

Regional Experience of Studying and Developing Productive Forces (Case Study of the Republic of Komi)



Vitalii N.

LAZHENTSEV

Institute for Socio-Economic & Energy Problems of Komi Science Centre of the
Ural Branch of RAS

Syktvykar, Russian Federation

e-mail: vnl1940@gmail.com

ORCID: 0000-0003-2222-5107; ResearcherID: O-6722-2017

Abstract. As an attempt to extract positive experience to overcome difficulties of an extraordinary nature, we tried to appeal to historic examples of active participation of science in solving problems of regional development due to the general national tasks. The paper deals with the experience of the Commission for Study of Natural Productive Forces under the Head of the Republic of Komi (1993–2004), which is of scientific interest regarding the use of the results of research works of strategic planning and project management, taking into account the extraordinary circumstances caused by the sharp transformation of Russia’s economic structure. The article shows that it happens in a more constructive way when researchers and practitioners are united organizationally within the framework of the “problem – program” methodology. The second line of analysis of such experience is to identify the correspondence between the scientific interpretation of the concept of “productive forces” and the content of state strategic planning documents. To return productive forces to the system “science – practice”, it is necessary to eliminate the substitution of this concept by resources and production and to select appropriate indicators of their measurement. The main subject of this dimension becomes “force”, which is presented as the force and result of natural processes, scientific and technological progress and new forms of production organization.

Key words: Commission – a form of organizing the solution of national economic problems, productive forces as a natural and social category, indicators of measuring forces, translation of theoretical knowledge into management practice.

For citation: Lazhentsev V.N. (2024). Regional experience of studying and developing productive forces (case study of the Republic of Komi). *Economic and Social Changes: Facts, Trends, Forecast*, 17(1), 79–90. DOI: 10.15838/esc.2024.1.91.4

Introduction

The focus on Russia's technological self-sufficiency determines the search for optimal forms of connecting the economy of the northern regions to the solution of complex national economic problems. The urgent task is to produce materials that are extremely necessary for the development of machine building, instrument making, electronics and other manufacturing industries. At the same time, it is necessary to strengthen the regions' own potential by activating the sources of development – labor, science, education, engineering and technology, territorial organization of the economy, as well as driving forces – professional interest, institutions and relations, reasonable needs, etc. The improvement of socio-economic relations “region – country” and “region – population” in today's rather complex living conditions is associated with the mobilization of intellectual, natural and production potential of regions – everything that in previous years was denoted by the concept of “productive forces”.

The return of this category to the scientific arsenal and management practice, but with the understanding of its specificity, was the motivation for writing our article. The paper aims to show the necessity of including research and development (R&D) in the field of development and location of productive forces in the general system of strategic planning on the basis of three postulates: 1) productive forces are a way of transforming the natural into the social, the unity of objective and subjective aspects of labor, connected by end-to-end technological systems; 2) scientific knowledge about productive forces is transformed into the field of practical activity in accordance with the stages of solving specific problems: scientific and research, scientific and practical knowledge of the productive forces is transferred to the field of management; 3) scientific centers and institutes of the Russian Academy of Sciences should independently carry out pre-plan and pre-project forecasts of scientific-

technical and socio-economic development of the country and its regions while preserving the specific content of certain scientific categories and concepts.

Commission for the Study of Natural Productive Forces of the Komi Republic (KEPS RK) – historical facts

KEPS RK – civic position. Taking into account the increasing role of the RF constituent entities in the management of the state, and most importantly – in restraining the destructive impact on the “shock therapy” economy, conducted by the federal government, in December 1992, the Commission for the Study of Natural Productive Forces of the Komi Republic was formed under the chairmanship of Academician N.P. Yushkin.

The main task of the KEPS RK is the system analysis of available natural and human resources, determination of general directions of socio-economic development of the republic taking into account all-Russian and regional interests. Its mission, which was not initially thinkable, was also important, namely, the creation of an informal collective of like-minded people, standing on the position of evolutionary transformations and leveling the negative effects of the revolutionary imposition of market relations with a focus on privatization of state property in favor of private capital. The KEPS RK restrained (as far as it was feasible) not only economic perturbation, but also, figuratively speaking, “inflammation of brains” under the influence of socio-political chaos.

Academician N.P. Yushkin stood on the position of the public movement “Russian Scientists of Socialist Orientation (RUSO)”, and this circumstance had a certain impact on the formation of ideas and plans of the Commission's activity. The fact is that the rational organization of productive forces was rightly considered one of the advantages of socialism over capitalism, since state ownership of key sources of development and planned economy served as a basis for saving public resources through

inter-sectoral cooperation and coordination of technological, economic, ecological and social aspects of the national economy.

