

UDC 338 (470 + 571)

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## Megaprojecting as a tool of strategical and territorial management\*

*Modern territorial strategic management needs upgraded tools. Today megaprojects are the actual but ambiguous strategical management tools of territorial development along with the federal target-oriented programs. There are both positive and negative examples of territorial megaprojecting in history. The article divulges the reasons for the development of territorial megaprojects; it describes their distinctive features and risks. The conditions for the effective practical application of territorial megaprojects in the sphere of strategic territorial management are substantiated in the article.*

*Macroregion, development, strategy, target-oriented approach, megaproject, risk.*



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Megaprojecting is a new tool of strategical and territorial management on the global and macroeconomic scale. The state has the right to consider that the reform is successful if it allows the country to have capital-intensive

projects. Megaprojects implementation is the modern manifestation of the institutional, organizational and information transformations of the economic space of the global economic system [3, p. 15].

\* The article was written within the scope of the project "Multicriterion analysis of the territories' investment attractiveness for inter-regional project management" of the Presidium of RAS Program of fundamental investigations "Fundamental problems of multi-ethnic region's modernization under the tension growth conditions" (2012-2014).

Megaprojects are extremely large-scale and global investment projects (more than \$ 1 billion; regardless of spatial implementation level) (table).

Large-scale investment project may achieve the status of a megaproject, if it is a long-term capital-intensive project, characterized by complexity, high cost, systemic nature and target significance [3, p. 15].

In authors' opinion, modern territorial megaprojects are large-scale projects, which have the characteristic mentioned above and which are included, as a rule, in the federal, district, regional strategy or program. On the other hand, these megaprojects can be integral target front-pendulum or focal programs of inter-regional, macro-economic and global scale, which involve many interrelated projects that are united by the common purpose, dedicated resources and defined implementation period [17, p. 13].

In addition, megaproject can also be selected as a separate format for the development of a territorial strategy [2, 8, 15, 20].

Only those projects, which change the economic landscape of modernizing economic space in terms of the given strategic direction, can be called megaprojects [3, p. 15, 12, p. 17-19, 24, p. 40-42].

The territorial nature is a priori characteristic of any program or project, because they are implemented in a certain space, and the facilities of program and project arrangements and resources are located in a particular area [22, p. 262]. The nature of socio-economic program needs is determined by the composition and structure of the territory's population; it is influenced by geographic, climatic, cultural, historical and other conditions of a particular territory. However, despite the fact that in a broad sense territoriality inheres in all the strategic initiatives, including the strategies and target developmental programs for the Federal subjects of Russia and their investment projects, there is a necessity to separate a class of territorial megaprojects with the following specific features: firstly, the objectives, problems and scope of megaprojects cover a large-scale ter-

The classification of investment projects [23, p. 90]

Classification feature	The type of project				
Project level	Project	Program		System	
Scale (size) of the project	Small	Medium		<b>MEGAPROJECT</b>	
Complexity	Simple	Organizationally complex	Technically complex	Resource complex	Multilaterally complex
Implementation period	Short-term		Medium-term	Long-term	
Quality perspective and the ways to improve it	Free of defects		Module	Standard	
Resource limitations	Multiproject		Monoproject		
Type of project according to the level of participants	International (joint)		Domestic (national, district, interregional, regional, local)		
The purpose of investing	Anti-recessionary		Modernization/ Reformation/ Restructuring		
	Marketing		Innovation		
	Educational		Extraordinary		
The object of investment	Financial		Real		
The main cause of a project	Opening possibilities	The necessity of structural and functional reforms		Modernization	
				Integration	
				Diversification	
				Reorganization	
	Restructuring				
Extraordinary situation			Re-engineering		

ritory (country, region, the group of regions, etc.); secondly, the targets of megaprojects are associated with the solution of systemic problems aimed at the sustainable, competitive, safe and balanced development of social, nature and economic systems of one or another hierarchical level [22, p. 263].

