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MULTI-CRITERIA ASSESSMENT OF REGIONS TO DETERMINE THE PERSPECTIVES FOR CREATION OF INNOVATIVE DEVELOPMENT TERRITORIES*

The paper views the methodological approaches to the assessment of regional potential for launching of innovative development territories. The author suggests the system of quantitative and qualitative indicators which enables the identification of the initial conditions for perspective scientific, technological and innovative development of territories, as well as the management team potential as the key source of successful realization of the project.

Keywords: territory of innovative development; innovative potential; science-based city; special economic zone.

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БАГАТОКРИТЕРІАЛЬНЕ ОЦІНЮВАННЯ РЕГІОНІВ ДЛЯ ВИЗНАЧЕННЯ ПЕРСПЕКТИВ ФОРМУВАННЯ ТЕРИТОРІЙ ІННОВАЦІЙНОГО РОЗВИТКУ

У статті викладено методичні підходи до визначення потенціалу регіонів з метою створення в їх межах територій інноваційного розвитку. Запропоновано використовувати систему кількісних і якісних показників, які дозволятимуть не тільки виявляти початкові умови перспективного науково-технологічного та інноваційного розвитку території, але й потенціал команди управління як важливої умови успішної реалізації проекту.

Ключові слова: територія інноваційного розвитку; інноваційний потенціал; наукоград; особлива економічна зона.

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МНОГОКРИТЕРИАЛЬНАЯ ОЦЕНКА РЕГИОНОВ ДЛЯ ОПРЕДЕЛЕНИЯ ПЕРСПЕКТИВ ФОРМИРОВАНИЯ ТЕРРИТОРИЙ ИННОВАЦИОННОГО РАЗВИТИЯ

В статье изложены методические подходы к определению потенциала регионов с целью создания в их границах территорий инновационного развития. Предложено использовать систему количественных и качественных показателей, позволяющих не только выявлять начальные условия перспективного научно-технологического и инновационного развития территории, но и потенциал команды управления как важного условия успешной реализации проекта.

Ключевые слова: территория инновационного развития; инновационный потенциал; наукоград; особая экономическая зона.

Problem setting. The vector of the country's innovative development, marked as top priority on the federal level of key policy documents in Russian Federation, defines the primary need for a theoretical framework and practical implementation of integrated territorial structures which would strengthen the innovative aspect of economic development.

Competently implemented, the development of territories will not only considerably increase the integrated socioeconomic indicators of the federal members but

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will also create conditions for fully innovative development of regions, due to synergy effect.

The Ministry of Economic Development of Russian Federation treat territories of innovative development as a special kind of economic subjects – science-based cities and special economic zones for technology implementation.

Currently there are 5 effectively functioning special economic zones of technology implementation and 14 science-based cities. In some regions a normative consolidation was also given to the initiatives of creating favorable economic zones, special economic zones of regional level.

The analysis of the regulatory framework in Russian Federation shows that only a region leading in qualitative and quantitative aspects of innovative development can claim for a normatively consolidated status of such a structure. The author shares the views of V.V. Ivanov and O.A. Koshkareva (2008) who state the possibility of designing territories of innovative development in regions with medium and low initial research, innovation and social indicators, which would facilitate the leveling of regional development. Viewing the region as an administration subject, we may conclude that it is "out of the comfort zone" starting position that may trigger outrunning growth and economic development if we design territorial organization wisely and make a clever choice of growth points.

Complex methodological frameworks bringing out the potential of certain regions to form innovative development territories may be effectively employed by local governments. Taking into account the produced multiplicative effect, this practice, lobbied by administration, may enhance the creation of new territories of development at the federal level.

Latest research and publications analysis. Researchers of Russian Federation and other countries have given a rather detailed analysis of methodological approaches to the assessment of innovative development, regions' innovative potential and other related issues.

A similar analysis of the existing approaches, conducted by the author, revealed the following strategies as the most efficient: the efficient methods of innovation activity rating, the National Association of Innovation and IT development; the innovation development index, the Association of Innovative Regions of Russia; the innovativeness level, the national research university "Higher School of Economics"; the index of areal innovative development in Russia, the Institute of Innovative Economics of the University of Finance under the Government of Russian Federation.