Great importance was attached to the territorial organization of productive forces in the form of economic districts and production territorial complexes. In practice, it was expressed in the development and implementation of the GOELRO plan, in the territorial breakdown of the five-year plan, in the formation of program-targeted territorial production complexes (TPC) and in a number of other forms of organization of production. It is important to say that not everything went easily and smoothly (and the author reflected the note in the article written on the occasion of the centenary of the statehood of the Komi Republic) (Lazhentsev, 2021), but the ideas of comprehensiveness, efficiency and social justice were so firmly established in the minds of many scientific and practical workers that it was difficult to erase them with the propaganda of market regulators, reflecting the superiority of monetarism over the real design and creation of economic complexes. Although we should note the “successes” of such propaganda. The very concept of “productive forces” was removed from textbooks, scientific texts and state documents because of its belonging to Marxism.

Analogy. At creation of the KEPS RK there involuntarily appeared an analogy with the All-Russian Commission for the Study of Natural Productive Forces (KEPS), created by the Imperial Saint Petersburg Academy of Sciences in 1915, chaired by Academician V.I. Vernadsky, which in addition to staff members included scientific societies, as well as members of five ministries (finance, trade and industry, railways, maritime, public education), the Central Military-Industrial Committee, the General Directorate of Land Management and Agriculture.

There were substantial grounds for the formation of the Commission in such a composition: extreme living conditions and mobilization economy of

wartime, the extreme need for accelerated creation of new production bases, awareness of the special role of science in improving the technological parameters of Russian industry, the need to include in the economy essentially all natural elements of the Periodic Table of Mendeleev. KEPS of Russia¹ carried out active expeditionary work, which is directly related to the development of productive forces of the European North. A huge contribution to the scientific substantiation of the development of northern territories was made by the *expedition to the Komi Region under the leadership of Academician A.P. Karpinsky, President of the USSR Academy of Sciences (“Pechora Brigade”, 1933)* (Brovina, 2016; Roshchevskii et al., 2015). Scientific and analytical materials of the expedition served as a starting point for the implementation of a number of production projects, including the creation of the Northern coal-metallurgical base in the 1950s (construction of a ferrous metals plant in Cherepovets based on coking coal from Vorkuta, iron ores from Karelia and the Kola Peninsula, and electricity from the Rybinsk HPP)².

The experience of the *USSR Academy of Sciences Commission on mobilization of resources of the Urals, Western Siberia and Kazakhstan for the needs of national defense (1941–1944) under the leadership of academicians V.L. Komarov and I.P. Bardin* was very useful for the organization of scientific-applied works within the framework of the KEPS RK. Positive aspects of the activities of the Commission were the following: program-targeted method of mobilization economy, mastering scientific knowledge “just-in-time”, carte blanche in financing and logistical support of research programs, hard work and personal responsibility (Lazhentsev, 2023).

¹ In 1930, The KEPS was transformed into SOPS (Council for the Study of Productive Forces).

² Academician I.P. Bardin, Professors A.E. Probst and V.V. Rickman made a significant contribution to the feasibility study of the Northern Coal and Metallurgical Base.

Local experience was also of interest. The *Interdepartmental Commission for the formation of the Timan-Pechora TPC under the chairmanship of Academician M.P. Roshchevskii* (1978–1990) served as an example of comprehensive coverage of numerous scientific disciplines to solve a specific industrial and economic problem. The obstacle to its activity was the steep politicization around this complex as a hype object – the directives of the CPSU. But, in the end, the TPC managed to fit into the mainstream of program-target planning, which later fully transferred into the ideology of the work of the KEPS RK.

The three analog commissions and the KEPS RK had one common ground – *they were created to solve tasks of extreme importance*. It is quite inherent in the war years and the time of revolutionary reform, but even the period of creation of the Timan-Pechora TPC, seemingly calm, can also be characterized as very economically tense. In the 1970–80s, the Soviet Union attempted to overcome economic stagnation by concentrating resources on the accelerated formation of program-targeted territorial-production complexes. The experience of hard times becomes useful every time when there is a need to choose non-standard methods of solving complex problems.

KEPS RK – a form of integration of science and practice

Support structure of science and practice. On the scientific side, *the Komi Science Centre of the Ural Branch of RAS* was the backbone structure for the KEPS RK. It is a classical academic center for fundamental and applied research in mathematics, physics, energy, chemistry, biology, physiology, earth sciences, social sciences and humanities. The Commission's task was to evaluate the research results obtained here and the possibilities of their use in practice, i.e. to organize scientific knowledge in a certain order. The Commission was supposed to be able to form a thematic plan of applied research works for solving technological and socio-economic

problems (the plan not of the Komi Science Centre, but of the government of the republic).

