

METHODOLOGICAL APPROACHES TO ESTIMATION OF THE STABILITY OF MUNICIPAL FORMATIONS: ANALYSIS OF INTERNATIONAL RESEARCHES

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Abstract: The paper discloses conceptual provisions of sustainable development, the principles of sustainable environmental and economic development, the problems and contradictions of the modern phase of sustainable development concept implementation. The directions on achievement of the sustainable development goals are substantiated on the basis of materials provided by international organizations. The work studies the trends in sustainable development of municipal formations revealed by Pricewaterhouse Coopers International Limited (PwC). The system of sustainable development indicators both at the municipal and at the international level is considered. The directions of achievement of sustainable development goals are grounded. A number of tasks necessary for the sustainable development of municipal formations have been formulated. In accordance with the guidelines of the fundamental international documents adopted in terms of formation and implementation of conceptual provisions for sustainable ecological and economic development, criteria and indicators have been identified that allow assessing the economic, social and environmental situation at various levels of the social system. Based on the study of methodological developments of the United Nations and the World Bank, the criteria and indicators have been systematized to assess the level of sustainability of the ecological and economic system. The foreign experience of sustainable development of municipalities is generalized and analyzed. Taking into account foreign experience, proposals are formulated to improve methodological approaches to analyze and assess the level of sustainability of the ecological and economic system in its various aspects.

Keywords: sustainable development, ecological and economic system, sustainable development model, problems and contradictions.

1 Introduction

In accordance with the Sustainable Development Concept, the goal of sustainable development of municipal formations is to promote stable development of society in accordance with modern requirements, i.e. balanced socio-economic development which does not damage external environment and contributing progress of society. Municipalities have a serious potential and ability to bring in a tangible contribution to the decision of socio-economic development problems of the country. For this purpose, it is necessary to determine priorities in development of territories based on systematized approach to development of municipalities (Villalobos Antúnez, 2001; Makhyanova & Zainullina, 2015).

2 Methodology

The basis for the PwC study was the system of indicators grouped by directions: intellectual capital and innovations, technological readiness, transport and infrastructure, health, security, law and order, sustainable development and environment, economic impact, favorable conditions for doing business, costs, demography and living conditions, and others. Original information is contained in such multilateral international organizations such as The World Bank and International currency fund, national statistical organizations, such as UK Management National Statistics and United States Bureau of Census, and commercial service providers data.

3 Results and discussion

Sustainable development of a municipal formation may be characterized by a set of indicators which give qualitative and quantitative assessment of the situation, and also let see where we moving.

We consider that it is necessary to execute a number of tasks to implement the sustainable development of municipalities; among those tasks we can specify the following:

1. Organization of a system for stimulation of sustainable development of municipal formations;
2. Formation of the system for support of sustainable development projects in municipal formations;
3. Creating a system for monitoring sustainable development of municipal formations.

For the solution of tasks assigned it is necessary to realize methods of management by development and implementation of strategies, programs and techniques.

Methods of sustainable development implementation in municipal formations are presented in Table 1.

Table 1. Methods for implementation of sustainable development in municipal formations

	Tasks			
	Formation of a system on support of sustainable development projects in municipalities	Creation of financing mechanisms for municipal sustainable development	Organization of a system for stimulation of sustainable development of municipalities	Creation of a system on monitoring sustainable development of municipalities
Methods	1. Development of a strategic Plan and programs of sustainable development of municipalities	1. Budget financial mechanisms: - creation of favorable legislative conditions (including tax); 2. Participation of Russian systemically important banks. 3. Attraction of Russian private and foreign investors to support of enterprises	1. Development of Sustainable Development Institutions; 2. Creation of a system on training, retraining and personnel development; 3. Improve of infrastructure for sustainable development of municipal formations; 4. Organization and coordination of actions held by municipalities	1. Development of the sustainable development indicator system for municipalities and their evaluation; 2. Evaluation of the production, ecological and socio-economic impact of sustainable development municipalities

To create a municipal formation sustainable development monitoring system, it is necessary to work out the system of indicators of municipal formation sustainable development and methods of their evaluation.

In the opinion of scientists, sustainable development indicators should reflect economic, social and environmental aspects of meeting the needs of a modern generation without limitations to

the needs of future generations to meet their own needs. In order to achieve development which could be considered sustainable, they must take into account achievement of economic growth, but with ensuring its balance with society needs for improvement of life quality and prevention degradation of the environment (Bobylev, 2007; Makhyanova et al, 2015).

It is worth noting that the working out of sustainable development indicators is possible at three levels:

- Federal,
- Regional,
- Local (districts, municipalities, cities).