Foreign methodological approaches to assessment of innovative development slightly differ from the ones developed in Russia, yet in a number of cases they underlie them, for example the Global Innovation Index (INSEAD, France); the European Innovation Scoreboard and the Regional Innovation Scoreboard, widely used in European countries; the Innovation Portfolio Index (the US Department of Commerce) etc.

Though the abovementioned methodological approaches are widely employed for the assessment of socioeconomic and innovative development of regions and their ranging, they do not fully meet the requirements of determining potential territories of innovative development. Based on the statistic indicators framework, they com-

prehensively examine a region as a subject of innovative economics. Yet those indicators that demonstrate the significant achievements of local entities may be missing from the list of the studied aspects.

The indicators proposed in the mentioned methods are mostly static, while the assessment of regional potential of forming territories of innovative development demands rather dynamic indicators since they facilitate identifying region's chances for outrunning innovation growth.

Research objectives. The present research aims at working out methodological approaches to assessment of various regions' potential for innovative development.

Key research findings. The regulatory framework of Russian Federation clearly defines the process and the criteria for selecting territories of innovative development at the federal level.

In compliance with the Provision on the contest of applications for creating special economic zones and the documentation on participation in this contest an eight-criteria based system was introduced (Figure 1).

The system of indicators (Figure 2) is employed to assess a municipal entity that claims for the status of a science city. It helps trace the interdependence between the overall current condition of the territory, the potential of its research-and-production complex, and separate companies at large.

Academic literature does not explicitly describe the methodological approaches to the assessment of regional potential for creating territories of innovative development.

E.A. Lurye (2009) distinguishes the administrative leverage, the mindset of the society, and the priorities of science and education as the key factors to estimate a territory of innovative development.

V.V. Ivanov (2002) distinguishes the following criteria for successful innovative development, which in fact constitute a system of quantitative indices for their assessment:

- necessary starting development level of the initial research-and-production potential of a region;
- competitiveness of a region;
- broad sales markets of the current and potential production of the territorial economic complex;
- funding;
- strong support for innovative development by authorities.

The examination of normative and scientific approaches to the assessment of region's potential for forming territories of innovative development shows that they are not to be unified and that social-humanitarian projecting demands specific methodological approaches, which should meet the following requirements:

- they should be based on the key functions of territories of innovative development and/or classical stages of innovative process;
- they should take into account the interrelation between the system indices and exclude doubling;
- they should include not only static indicators but also the dynamic ones and relative indices of efficiency;



Figure 1. The system of selection criteria for assigning a territory the status of a special economic zone of technology implementation, made by the author based on Regulation of the tendering process for selecting applications on the creation of special economic zones