On the practice side, the reference structure for the KEPS RK was the *Administration of the Program for Economic Development of the Komi Republic (1993–2004)*. *The Collegium of the Administration was headed by the Head of the RK Y.A. Spiridonov, the Directorate was headed by I.B. Granovich, then by N.N. Gerasimov*. This is a unique organizational structure, the only one in Russia at that time, formalized by the RF Presidential Decree. It can be compared only with the federal (USA) corporation “Tennessee River Valley Authority” (from 1933 to present). Thanks to the successful activity of the Program Administration, even in the conditions of deep economic crisis in Russia it was possible to move “from a dead point” the issues of construction of the Sredne-Timansky bauxite mine, Yaregsky mining (oil-titanium) plant, reconstruction of Ukhta oil refinery, to start development of a number of fields in the Polar Urals, to introduce the Cardiology Center in Syktyvkar and a number of infrastructure facilities in rural areas, to design the railroad “Arkhangelsk – Syktyvkar – Solikamsk” (“Belkomur”)³.

The sequence of movement along the line of “science – practice”. Initially, an attempt was made to correctly interpret applied science. Option one. If the R&D result can be immediately applied in some practical case, the science automatically becomes applied. Option two. Applied science is that part of science which develops the technology of transfer of scientific knowledge into the field of practice; it is a kind of methodology of scientific-

³ The construction of the Belkomur railroad has been postponed indefinitely due to various kinds of inconsistencies of departmental, corporate and public interests, lack of coordination between potential investors, far-fetched competition with the project of construction of the railroad to Indiga, the reason for which was the political actualization of the Arctic theme, sluggish activity and liquidation of OAO Belkomur. The refusal to create this railroad and the corresponding strip of industrial development in the 1990s and early 2000s is a strategic mistake that will be realized sooner or later.

Figure 1. Organizational-activity scheme of designing regional economic systems

Types of analysis	Stages of regulation	Targets	Documents
Diagnostic analysis	Conceptualization	Values	Concept
Analysis of priority problems		Aims	Strategy
Analysis of program implementation	Strategying Programing	Problems, tasks	Programs
Analysis of trends		Result	Projects
	Monitoring	Consequences	Reports on monitoring results

Source: (Dmitrieva, Lazhentsev, 1996, p. 22).

Figure 2. Scientific and organizational support of activities of the Government of the Komi Republic in the field of strategic planning (1993–2004).

Planning documents	Executors
Strategy	Komi SC UrB RAS + KEPS RK
Program	KEPS RK + Program Administration
Project	Program Administration + contractors

Source: own compilation.

practical activity about the transformation of knowledge, actualization of problems and choice of structures – attractors. The second option for the KEPS RK was more suitable because it corresponded to the nature of the problems to be solved, when the problem itself “lives” successively scientific and research, scientific and technical, and organizational and economic stages (Preobrazhenskii, 1972, p. 16).

The problematic approach to forecasting socio-economic development of the region received theoretical support in the form of a scheme of organizational activity, where the *analysis* determines the initial base of the forecast, the *concept* – a set of goals (ideals) and the vector of movement, the *strategy* – the means of achieving the ideal state of the system, the *program* – tactical methods and techniques for implementing the intended goals, the *project* – the practical solution of a specific problem, *monitoring* – control over the implementation of decisions (Fig. 1).

Practically, the problem-based approach was implemented within the framework of interaction of the KEPS RK with Komi SC, Program Administration and executors of specific projects (Fig. 2).

The “Scheme of development and location of productive forces of the Komi Republic for the period up to 2010” developed in 1993–1994 by the Komi Science Center and Lennpromstroyproekt served as a kind of inventory of the problems. The scheme was drawn up under contract with the Ministry of Economic Development of the Russian Federation, which wanted to understand whether it made sense to draw up such a document (standard for the Soviet period) in the conditions of a market economy. In addition to the Komi Republic, the scheme was developed by the Leningrad and Sverdlovsk regions. We are not aware of the conclusions on this issue, but the drawing up of schemes was not practiced in the future. They were replaced by territorial planning schemes and other district planning documents.

