of state employees. Here data of the municipal reports units entering the statistical area act as data sources.*
- 2) *Investments. As with enterprises, in municipal statistics the indicator "Investments in fixed assets from the budgets of all levels" is highlighted, which we use when building this account.*
- 3) *Other expenses. Under them refers to all other expenses that are not aimed at the remuneration of employees and the accumulation of fixed capital. It is calculated by subtracting previous amounts from the total budget of the statistical area.*

The Household Sector, as envisioned by the SNA developers, is a “consuming” sector-produced goods and services sector. From this point of view, the main items of household expenditures are final consumption of households (that is, independently acquired), public consumption (that is, which themselves do not pay, but use), and savings (as accumulation and repayment of debts) and various transfers.

The resource part of this sector is dependent on other sectors - incomes of employees of enterprises and state employees are accumulated in incomes. In addition, if we rely on the classical construction of SNA accounts, we need to allocate transfers to the population, and one of these elements are benefits and payments from the government (various subsidies for housing and public utilities, material assistance, payments, etc.). The use of resources of the population can be carried out in several directions: these are final consumption, investments, gross savings and transfers. We use the last indicator as net lending / borrowing, while investments and savings are currently almost not calculated at the municipal level.

Therefore, the main indicator balancing the resource part of the sector is final consumption, as the sum of all expenditures made by the population for personal use.

Of course, the presented methodological approach to determining the financial flows of the Arctic and Subarctic territories, due to the distortion and lack of statistical information, is rather conventional. At the same time, taking into account all the major financial flows of statistical areas, it gives an idea of the origin and expenditure of value added territories, which is the source of industrial development.

As a result, all the data obtained on indicators of the movement of financial resources in the sectors of the Arctic territories are used to build a common matrix for the formation and use of the added value of the Arctic territories. The presented approach makes it possible to coordinate the movement of regional resources by sectors of the “Corporation”, “Government” and “Households” among themselves, and the cash flows of the territory - by sectors and directions of use. As a result, they form a single account of the formation and distribution of financial resources of municipalities, in essence, representing a territorial balance model of financial flows in the Arctic territories.

#### IV. RESULTS

Formation of balance sheets of the movement of financial resources of the Arctic territories for 2011-2014 and analyzing them in order to determine key development parameters allowed us to determine the sources of industrialization of the Arctic regions.

Murmansk region. Gross regional product of the region (in comparable prices) for the period 2011-2014 was at a constant level, the average annual growth was less than 1%. The main source of industrialization of the Murmansk region is the public sector - with a gross value added of the corporate sector of 245 billion rubles, the expenditures of budgets of all levels amounted to more than 200 billion rubles. If we consider the state defense order (displayed in the GVA of the “Corporation” sector), then, according to our estimates, the government authorities provide at least two-thirds of the added value of the Murmansk region, being a key source of industrial development of the territory.

Arkhangelsk region. Since we included in the Arctic territories of the Arkhangelsk region only the municipality “Novaya Zemlya”, where there is practically no economic activity, the formation of resources is concentrated only in the public sector, while almost all of them go to the “mainland” due to the lack of household infrastructure.

Nenets Autonomous Okrug. The analysis of the structure of the financial balance sheets of the NAO suggests that the key parameters of industrialization of the district are all the institutional sectors, which is unique to the studied Arctic territories. So, undoubtedly, the main source in the formation of investments of the NAO is the corporate sector (or rather, mining, which accounts for almost of the GRP), but a significant part of the population of the district is employed in the public sector, providing about a third of the wage bill. Taking into account the fact that households “take out” more than half of the income received from the territory of the district, it is possible to speak of an equal influence of all sectors of the economy on the industrialization of the NAO.

Komi Republic. As the analysis showed, the key parameter of the formation of the financial balances of the Arctic territories of the Komi Republic is the investment activity of the “Corporation” sector. The fact is that the construction of the Bovanenkovo - Ukhta gas pipeline took place during the study period, which was reflected in the anomalous level of industrialization in the Arctic territories of Komi (and the inflow of corporate resources), as well as the outflow of funds in households. Accordingly, the completion of construction of an investment object sharply rebalances financial accounts, negatively affecting the pace of industrialization of the territory.

Yamalo-Nenets Autonomous District. A detailed analysis of the financial flows of the Yamal-Nenets Autonomous District allowed identifying two key parameters of its development: these are the investment activity of the enterprises of the Yamal-Nenets Autonomous District and the tax system of public administration. Due to the huge investment in the Yamal Peninsula, the region is the leader in industrial development in the Arctic. On the other hand, due to the mineral extraction tax paid, the government sector seized over 80% of tax revenues from the Arctic territories of Yamal, which reduces the possibilities for further industrialization of the district.