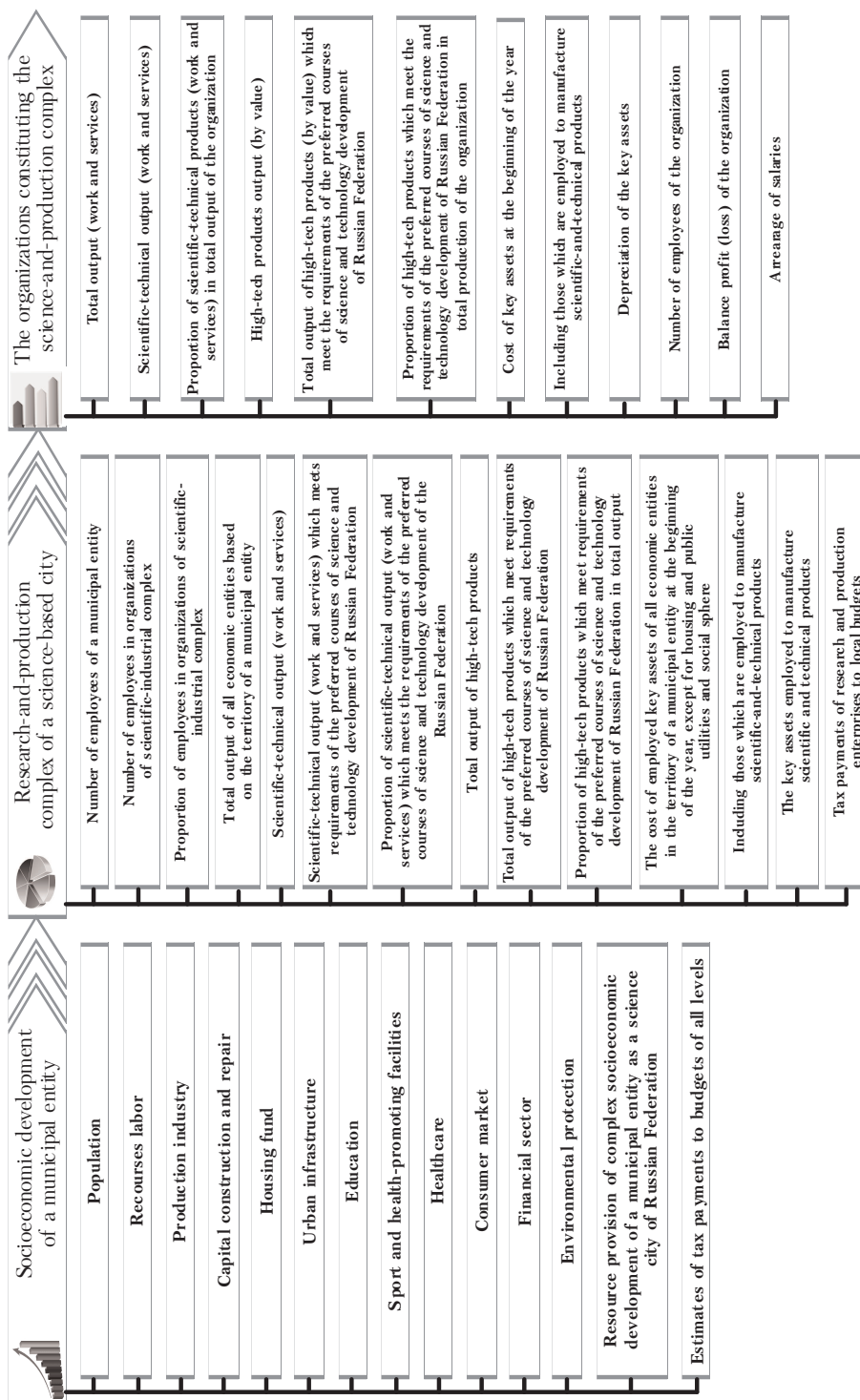


Figure 2. The indicators system to assess a science-based city, made by the author based on Guidelines for the documents preparation of the award of Russian Federation's science city status to municipal district

- apart from the assessment of the region's (municipal constituency) capacity, the potential of project team and local authorities and a friendly attitude to innovations in society should also be considered as key factors in the estimation of potential for creating territories of innovative development;

- there must be worked out different approaches or criteria to assess territories of innovative development creating potential of regions with different conditions – high, medium or low innovative development level.

To assess the innovative development territory forming potential of regions (municipal entities) we propose to work out a system of qualitative and quantitative indicators, which include the following key components:

- socioeconomic and scientific-technical potential of a certain region;
- project management team's potential;
- innovation susceptibility of the society.

Socioeconomic and scientific-technical potentials are suggested to be grounded with the key functions of territories of innovative development and to be evaluated with the following indexes, which define the prospects of a region for their realization. Figure 3 provides the key aspects of evaluation, which correspond to the functions of territories of innovative development (the system of indices is not provided due to the restricted volume of the publication).

The research states that it is important to calculate the indices by separately taken components and the growth rates of innovative development territories. The integral indices are supposed to provide the basis for the rating system of regions.

The author's opinion on the ranging methodology and selection criteria for potential platforms for creating the territories of innovative development could be presented as follows.

Stage 1. Calculating indices and conducting their rating. While assessing qualitative indicators, "1" is proposed to be used if a feature is represented, "0" – if it is not. The indicators that exert negative influence on the integral level should be preliminary inverted.

Stage 2. Determining the integral index for each component as a multitude of rated indicators.

Stage 3. Rating the regions to single out top-10 of the strongest ones for each component.

Stage 4. Defining the integral index of the socioeconomic and innovative potential of regions to single out top-10 the strongest ones.