Public activity. This aspect includes the desire of the KEPS RK members to be in the public eye and their desire to provide useful information about their own involvement in solving current and future problems (Vityazeva, 1997). But the main thing was to organize scientific and practical conferences on predetermined topics with the invitation of speakers from Moscow, Yekaterinburg and other cities of Russia. Conference proceedings were published in the form of preprints and then in book editions⁴. Such conferences include:

1. *“Natural resources and productive forces of the Komi Republic” (November 1993)*. Formation of information base for rational nature management and perspective economic developments. Market transformation of the legal and regulatory framework in the mineral and forestry economic sector.

2. *“The Komi Republic: Economic strategy of entering the 21st century” (March 1995)*. A new approach to forecasting as a methodology for determining the ideal image of the future and systematic organization of movement along the chosen path – from scientific foresight to the practice of public administration at the regional level. Strategy of formation of mineral and raw materials, fuel and energy and bioresource complexes, transportation and energy systems, development of education and culture. Methods of harmonization of public and private interests.

3. *“The Komi Republic: Scientific and technical policy” (October 1996)*. Organization of innovation activity on the basis of scientific and technical developments. The role of science in the system

⁴ The Komi Republic: Economic strategy of entering the 21st century. In: *Materials of the Scientific Conference (March 13–14, 1995)* (1996). KEPS under the Head of the Komi Republic. Syktyvkar, 160 p.; the Komi Republic: Scientific and technical policy. In: *Materials of the Scientific and Analytical Conference (October 17–18, 1996)* (1997). KEPS under the Head of the Komi Republic. Syktyvkar. 264 p.; Man in the North: Conditions and quality of life. In: *Proceedings of the Scientific and Analytical Conference (October 27–28, 1998)* (1999). KEPS under the Head of the Komi Republic. Syktyvkar. 296 p.

of nature management taking into account the ecological factor. Formation of a new technical and economic mode of production in which geo- and biotechnologies play a decisive role.

4. *“Man in the North: Conditions and quality of life” (October 1998)*. Multidimensional analysis of living conditions of northerners, assessment of human potential, health and environment, risks and security issues, spirituality – education – culture.

The published works and scientific-analytical materials of the KEPS RK to a certain extent increased the importance of science in making concrete decisions of the government of the republic. Five members of the KEPS RK (V.A. Vityazeva, T.E. Dmitrieva, A.V. Kokovkin, V.N. Lazhentsev and N.P. Yushkin) for preparation of such works and active scientific and organizational activity in 2001 became laureates of the State Prize of the Komi Republic.

No initiative goes unpunishable. With the effective activity of the KEPS RK a certain element of self-sufficiency of the Republic emerged, which was noticed by the federal authorities. At the end of 2004 the Commission de jure ceased to exist; but we especially regret that the Program Administration was also abolished. They did not fit into the vertical of state power. The link between regional science and regional practice of strategic planning was significantly undermined.

The example of the KEPS RK and the Program Administration is only a particular case of the general contradictory situation in the relations between the center and the regions. These relations are well known and critically analyzed. Let us only draw attention to the possibility of a new aspect in the interpretation of these contradictions. Under the current circumstances in the field of economic federalism, all significant, and even minor, issues are decided by regional governments in Moscow, so scientific research in the regions has also become Moscow-oriented. If a scientific result is accepted by the central structures of public administration,

the probability of its practical application at the local level increases. The scientific space is definitely formed over administrative-territorial boundaries, and the procedure of implementation of R&D results should not necessarily be based on the principles of “shuttle diplomacy” between the center and the regions. But the mechanism of launching scientific and technical projects (financial and administrative resources) under the existing procedures is concentrated in the capital; moreover, corporate capital has not yet thoroughly engaged in regional science.

Return to a scientific interpretation of the concept of “productive forces”

Lessons from the past. Currently, it seems strange that the designers of schemes and programs for the development of productive forces have never once started from the very concept of “productive forces”. Methodological recommendations on such developments, bypassing conceptual clarifications, immediately proposed to show the availability and prospects in terms of population and labor resources, natural resources, fixed assets, production in kind and cost, transport construction, capital investments, concentration of industry by cities and districts. That is, everything that was required for the subsequent compilation of five-year plans, and in the post-Soviet period – national projects, strategies and programs. Since long ago, productive forces began to be replaced by resources and production not only in state documents, but also in academic publications, for example, on the Komi Republic⁵. Was there any damage there? In practice, it did not manifest itself, and in theory – only sometimes it was fixed with the naive belief that such fixation would be noticed by the leadership of the country and regions.

⁵ Development of productive forces of the Komi ASSR. In: *Materials of the Conference on the Development and Location of Productive Forces of the Komi ASSR, September 20–23, 1966* (1968). Council of Ministers of the Komi ASSR, Komi branch. USSR Academy of Sciences. Leningrad: Izd-vo Leningradskogo unta.