Krasnoyarsk region. The different conditions for the financial development of the territories in the two large municipalities of the region, Norilsk and Turukhansk, do not allow us to single out the key parameters of industrialization that are common to all. Norilsk industrial hub, despite a significant outflow of resources, is characterized by a rather high coefficient of use of value added in the territory of the municipality, respectively the main parameter of the stability of financial development is the sector of the Corporation. In the Turukhansky district, with a dominant position in the industrialization of the Vankor oil field, the municipal district is actually “turned off” from the distribution of financial flows: less than 5% of tax collections are spent on the territory of the region (which approximately corresponds to its own tax base), and the population exports more than 70% of income (that is almost all wages in the corporate sector). Thus, in our opinion, it is households that play a decisive role as a key

parameter industrial development of the Turukhansk region, due to the poor use of resources in the interests of the local population.

The Republic of Sakha (Yakutia). According to statistics, in the Arctic territories under consideration, the industrial sector does not play a strategic role, except for the city of Udachny (diamond mining). A significant part of the income of the population of the territories is formed from budgetary sources (sector wages, transfers and pensions), therefore the conditions for the industrial development of the Arctic belt of Yakutia are now completely determined by the public sector.

Chukotka Autonomous Region. Due to the geographical position of the subject of the federation, the district embodied all the negative trends in the industrial development of the Arctic. Firstly, about half of the GVA is removed from the small value added generated by the corporate sector. Secondly, Chukotka is a region that is chronically dependent on subsidies, where more than half of the costs are not covered by its own tax base. The population of the region also derives financial resources from the territory, which in terms of volume practically coincide with the wages paid by corporations.

#### V. CONCLUSIONS

Based on the author's calculations on the formation of the balance of net lending / borrowing of institutional sectors of the economy, it is conditionally possible to distinguish the following types of financing the industrialization of the Arctic municipalities.

1. Self-sufficient areas of the Arctic, characterized by a strong industrial base (mainly due to mining) and a relatively high level of use of resources within the territories (through the budget system and the final consumption of households). These municipalities include: the city of Usinsk, the Komi Republic, the Nadym and Novy Urengoy municipalities of the YNAO, the city of Vorkuta, the Komi Republic, the Taimyr and Norilsk districts of the Krasnoyarsk Territory.

2. Financially redundant municipalities, the main distinguishing feature of which is an abnormally high outflow of financial resources in all institutional sectors, meaning the use of the limited labor resources of the territory, usually in the form of a "rotational shift" method. These include: the Nenets Autonomous District (completely), the Tazovsky District of the Yamalo-Nenets Autonomous District, the Turukhansky District of the Krasnoyarsk Territory, the town of Udachny of Yakutia, the Chaunsky and Bilibinsky municipalities of the Chukotka Autonomous Region.

3. Financially attractive territories, the basis of the balance sheets of which are attracted investments in the "Public administration" sector, determining the structure of the formation of the value added of municipalities. This type of Arctic territories includes: Priuralsky district and the town of Salekhard of the Yamalo-Nenets Autonomous Okrug, Evenkiysky district of the Krasnoyarsk Territory, and with some reservations the Vorkuta and Usinsk of the Komi Republic can be called investment attractive.

4. Budget-oriented territories. We attributed those municipal formations to them, in which public administration resources serve as a source of income for the population, while the balance of revenues and expenditures of the consolidated budget of the district is positive. In this group, the Murmansk

region is particularly worth noting - despite the good financial development indicators of the region in the corporate sector, the main source of value added, judging by the built accounts, is the public sector in all its diversity. In other municipalities of the budget-oriented territories of the Arctic, due to the absence of large-scale industry, the public sector is a systemically forming factor of their financial development, such as: Novaya Zemlya Land of the Arkhangelsk region, all of the Arctic territories of Yakutia (except Udachny), and Iultinsky and Chukotka areas of Chukotka.

#### VI. DISCUSSION OF THE RESULTS.

It should be noted that in compiling the financial balances of the Arctic territories, the team of authors faced difficulties in finding adequate statistical information at the municipal level, especially in small and remote from the central regions territories. Therefore, part of the calculations was carried out by comparative and analytical methods, which leads to a distortion of data on the financial development of the territories. At the same time, in our opinion, the presented study as a whole provides an objective picture of the processes in financing new industrial development of individual Arctic territories, which have a decisive influence on the socio-economic development of municipalities and regions of the polar territories.

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