There are the following features of such projects:

- territorial megaprojects improve existing and form new territorial proportions and effective integration inter-regional relations, which define the long-term common interests of regional systems; this fact improves the possibility to use rationally the advantages of each of them in order to achieve common objectives and increase the total efficiency of social and economic complex of a macroregion on the whole;

- they cause a diversion of significant capital investments, material and labour resources in the long lag of expected results; it can lead to long-term trends in the distribution of capital investment and utilization of productive potential of macroregional subjects;

- these projects become the sources of centrifugal forces correcting the interests of industries and territorial entities, which can provoke a chain reaction affecting the numerous allied industries that take part in project implementation;

- they contribute to the creation of powerful strategic (district and federal) infrastructure projects, which become a condition for the inclusion of new resources into the economic turnover and the creation of major centers of economic and social development;

- they need the resource accumulation by a single fund holder;

- they impose entirely new requirements for assessing target usability of territorial resource combinations and conditions for the benefit of macroregional community;

these projects involve the organizations of different departmental subordination;

- they are based on the combination of sectoral, territorial and program planning;

- they should reflect all the stages of the triad “economy (manufacturing) – nature – population”, beginning with the theoretical and methodological prerequisites for the pre-planning researches and developments and concluding with real investment and production processes;

- they stimulate the development of a mechanism for the complex non-departmental expertise of major inter-related projects that form a megaproject;

- these projects are characterized by unique temporal and spatial boundaries, and the problems of territories’ development that have “programmed nature” can be solved within the scope of them [12; 24].

Management experience based on the program-oriented approach to the development of territories of different levels, which was accumulated in Russia, allow us to point out a number of conditions requiring the use of such a tool as megaprojects to solve territorial problems.

First, the objective need for territorial megaprojecting occurs when there are complex and multi-target problems, but the traditional methods of sectoral and territorial management and planning are insufficient to make reasonable decisions due to the difficult situation generated by the tangle of diverse interests and relationships within the territorial community.

Second, the time interval, which is required to identify and resolve problems, does not fit in with the medium term. Meanwhile, it is reasonable to consider the whole history of each problem in time and define the most important stages of its growth. Each territorial problem has its own temporal logic of development.

Third, megaprojects are required when the distribution area of territorial problems does not coincide with the grids of economic and administrative zoning.

The territorial boundaries of any social and economic objectives depend both on the potential resource capacity and the scale of production factors actually involved in the economic turnover considering the radius of influence of program activities.

There are at least two most widespread decision boundaries of territorial problems. In the first case, these problems integrate several administrative units, which are related by single concept solutions. In the second case, "problem" territory covers only a part of oblast, region or district. The situation is also possible when a territory with its own distinctive problem matches the boundaries of an administrative entity.

Fourth, territorial megaprojects are reasonable in the case, when there is a necessity to use fully cross-sectoral and multipurpose natural resources. Strengthening the inter-sectoral importance of natural resources imposes new requirements for assessing opportunities of multipurpose use of each resource for the benefit of many territorial stakeholders and various organizations. This leads to the changes in traditional approaches, according to which every interested department approaches the subjective prospecting and use of resources (to solve their own problems) and the requirements for their qualitative and quantitative characteristics.

As a result, the same resource can be studied independently by many organizations, leading to work duplication and increased cost of works. In addition, conflicting interests are inevitable in the resource assessment in terms of the development of various spheres of national economy due to their scantiness. Complex use of natural, raw material and intellectual resources requires an interdisciplinary approach, which allows us to create a highly efficient structure of territory's economy, to form a unified production and social infrastructure, promoting more rational use of natural resources.

Fifth, territorial megaprojecting is necessary in the case when the existing forms and methods of control can't combine a number of sectoral and interdisciplinary projects, which are united by the same goals and objectives. Meanwhile, such a linkage is necessary only because of the fact that jointing of sectoral interests causes a chain of internal contradictions. Thus, each sectoral project is aimed at the implementation of specific industrial and economic objectives, so the terms and order of its implementation is determined in accordance with the resource capabilities. The target orientation of the industry is a criterion to determine the temporal parameters of the project. However, sometimes the optimal sectoral terms of project implementation don't coincide with the whole problem implementation, or they can fail to comply with its temporal logic. It is clear that it is very difficult to make a network schedule, which is single and obligatory for all ministries and departments, even in the scope of long-term, strategic planning. It is possible to solve the issues, which are related to the formation of the most appropriate relationships between production and non-production capital investments, various infrastructural branches, construction industry rates and investment, only in the developmental process of territorial target-oriented and target-implementing project.

Sixth, megaprojecting is effective if there is a need for the complex economic development of new territories, especially problematic areas and regions difficult to access. It is possible to develop efficiently the resources of such territories only through the complex solution of socio-economic, scientific and technical issues of their development. The main problems among them are the following: 1) conducting comprehensive researches aimed at the study of environmental components' behavior given under various regimes of natural resources usage; 2) the analysis of usability of technological systems and production means, ensuring

human labour-saving and reducing the impact of complex natural and climatic conditions for production activities, daily life of people, as well as promoting the effective economic development of the territory's raw materials [1; 5; 13; 14; 15].