The scientific concept of “productive forces”.

We are in solidarity with the philosophical interpretation of productive forces as a way of transformation of natural into social, the unity of objective and subjective sides of labor, connected by through technological systems (Marakhov, 1970, pp. 17, 18). At present, this formulation can be regarded as a synthesis of two theories of the development of productive forces: the change of technological modes and the formation of natural-social systems.

The origins of the theory of technological modes lie in K. Marx’s works, where productive forces are treated as the main link of the mode of production, and the correspondence of production relations to the level of development of productive forces is manifested as a law. This is still the correct reference point for socio-economic strategies⁶. This is confirmed by the fact that in modern science, the change of technological modes is explained by the correspondence, on the one hand, of the leading factors of production, on the other – the socio-economic characteristics of life. N.D. Kondratiev based his theory of “long waves” (Kondratiev, 1989) on the regularities of the change of technological patterns, which was later taken into account by many designers of strategies for the development of the economy and society. Modern leaders in the development of the theory of technological (techno-economic) patterns are Academician S.Y. Glazyev (Glazyev, 1993; Glazyev, 2023) and Professor Carlota Perez (Perez, 2013).

⁶ Means of production in the sequence of their application: textile machinery – steam engine and machine tools – electric motor and mass-produced steel – internal combustion engine and energy-intensive chemical technology – microelectronic complexes and nanotechnology...

Socio-economic relations and institutions in the sequence of their emergence: destruction of feudal monopoly, free trade and competition – establishment of factory legislation, development of professional education and organization of research institutes – concentration of capital and separation of management from property, use of scientists and engineers directly in production – state institutions of social security, state regulation of economy, creation of R&D system and innovation...

In the analysis of the structure of social forces, usually we are talking about various kinds of sources (labor, division of labor, resources, education, science, technology) and driving forces (interests, needs, social forms of economic organization, economic and social relations); it also includes management structures (information systems, regulations, standards, incentives, etc.).

The theory of formation of natural-social systems creates and explains the schemes of transition from natural to social. It considers the forces of nature as the energy of the Space, the Sun and the Earth, the state of the bodies and elements of nature. Science establishes how mechanical, thermodynamic, gravitational, electromagnetic, geochemical, biochemical, and other forces create mineral and biological substances useful to humans. Within the framework of this theory, the possibilities of using the above forces in production processes are revealed – *through the design of production technologies as analogs of natural “technologies” and through their direct application for obtaining various types of energy.*

The scientific explanation of productive forces significantly increases its value when it unites natural and social forces into a single whole on a geosystem basis. Here, the main object of scientific analysis and forecasting is natural-economic complexes, in which natural resources are considered as national wealth and fixed assets, the economy is considered as a natural-social-technical system, and the well-being of the natural environment as one of the basic human needs.

The interaction of natural and social forces is the basis for the doctrines of geosystems (Sochava, 1978), energy-production cycles and production-territorial complexes (Kolosovskii, 1958), natural-resource cycles (Komar, 1975), and territorial combinations of natural resources (Mints, 1972). In our opinion, there is no reason to give such interaction a special, noospheric, meaning; it is quite consistent with the classical forms of motion

of matter (physical, chemical, biological and social). All these forms of motion participate in the formation of productive forces, with the social one playing the final role. Only under certain social conditions do productive forces become a social category, it means that they acquire real meaning.

In both nature and society, the same forces can be *creative and destructive*. The thing, which leads to destruction should be studied and practiced in a particularly responsible way. This statement is perfectly understandable with regard to dangerous natural processes (permafrost degradation⁷, floods, tsunamis, earthquakes, volcanic eruptions, soil erosion, desertification...); more or less understandable with regard to the negative consequences of predatory nature management; initially difficult to understand, but most of all harmful – radical political decisions, such as “shock therapy” of the economy, imposition of pseudo-culture, excessive social stratification, etc.

If we compare the above with the content of the schemes of development and location of productive forces of the Soviet times and modern strategic planning documents, we cannot but notice that they lack sections corresponding to the scientific interpretation of “productive forces”. This concept more or less corresponded to the Comprehensive Program of Scientific and Technological Progress of the USSR, and at present – the Strategy of Scientific and Technological Development of the Russian Federation and the Forecast of Scientific and Technological Development of the Russian Federation⁸. But even in these documents much is underdeveloped, especially in terms of systemic analysis of science as a productive force.