Similarly, regions are ranged by their growth rates which brings out top-10 of the strongest ones for each component and the ones with the highest growth indices of socioeconomic and innovation potential. To calculate the growth rates of relative indexes the value of the previous period should be deducted from the current value.

To elicit the regional potential to form territories of innovative development the following criteria are proposed:

- regions that belong to the top-10 by their socioeconomic and innovative potential (those with high innovation potential);
- regions that belong to the top-10 of the socioeconomic and innovation potential influx (those with high innovation activity);

Functions of innovation development areas	Research component of a territory of innovative development		Aspects of assessment
	Conducting world-competitive fundamental research capable of providing scientific basis for applied research of current interest	<ul style="list-style-type: none"> - Diversification of fundamental research - Sufficient number of research staff - Patenting and publications 	
	Developing new technological solutions of the top-priority economic activity of the country, based on the findings of applied research	<ul style="list-style-type: none"> - Diversification of applied research - Patenting - Efficiency of applied research 	
	Qualitative development of research in the territory	<ul style="list-style-type: none"> - Popularity of scientific research - Financial support for scientific research - Topicality and innovation attraction of scientific research and findings - Sufficient equipment 	
	Transfer-promotional component of a territory of innovative development		
	Creation and support of a system efficiently attracting advanced technologies and scientific-technical solutions from internal and external sources	<ul style="list-style-type: none"> - Intensity of the solutions influx from internal sources - Intensity of the solutions influx from external sources 	
	Introduction of the worked out technologies and products into the productive sector of the area	<ul style="list-style-type: none"> - Intensity of innovations promotion - Efficiency of innovations promotion 	
	Overall support for commercialization of the applied research findings by created innovative companies	<ul style="list-style-type: none"> - Development of innovative infrastructure - Efficiency of innovative infrastructure 	
	Creation and support of a system of technology transfer within the area and exchange with external stakeholders with the priority of export over import	<ul style="list-style-type: none"> - The efficiency of the technology transfer system - Cooperation capacity 	
	Creating favorable conditions for faster development of new products and services	<ul style="list-style-type: none"> - Financial support for innovative activity - Intensity of innovations development - Level of local innovation system development - Influence of the created conditions on the development of innovation activity 	
	Raising investments to develop innovative activity of local organizations	<ul style="list-style-type: none"> - Investment activity development - Investments into research - Attractiveness for foreign investors 	
	Industrial component of a territory of innovative development		
	Facilitating the development of material and technical base for manufacturing companies, a new technology and high-tech equipment inflow	<ul style="list-style-type: none"> - Expenditures for the material and technical base development - ICT development level - The degree of material and technical base updating - Efficiency of the material and technical base employment 	
	Organizing and developing effective production based on advanced technological solutions	<ul style="list-style-type: none"> - Quantitative description of enterprises and organizations - Efficiency of innovation active enterprises 	
	Increasing competitiveness of local companies	<ul style="list-style-type: none"> - Efficiency of companies - Competitiveness of innovative products - Influence of innovations on the efficiency of companies 	
	Infrastructural component of a territory of innovative development		
	Creating infrastructure for effective faultless functioning of local enterprises	<ul style="list-style-type: none"> - Power infrastructure development level - Transportation infrastructure development level - Information infrastructure development level 	
	Human capital component of a territory of innovative development		
	Overcoming depopulation, preserving demographic and labor resources	<ul style="list-style-type: none"> - Demographic resources - Labor resources - Employment of labor resources 	
	Creating favorable conditions for general qualitative growth of the human capital	<ul style="list-style-type: none"> - Expenditures for human capital development - The development level of the qualified manpower preparation system - Qualified manpower availability 	
	Providing an inflow of qualified experts	<ul style="list-style-type: none"> - Detailed description of the qualified experts inflow - Participation of youth in science - Detailed description of the created conditions for the researchers inflow 	
	Development of interregional and international connections in order to increase human capital of the territory and to provide further professional training in accordance with the principle "education throughout the lifetime"	<ul style="list-style-type: none"> - "Education throughout the lifetime" system development - Career enhancement system development - Interregional and international mobility 	
	Marketing component of a territory of innovative development		
	Creation and development of an effective technology and brain capital market in the territory	<ul style="list-style-type: none"> - Innovative products market development level - Technology market development level - Venture capital market development level 	
	Full-scale facilitation to the realization of innovative products and the industrial sector services in the territory	<ul style="list-style-type: none"> - Popularity of non-technological innovations - Description of exhibition and trade fair activities 	
	Increasing investment attractiveness of the territory, promoting its brand image in the global economy	<ul style="list-style-type: none"> - Investment attractiveness of the territory - Respectable image of the territory 	
	Social component of a territory of innovative development		
Increasing the employment and average wages of the population	<ul style="list-style-type: none"> - Income of population - Employment of population 		
Enhancing the quality of living in the territory	<ul style="list-style-type: none"> - Health protection - Social standards of living - Security 		