R.I. Schnieper, A.S. Marshalov and A.S. Novoselov point out the fact that territorial megaprojects include "the implementation zones of territorial problems that deal with the significant shifts in the distribution of productive forces, economic development of new territories, radical re-specialization and intensified use of the economic potential of regional development and formation of program-target territorial and production complexes" [12, p. 7].

There are the following conditions of the necessity to develop territorial megaprojects: a significant change in the spatial strategy and breaking the current economic structures and territorial proportions; the economic development of new territories in the extreme conditions; inter-regional and intra-regional interindustrial cooperation that is aimed at the complex use of multi-aspect resources and establishing new territorial and production complexes, clusters; implementing long-term projects, which have large-scale economic, social and environmental impacts; the complex use of all intensification and modernization reserves lying in the field of sectoral and territorial development; the use of specific institutional, organizational, economic and managerial levers to solve territorial problems [12, p. 8].

The starting methodological points that should be assumed as the basis of territorial megaprojecting are:

1) the marked interdisciplinary and systemic character of pre-studies, which integrate theoretical and applied problems; as a result, it is possible to develop a unified system of concepts and quantitative assessments, which allow using obtained particular results to make complex conclusions and generalizations;

2) the importance of pre-planning and project studies with the participation of scientific and design organizations, which are kept in the development of specific practical decisions at the stage of megaproject implementation;

3) the polyvariant character of the study of the territorial megaproject's various aspects for different environmental conditions, when the most heterogeneous activities that are planned to be implemented must be linked and coordinated to ensure the project's integrity; project's variability, which extends the use of its maneuvering characteristics;

4) the need for the comprehensive solution of the problem related to ensuring the harmonious interaction of the elements of the territory's productive forces with its natural environment; it is necessary to use such technological schemes and the means of production, which wouldn't infringe the allowable norms of people and their production invasion into natural environment [10; 11; 16; 21].

There are three interrelated territories which are influenced by the implementation of a territorial megaproject. First, they are the territories whose socio-economic development is affected directly by megaproject implementation.

The size of the territory varies depending on the location of explored reserves and the possibility to involve them into the economic turnover in the next 5 – 15 years, as well as on the scale of the resources involved into the turnover which were explored before but which are still laid up. In this zone one will continue increasing raw material potential and establishing on this base transport, industrial, territorial and production complexes, clusters, industrial centres, urban settlements, constructing production and social infrastructure, developing non-production sphere, etc.

Second, there are the territories that are adjacent to the zone of megaproject implementation; they are the resting bases of construction

works, staffing, trade, material and technical support for construction. These territories are the main suppliers of the population with agricultural products, they distribute repair facilities, etc.

Third, there are territories, districts and regions, which are involved in scientific training, design, constructing industrial, social and infrastructure facilities, forming financial and material resources, which are necessary to implement a territorial megaproject [11, p. 110; 20].

During the process of megaprojecting it is necessary to consider the interests of many sectors, which take part in the program implementation or perform contiguous functions.

To achieve the general and local objectives of a megaproject the industries should:

- ✓ give arguments for the feasibility of ministries and agencies' participation in a particular project at the various stages of its implementation; take into account the interests of the industries associated with the use of natural resources;

- ✓ take into account temporal, production, material and technical constraints in determining the structure and scale of production, as well as the relation between direct and embodied labour; choose the technological systems that meet the requirements of innovations, climatic conditions and mineral resources, which will involve the development of the production sectors of the economy;

- ✓ keep on the project network schedules; predict and plan the arrangements ensuring the compliance with ministries and agencies' project commitments, in which they participate;

- ✓ implement program requirements in planning their activities, taking into account not only the efficiency of the industry, but also the need for achieving megaproject's objectives when time and resources are minimized; prepare project documents, considering territorial specifics and the scope of territorial subjects which are included in the project;

- ✓ place orders in the manufacturing companies for future businesses in advance; coordinate technical characteristics of machinery and equipment with the relevant control elements, as well as their ability to save direct labour and minimize negative impacts on the environment;

- ✓ create trusted construction industry in accordance with the project size, deploying it in time and in accordance with the volume, structure and capital investment at every stage of the project;

- ✓ geographically place the necessary objects of the construction industry in accordance with the approved forms of spatial organization of the territorial megaproject; develop and modernize transport infrastructure of the territory where the project is implemented, taking into account the forming sequence of regional clusters; create conditions for forming stable intra-and inter-regional transport economic ties.