⁷ The economic assessment of permafrost degradation for the northern regions is highly relevant because it is associated with coping with billions of dollars of damage (Porfiriev, Eliseev, 2023).

⁸ On Strategic Planning in the Russian Federation: Federal Law 172-FZ, dated June 28, 2014 (Amended February 17, 2023).

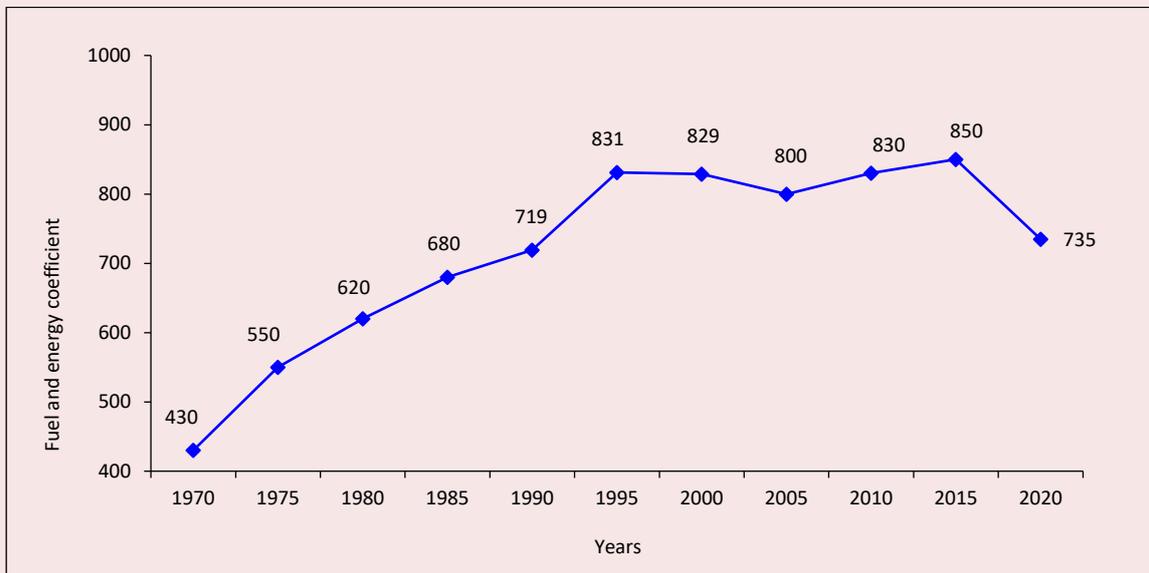
Indicators of the development of productive forces.

The study of natural productive forces focuses on the assessment of geologic and biological potentials. Geological (mineral-forming) potential is measured by rock density, seismic velocity, magnetic susceptibility, electrical resistivity, temperature regime, a number of geochemical indicators. The above mentioned can be labeled as cause indicators. The consequence indicators include the territorial density of local structures, their saturation, the rank and density of tectonic faults, the class and type of deposits, the volume of resources, the category of reserves, etc. Biologists calculate the bioclimatic potential of a certain area and its efficiency in forestry and agriculture. In this case, the main indicators are the ratio of heat and moisture, manifestations of climatic zonality and azonality, coefficients of weather rigidity. These and other natural potentials are basic for territorial planning (Lazhentsev, 1990).

In the study of *social productive forces*, the socio-economic assessment of natural-resource potentials is supplemented by a second set of characteristics: the capacity of means of production, their carrying capacity, speed of movement, technological contiguity, levels of mechanization and automation, the use of microelectronics and robot-like mechanisms, etc.

Special attention should be paid to the *energy characteristics of the development of productive forces*. For instance, the fuel and energy coefficient (Kte) shows the ratio of electricity consumption to fuel consumption. With its growth of approximately 1.5 times to the base value, the economy as a whole changes qualitatively. For the period 1970–1990 in the Komi Republic it increased from 430 to 719 conv. units; an increase was of 1.7 times. In the previous 30 years, there have been no such changes in Komi (Fig. 3).

Figure 3. Fuel and energy coefficient in the economy of the Komi Republic



Source: own compilation according to the data of the Laboratory of Complex Fuel and Energy Problems of the Institute for Socio-Economic and Energy Problems of FRC Komi Science Centre of the Ural Branch of RAS.

The high growth of Kte in 1970–1990 was due to the transition from the predominance of direct fuel consumption (combustion in furnaces, stationary and mobile installations) to the predominance of the use of medium potential heat energy and electricity. It was assumed that in the future the consumption of high potential thermal energy would increase at a faster pace, and electrification would deepen due to the development of electromechanical, electrochemical and other high technologies. However, it did not happen, but the number of cars for personal use increased sharply, which again returned the situation to the growth of direct fuel combustion; there were no significant changes in the transfer of the housing stock to electric heating.