Their own indicator systems with individual characteristics can be developed at these three levels (Bobylev, 2007; Vonk & Schras, 1987)

It is important to assess and analyze the authorities and resources that can be used to create and use those indicators. It should be noted that the distribution of responsibilities between different levels of state power is discussed in presidential and Duma (the Parliament of the Russian Federation) structures.

"Cities of Opportunity" are highlighted in the study of trends towards the sustainable development of municipalities held by Pricewaterhouse Coopers International Limited (PwC) (Yusupov & Demyanov, 2017; Igorevna et al, 2017). Our analysis of the results of this project which has been implemented since 2007, allows us to formulate a series of conclusions using the system of sustainable development indicators and to develop recommendations for the inclusion of other large Russian cities with high urbanization rates in similar studies. This will make it possible to more rationally form strategic directions for their sustainable development with a view to preserving the resource base for future generations.

First of all, it should be noted that the study includes the largest cities in the world: in 2011 - 26, in 2012 - 27, in 2014 - 30, in 2016 - 30 cities. In addition, special studies are conducted on selected groups of cities. In particular, in 2014 the rating of the cities from the seven leading countries with the developing economy "From Moscow to São Paulo" was published, in 2016 the rating of 10 cities - the leaders providing the greatest number of opportunities was published also.

The PwC study is based on a system of indicators grouped by areas: intellectual capital and innovation, technological readiness, transport and infrastructure, health, security and the rule of law: sustainable development and the environment, economic impact, favorable business conditions, costs, demography and housing conditions, and others. Background information is provided by sources such as multilateral international organizations - the World Bank and the International Monetary Fund, national statistical organizations such as the UK National Statistics Office and the US Census Bureau, and commercial data providers.

Methodological features of these calculations are that the city ratings for a particular parameter are presented in descending order - from a larger (better) indicator to a smaller (worst) one. Then cities are awarded a score from the highest to 1 (the lowest score). After all the parameters were appropriately ranked and evaluated according to a point system, they are categorized. In each category, the scores for a given parameter are added together to obtain the total score. As a result, tables of ratings are compiled reflecting the comparative figures of all the cities participating in the study.

Leading cities are identified for each group. So, in 2016, such cities included London (the leader in the group "Intellectual Capital and Innovations"; analysts note some changes related to the fact that this year in the UK there was a referendum on withdrawal from the EU), Singapore (the leader in the groups "Technological readiness" and "Transport and infrastructure"), Toronto (the leader in the group "Demographics and standard of

living"), Paris (entered the top-10 in many indicators), Amsterdam (entered the top 10 for seven of the ten parameters for which cities were rated), New York (high rating in the group "Demography and the life level), Stockholm (the leader in the group "Sustainable Development and the Environment"), San Francisco (second place in the rating "Intellectual Capital and Innovation"), Hong Kong (leads in the most diverse parameters), and Sydney (high scores in the group "Sustainable development and the environment") (Makhiyanova et al, 2016).

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PwC analysts are considering the ways of development for 26 cities which are world financial and cultural centers.

Analyzing the indicators of these cities, international experts tried to understand what helped the cities to take the leading positions, what are the driving factors in the development of those cities. Then, they transfer the acquired knowledge to civil servants, policy-makers, businessmen, professionals and citizens who contribute to the development of their city.

The "Cities of Opportunity 2011" study is the fourth edition which draws close attention to some of the most urgent problems at the moment - regional governance, education, sustainable development, population density, and transport and nature protection (Makhiyanova et al, 2017).

The results of the correlation analysis give one of the signals that the researchers are moving in the right direction. There is a correlation between favorable economic and social indicators. Of the 10 indicators, five are in close positive relationship - intellectual capital and innovation; health, safety and security; simplicity of doing business; technological preparedness, as well as demography and fitness for life. In other words, if one of them grows, others, as a rule, are pulled up after it. For example, indicators reflecting health and intellectual capital follow each other with astonishing accuracy + 87% (Makhiyanova & Shakirova, 2015).

100% - strong positive correlation

0% - weak positive and weak negative correlation

-100% - strong negative correlation

The results of the correlation analysis in percent are presented in Table 2.

Five indicators, which are very positively correlated with each other, are located in the upper left corner. In addition to the two indicators discussed above, they also include ease of doing business, technological preparedness, and demographics and fitness for life. In this block it is worthy to mention that only the simplicity of doing business is a "tough" economic or financial indicator. The other four are social, educational or technological indicators.