Every industry subordinates its own interests to the general interests of the project, therefore, the implementation of the principle of feedback requires the consideration of the industry's interests:

- ◆ the need to cater for short-range and long-term interests of the industry in determining the temporal sequence of megaproject development and the network schedule of its implementation; providing the future sectoral enterprises with local resources with the right of their preferable exploitation; the development of inter-industry production to provide the megaproject's participants with repair and other services;

- ◆ the creation of a reliable power base; forming an integrated transport system to serve the needs of the project, which will take into account the size and structure of transport and economic interests of the territorial subjects and each participant of the project;

- ◆ early identifying the position of the project leadership towards the sectoral proposals

of the territorial organization of the economy; architectural and planning decisions, the principles of settlement and material support; taking into account the interests of a sector in defining the territorial policy of forming the balance of labour resources, general project technical and technological strategies, etc. [ 1, 18, 19].

Russia has considerable historical experience in megaprojecting, both positive (Trans-Siberian Railway) and negative (The Baikal-Amur Mainline). Today the Government of Russia has emphasized clearly its strategic goals and formed the complete system of institutions to implement them. It has become a powerful impetus for forming a network of megaprojects in Russia. The project base of megaprojecting, which had been developed by 2010, was the result of private initiative and the effect of a new public economic policy.

World experience shows that megaprojects traditionally involve infrastructure investment projects, including the projects aimed at the construction of large units: transport infrastructure (aerospace, air, rail, motor traffic, oil and gas transit, international transport corridors); the infrastructure of national and regional innovation systems including infrastructure facilities of the federal and regional nanotechnology network, for example, mega-science centers – large research centers aimed at the collaboration of a number of countries in order to develop and produce new nanoproducts and nanomaterials, as well as to train new specialists for nanotechnology [3, p. 15-16].

World megaprojects generate the development of adjacent sectors, high redivision economy, services and knowledge; they are the core of modern clusters; they are the customers and suppliers of a huge amount of goods and services, the inter-regional centers of economic development.

Over 1000 investment projects had been planned to be implemented in Russia by the beginning of 2010; the investments of about 130 of them exceeded \$ 1 billion.

The total amount of investments for these projects exceeded 12 trillion rubles. It is possible to point out megaprojects among them, which were supported by the budget assignments of the Investment Fund of Russia. The total number of such projects amounted to 26. It was planned to invest 3.3 trillion rubles, of which 2.1 trillion rubles should be invested by private investors and 1.2 trillion rubles should be invested by the Government. Most of these projects were based on the integrated approach, which implies overcoming of socio-economic constraints in the development of the regions through forming industrial area on the base of new industrial enterprises and infrastructure construction [4].

The problem of Russian megaprojects is their high emphasis on those industries which reproduce the current industrial and raw material model of the country's development. Fuel and energy complex, metallurgy, infrastructure industries dominate in terms of investments among planned megaprojects. However, the development of infrastructure and industry for most regions, where these projects are planned to be implemented, is the first step towards the realization of higher redivision and higher added value projects.

Today, most Russian megaprojects are focused on the new economy branch. As a rule, they include chemical industry, timber industry, tourism, innovation, as well as large development projects.

According to experts, planned territorial megaprojects (Industrial Urals – Polar Urals, BELKOMUR, Integrated Development of the Lower Angara River Region, Integrated Development of South Yakutia), the first three of which are being implemented now, are aimed at the transformation of the economic space of the eastern part of Russia. Ural, Siberia and the Far East are macro-regions, where capital-intensive economic growth, which is based on the coordination between government and business in implementing major investment

projects, will dominate in the nearest 15 – 20 years. However, in spite of all the predicted positive effects for the subjects of these macroregions, such spatial concentration of megaprojects can not increase asynchrony, asymmetry and differentiation of Russia's spatial development.

There is a need to work out a strategy for the development of the Southern macroregion in the scope of megaprojects, which will be a new type of strategic planning in the macroeconomic and global dimensions. Its purpose is the development of the South macroregion (consisting of the Southern Federal District and North Caucasian Federal District) as a megaregion in the global economic space.

Strategic directions, developing a meaningful concept of a megaproject include: the creation of new and the development of existing international transport corridors and road networks, modernization of sea and river ports, airports, rail terminals, rationalization of energy infrastructure, expansion of recreational facilities infrastructure, investment support for the unique nature reserves of the North Caucasus.

However, their successful implementation requires the systemic involvement of strategic programming in all subjects of the Southern macroregion, and it is impossible without the support of the Federal Government. Only a combination of the directed state development with the initiative of subjects which are at the different levels of spatial hierarchy will effectively realize the competitive advantages of the southern regions in the country and increase their importance in the global and national economic space.