The sequence of formation of the transportation network, the growth of its capacity and reliability also serve as a reliable indicator of the development of productive forces. It is important to catch the moment when the transportation network begins developing according to the internal logic, i.e. acquires some autonomy from production and the established settlement of the population. Such a moment, apparently, starts when local communication routes are supplemented by a transit highway; then follows polymagistralization, ringing of roads and further – supermagistralization. In the Komi Republic, as well as in the Arkhangelsk Region, this process is far from being completed. The failure in the logical sequence of formation of the transportation network in these two regions occurred (as we have mentioned above) due to the failure to build the Belkomur railroad in time.

The situation is not simple in measuring the capital stock and labor productivity. In the absence of state control over the movement of fixed assets and their objective cost estimation, speculative behavior of owners regarding the capitalization of enterprises, the presence of “shadow” schemes of labor remuneration, and price hikes, these indicators lose their reliability. It is necessary to

create a new system of measuring the organization of labor, its stock and productivity, which would be based on scientific and technological progress (Aganbegyan, 2023).

The regional aspect of such a dimension consists in the conjugation and synchronous modernization of the territorial combination of production and infrastructure industries. Failure in some links (as a rule, in auxiliary and servicing ones) makes the whole territorial-economic complex low-productive.

Attempts are made to economically measure the power of intellectual potential. We know only one method of such measurement – the ratio of the value of material and technical objects of an enterprise, which are listed on the balance sheet, with the value of capitalization of this enterprise, which is reflected in the statistics of stock markets. The difference between stock and balance sheet valuations is attributed by analysts to the level of training, experience and skills of enterprise’s employees. Intellectual potential is one of the current topics of the scientific community.

These processes and indicators serve as information for thinking about the structural and functional characteristics of productive forces and their individual elements. It is a special subject of the forthcoming interdisciplinary research. For the time being, let us conclude that it is necessary not only to return the concept of “productive forces” to the scientific arsenal, but also to create a system of indicators adequate to its content.

Instead of conclusion

Two subjects – positive experience of activity of KEPS RK and criticism of neglect of the scientific concept of “productive forces” – logically need to be united. A simple judgment – the former should be revived and the latter should be substantially improved. But everything simple is questionable.

We suppose that there is no sense to repeat the KEPS RK. In modern conditions, it would be reasonable to introduce the scientific and

organizational functions of the Commission into the work regulations of the FRC Komi Science Centre of the Ural Branch of RAS. The experience of fulfillment of the state order of the Republic of Komi government for the development of the complex topic “The potential of the strategic alternative of the development of the Komi Republic” (2020; scientific supervisor, Cand. Sci. (Geography) T.E. Dmitrieva) showed the ability of the Centre’s team to generate the R&D results of different disciplines under the general idea of strategic development of the republic. However, the same experience proves the low efficiency of practical use of recommendations formulated in

the mentioned development. Such research results should be publicly available.

We are quite familiar with the R&D results and forms of scientific and organizational activities of the North-European centers of the Russian Academy of Sciences. Their example confirms the possibility of supplementing fundamental research with applied works and formalizing them in the form of a strategic forecast of regional development. The content of such works will definitely cover many directions and aspects of scientific, social and production activities, but it is advisable to start with the characterization of productive forces as a specific category of natural and social content.