Correlation analysis of sustainable urban development indicators

Table 2. Correlation analysis of sustainable urban development indicators

	average ratio	cumulative total	intellectual capital and innovation	health, safety and security	ease of doing business	Technological readiness	demography and fitness for life	life style	economic impact	transport and infrastructure	expenses	sustainable development
average ratio	55	74	70	67	61	60	57	53	50	48	43	27
cumulative total	74	100	94	91	83	81	76	71	67	65	56	32
intellectual capital and innovation	70	94	100	87	69	81	69	63	54	60	55	36
health, safety and security	67	91	87	100	78	65	84	46	47	46	68	30
ease of doing business	61	83	69	78	100	69	67	51	47	37	62	6
technological readiness	60	81	81	65	69	100	43	63	52	63	35	5
demography and fitness for life	57	76	69	84	67	43	100	28	27	30	67	38
life style	53	71	63	46	51	63	28	100	76	62	11	9
economic impact	50	67	54	47	47	52	27	76	100	68	-5	15
transport and infrastructure	48	65	60	46	37	63	0	62	68	100	-6	3
expenses	43	56	55	68	62	35	67	11	-5	-6	100	24
sustainable development	27th	32	36	30	6th	5	38	9	15	3	24	100

Most economic indicators - economic impact, transport and infrastructure, as well as costs - are in the lower half of the map. Interestingly, that the costs, which are the most "hard" and straightforward economic indicator of all, show a negative correlation with economic influence, as well as transport and infrastructure.

Indicator of intellectual capital and innovation has the greatest correlation with each other indicators. Indicator of health, safety and security are at the second place. However, these two indicators are more related to each other than any other indicators.

4 Summary

It should be concluded that the most competitive cities are almost always those where men and women who create intellectual resources are offered professional and personal conditions that enable them to ensure their health and safety.

As the researchers and analysts of PwC note that correlative analysis introduces an interesting aspect to the study, in which data create their own schemes, of the kind in which a random route leads to new, often unexpected and paradoxical conclusions that cast doubt on some theories and confirms others.

This is a wonderful illustration of the transformation of modern capital economies, which today are based and dependent on education, science and technology, and not on traditional industry. Moreover, in order to consolidate their success, modern cities are obliged to continuously attract and retain mental workers which are highly educated, technically literate and capable to use digital technologies, and which increasingly constitute the essence of their human capital and which are demanding and uncompromising in relation to quality standards life.

5 Conclusion

Thus, according to these data, a successful modern urban economy is dependent (and is almost exclusively a product) of intelligence and social well-being – that is a methodological conclusion which does not seem to challenge a theory, but supports common sense as much.

The development of cities changes over time. Both tangible and intangible components - physical and intellectual capital - should be balanced in modern cities and aimed at intensive development. Intellect is the foundation for the emergence of new ideas, and it serves as an incentive for building innovation.

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Literature:

- Villalobos Antunez J.V. (2001). Derecho, racionalidad y supuesto metodológico de la modernidad, Utopía y Praxis Latinoamericana, 6(12), pp. 64-82.
- Bobylev S.N. (2007). Indicators of sustainable development: a regional dimension. A handbook on regional environmental policy. M.: Akropol, CEPR, p.7
- Yusupov L.R., Demyanov D.N. (2017). Technological process modeling for castings according to specified parameters of output production quality based on production-frame model of knowledge representation, Astra Salvensis, Supplement No. 2, pp. 408-415.
- Igorevna K.V., Gennadievich I.A., Ibatova Z.A. (2017). Levels of linguistic self-educational competence development among the students of non-linguistic specialties. Revista QUID (Special Issue), pp. 865-869.
- Vonk J.H.C., Schras G.A. (1987). From beginning to experienced teacher: a study of professional development of teachers during their first four years of service, European J. of Teacher Education. Vol. 10, No. 1, pp. 95-110.

6. Makhyanova A.V., Sayfudinova N.Z., Timofeev R.A. (2016). Methodological basis of the regional systems socio-economic profile using survey method. *Journal of Economics and Economic Education Research*, 17(2), pp. 325-334.
7. Makhyanova A.V., Demyanova O.V., Vdovina C.D., Pugacheva M.A. Lazarchik S.D., Girfanova A.I. (2017). Regional market of medical equipment: Perspectives of development, I *Research Journal of Applied Sciences*, 11(11), pp. 1172 – 1177.
8. Makhyanova A.V., Shakirova A.F. (2015). Social portrait of the residents in the megapolis through the prism of the

governmental institutions' activities, *The4th International Congress on Interdisciplinary Behavior and Social Science*, pp. 135-138.

9. Makhyanova A.V., Burganova T.A., Huzieva E.F. (2015). Trends to the social structure formation of rural society: the ideal and real models *The4th International Congress on Interdisciplinary Behavior and Social Science*, pp. 49-54.
10. Makhyanova A.V., Zainullina M.R. (2015). Animated films for children as an agent of socialization (based on the results of content analysis) *The 4th International Congress on Interdisciplinary Behavior and Social Science*, pp. 44-49.