Figure 3. The key aspects of assessing socioeconomic and scientific-technology potential of regions from the functional perspective, made by author

- regions that belong to the top-10 of at least 3 rating component of socioeconomic and innovative potential increase (those with high prospects for innovative development);

- regions that belong to the top-10 of at least 3 ratings of socioeconomic and innovative potential increase (those with high prospects for innovative activity development).

At the core of the proposed assessment of social sensibility to innovations are the factors that could be evaluated with the help of social polls or expert panels:

- population's motivation for innovative activity;
- education and qualifications, which allow adopting new technologies in professional work and in everyday life;

- people's awareness in matters of innovative activity;
- ability and readiness to continuous education, retraining and self-study;
- interregional and international mobility in the field of innovations;
- creativity and resourcefulness, willingness to work in a highly competitive environment;

- participation of population and companies in federal and regional projects which facilitate innovative activity development;

- participation of people and companies from other regions in regional projects which facilitate innovative activity development;

- progress of interregional projects promoting innovations;

- initiative of companies and individuals for the development of innovative environment;

- cooperation of companies and individuals with institutes of development which facilitate innovation activity;

- efficiency of the system which searches and promotes promising innovative ideas;

- development of expert community in the field of innovation;

- development of information resources which promote and popularize innovations, databases of promising projects and companies;

- simplicity of organizing innovative businesses.

In conformity with the results of scoring (the scale is from 0 to 5) within the suggested framework regions are proposed to be ranged by the level of social sensibility to innovations:

- HIS-regions (the first third of the rating) – donors of innovations, which synthesize innovation impulses and spread them to other regions;

- MIS-regions (the second third of the rating) – in a number of cases they are not only donors but also recipients of innovations at the relative flexibility of managing innovation processes;

- LIS-regions (the third third of the rating) – recipients of innovations with relatively low promotion of innovative activity.

HIS-regions could provide the most efficient basis for forming territories of innovative development. Yet the possibility to increase innovation sensibility of MIS-regions is not excluded. It determines their positions in the rating of socioeconomic and innovative potentials growth.

An additional key factor in assessing prospects for creating a territory of innovative development will be the management team's potential, which is to be performed with the expert approach only. A source of information may be the general CV of the team or CV of each member in particular, which present their education, qualification, essential stages of career, experience successful realization of innovative and/or regional/municipal management projects. The team's CV should provide sufficient information to evaluate its coherence, lack of personal contradictions and effectiveness.

Conclusions. Assessment of regional potential for creating a territory of innovative development requires evaluation of socioeconomic and innovative potentials and also, if needed, evaluation of social sensibility to innovations and the efficiency of regional management authorities (Kharlamova, 2014).

The framework of the research suggests the general assessment of regions; more detailed data will be achieved in case of calculating indices for every municipal entity in particular. The latter strategy is more time-consuming, but it can facilitate choosing the location for a territory of innovative development.

The results of assessing socioeconomic and innovation potentials of a region will determine or correct the program and the plan of creating a territory of innovative development with the aim of advanced development of those components which are characterized by insufficient rating. A peculiar feature of social-and-humanitarian design of territories of innovative development is the fact that it relies on particular point of support – components with high rating and advancement of insufficiently developed components.

An essential prerequisite for creating a self-developing system on a territory is efficient interrelation between separate components. It is due to the fact that it is interconnecting processes that influence the stability of the system.

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