References

- Aganbegyan A.G. (2023). Innovations in Russia: From possessing the higher knowledge and promising scientific groundwork towards effective socio-economic development. *Ekonomicheskoe vozrozhdenie Rossii*, 2(76), 13–26 (in Russian).
- Brovina A.A. (2016). Historical retrospectives of the problem of studying the productive forces of Russia in 19th–first third of 20th century. *Izvestiya Komi nauchnogo tsentra UrO RAN*, 3, 89–94 (in Russian).
- Dmitrieva T.E., Lazhentsev V.N. (1996). From scientific foresight to the practice of state management of regional economic systems development. In: *Respublika Komi: ekonomicheskaya strategiya vkhozhdeniya v XXI vek: materialy nauchnoi konferentsii (13-14 marta 1995 g.)* [The Komi Republic: Economic Strategy of Entering the 21st Century: Materials of the Scientific Conference (March 13–14, 1995)]. Syktyvkar (in Russian).
- Glaz’ev S.Yu. (1993). *Teoriya dolgosrochnogo tekhniko-ekonomicheskogo razvitiya* [Theory of Long-Term Technical and Economic Development]. Moscow: VIdar.
- Glazyev S.Yu. (2023). Prospects for the development of Russia on the long-term wave of growth in the new technological order. *Ekonomicheskoe vozrozhdenie Rossii*, 2(76), 27–32 (in Russian).
- Kolosovskii N.N. (1958). *Osnovy ekonomicheskogo raionirovaniya* [Basics of Economic Zoning]. Moscow: Gospolitizdat.
- Komar I.V. (1975). *Ratsional’noe ispol’zovanie prirodnykh resursov i resursnye tsikly* [Rational Use of Natural Resources and Resource Cycles]. Moscow: Nauka.
- Kondratiev N.D. (1989). *Problemy ekonomicheskoi dinamiki* [Problems of Economic Dynamics]. Moscow: Ekonomika.
- Lazhentsev V.N. (1990). *Ekonomiko-geograficheskaya kontsepsiya territorial’nogo planirovaniya* [Economic and Geographical Concept of Territorial Planning]. Moscow: Nauka.
- Lazhentsev V.N. (2021). Socio-economic studies and political aspects of developing the Northern region (to the centenary of the Komi Republic). *Ekonomicheskie i sotsial’nye peremeny: fakty, tendentsii, prognoz* = *Economic and Social Changes: Facts, Trends, Forecast*, 14(3), 67–82. DOI: 10.15838/esc.2021.3.75.4 (in Russian).
- Lazhentsev V.N. (2023). Programmatic and targeted resource mobilization. *Problemy prognozirovaniya* = *Studies on Russian Economic Development*, 1(196), 32–41. DOI: 10.47711/0868-6351-196-32-41 (in Russian).
- Marakhov V.G. (1970). *Struktura i razvitie proizvoditel’nykh sil sotsialisticheskogo obshchestva (Metodologicheskie i sotsiologicheskie problemy)* [Structure and Development of Productive Forces of Socialist Society (Methodological and Sociological Problems)]. Moscow: Mysl’.

- Mints A.A. (1972). *Ekonomicheskaya otsenka estestvennykh resursov: Nauchno-metodicheskie problemy ucheta geograficheskikh razlichii i effektivnosti ispol'zovaniya* [Economic Evaluation of Natural Resources: Scientific and Methodological Problems of Accounting for Geographical Differences and Efficiency of Utilization]. Moscow: Mysl'.
- Perez C. (2013). *Tekhnologicheskie revolyutsii i finansovyi kapital. Dinamika puzyrei periodov protsvetaniya* [Technological Revolutions and Financial Capital. Dynamics of Bubbles of Periods of Prosperity]. Moscow: Delo.
- Porfir'ev B.N., Eliseev D.O. (2023). Scenario assessment of expected damage from permafrost degradation: Regional and sectoral aspects. *Problemy prognozirovaniya=Studies on Russian Economic Development*, 5(200), 124–135. DOI: 10.47711/0868-6351-200-124-135 (in Russian).
- Preobrazhenskii V.S. (1972). *Besedy o sovremennoi fizicheskoi geografii* [Talks on Modern Physical Geography]. Moscow: Nauka.
- Roshchevskii M.P., Roshchevskaya L.P., Brovina A.A. (2015). *Pechorskaya brigada akademika A.P. Karpinskogo* [Pechora Brigade of Academician A.P. Karpinsky]. Syktyvkar.
- Sochava V.B. (1978). *Vvedenie v uchenie o geosistemakh* [Introduction to Geosystem Science]. Novosibirsk: Nauka.
- Vityazeva V.A. (1997). *Izuchenie proizvodstvennykh sil Respubliki Komi na novom etape (rol' KEPS RK v regional'nykh ekonomicheskikh issledovaniyakh): doklad na nauchnoi konferentsii, posvyashchennoi 25-letiyu Syktyvkarskogo gosudarstvennogo universiteta* [Study of Production Forces of the Komi Republic at a New Stage (the Role of the KEPS RK in Regional Economic Research): Report at the Scientific Conference Dedicated to the 25th Anniversary of Syktyvkar State University]. Syktyvkar: SGU.

Information about the Author

Vitalii N. Lazhentsev – RAS Corresponding Member, Professor, Doctor of Sciences (Geography), Honored Scientist of the RF, Leading Researcher, Institute for Socio-Economic & Energy Problems of Komi Science Centre of the Ural Branch of RAS (26, Kommunisticheskaya Street, Syktyvkar, 167982, Russian Federation; e-mail: vnl1940@gmail.com)

Received December 12, 2023.