The concept of the priority megaproject "Development of the South of Russia" needs further improvement to meet the main task of mobilizing resources for the effective development and modernization of the social, nature and economic system of the Southern macroregion and considering the global trends and

interests, as well as the creation of a portal for the international movement of goods, services and capital in the Southern Federal District and North Caucasian Federal District [15; 16].

The implementation of megaprojects is related to organizational, legal, administrative, managerial, macroeconomic, financial, engineering, political and other risks. Thus, organizational and legal risks are caused by the implementation of Russian megaprojects in the constantly changing legal environment. The legal framework of the Investment Fund of the Russian Federation, the Law on Concessions, the Law on Special Economic Zones, the regulatory framework of functioning of public companies and corporations are amended infinitely.

As for administrative and managerial risks, unfortunately, megaprojects and especially the most difficult of them, which are being implemented in Russia today, suffer from nonoptimal control and the multiplicity of responsible executors. The principal of "a single window" is necessary because investors need one responsible executor representing the state and business.

World experience shows that the risks of routine and low-quality engineering solutions are one of the most important for any megaprojects, which are implemented in the situation when there are significant problems in the domestic engineering industry. Despite the emergence in Russia of a number of major international engineering and construction mega-companies [9], the quality of engineering and construction services in Russia is poor after a long pause in the implementation of major projects [4].

New businesses and infrastructures have not been established over the last 20 years in Russia, leading to the serious degradation of engineering. It is necessary to restore engineering sector over again and create a network of sectoral project organizations, using the mechanism of public-private partnership (PPP).

However, it should be done in close cooperation with the leaders of world engineering, which requires the liberalization of technical regulation and urban policy, because technical town-planning requirements, adopted in Russia, are tangled and largely conservative, they are constantly complicated. They demand more agreements, expertises, etc. It is necessary to bring national engineering standards closer to international standards in order to achieve progress in this important sector.

We need transparent instruments of state support to create housing and municipal infrastructure, a special procedure of land and mineral resources disposal in the scope of the complex megaprojects of territorial development.

#### *Conclusion*

Insufficient experience in functioning of developmental institutions in Russia has demonstrated a significant deficit of culture and experience in the territorial megaprojecting risk analysis and management. The important characteristic of a megaproject is its publicity and high public response.

The conceptual strategic thinking requires the renunciation of a strict “utilitarian approach”, when working out strategies and programs for the development of territories. In our opinion, it is a value approach that characterizes a new level in the development of strategic territorial management. And megaprojects are designed to be the key points of territorial development bifurcation, opening the possibility to make an alternative choice.

According to the value approach, an important condition for the choice of a megaproject includes values matching (integration into the system of environmental values) and management scale matching. It is necessary to include the territory into the zone of macro- and middle-spatial global changes in order to involve territory's assets into the global exchange.

Therefore, the strategic target of the megaproject should, in particular, reflect the desire of a country, a district or a region to expand its participation in the global exchanges and enhance its value (through capitalization) in this system, increasing the value of their assets, especially human capital and environmental quality of life activity in a society.

Under present-day conditions the sense of the districts and regions development strategies in Russia is changing, while the development of regional megaprojects is a fairly new practical task, which is not only the prerogative of the Federal Center, because it “runs counter to the interests and approval principles of constitutional economy and civil society” [6, p. 6-7; 7].

These are just the social, nature and economic systems of the middle level – regions and macro-regions, which should actively organize the systemic reproduction of resources today, they should integrate the systems, which are at the lower hierarchical levels, as the spaces of interaction of territorial systems. An important condition for such integration is improving the tools of territorial development strategic management.

The grounds for the development of territorial megaproject may include: paradigmatic change in the national spatial strategy; the transformation of current economic structures and territorial proportions; the economic development of territories that are in the extreme conditions; ensuring inter-sectoral collaboration in the use of various resources and in the formation of new territorial and industrial complexes, clusters; the implementation of long-term projects that have significant economic, social and environmental impacts, social pronounced effect; the integrated use of all intensification and modernization reserves, lying in the sphere of sectoral and spatial development; the application of specific institutional and organizational arrangements in order to solve the territorial program problems.

Territorial megaprojects, as opposed to financial investments, focused on a concrete material result that should have a significant prolong impact on the transformation of economic space, and the processes of their development and implementation require extensive pre-planning research, implementing competency, effective development institutions, the convergence of public and private interests,

publicity and high public response. They catalyze the development of the adjacent sectors, high value-added economy, services and knowledge, clusters and inter-regional cooperation. Innovative strategic territorial management in the regions and districts of Russia is associated with the development of the concept of territorial mega-projecting and the modernization of technology for its implementation.

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