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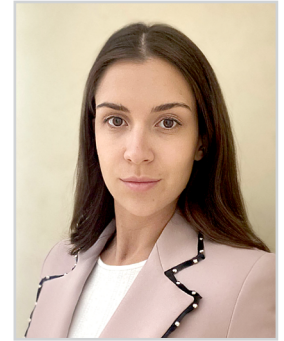
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Use of public-private partnership for the implementation of innovative urban policy and formation of the adaptive territory

Abstract

The article substantiates the use of public-private partnership (PPP) in order to implement the innovative urban planning policy and create the adaptive territory aimed at the implementation of modern realities of development in the context of technological and social transformation of the economy. The authors of the paper have carried out a comparative analysis of the peculiarities of the implementation of the urban planning policy in individual countries, which made it possible to determine its main innovative directions in modern conditions and form a conceptual basis for the implementation of an innovative urban planning policy based on PPP, a distinctive feature of which is the integrated consideration of factors affecting urban planning activities, as well as the orientation of innovative projects towards the implementation of the adaptive territory approach that meets modern requirements and gives the greatest synergistic effect during its implementation. A comparative analysis of the use of public-private partnership in urban planning activities in individual countries of the world has been carried out. As a result, an expert analysis methodology for the compliance of the PPP project with the goals and principles of the adaptive territory approach has been substantiated, based on the use of identified priorities for territorial development, a procedure for assessing the contribution of PPP subjects to solving problems of urban planning and calculating a compliance ratio. The proposed methodology makes it possible to comprehensively evaluate the results of the implementation of PPP projects both at the stage of completion and at the stage of project operation.

Keywords: Socio-economic Development; Economic Policy; Innovative Spatial Development; Public-Private Partnership; PPP; Adaptive Territory

JEL Classification: O20; O38; O57

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Використання державно-приватного партнерства для реалізації інноваційної містобудівної політики та формування «адаптивної території»

Анотація. У статті обґрунтовано використання державно-приватного партнерства для реалізації інноваційної містобудівної політики, спрямованої на реалізацію сучасних реалій розвитку в умовах технологічної та соціальної трансформації, а також формування «адаптивної території». Запропоновано концептуальні засади реалізації інноваційної містобудівної політики на основі державно-приватного партнерства, відмінна риса якої полягає у наявності комплексу обліку факторів, що впливають на містобудівну діяльність, а також орієнтації інноваційних проектів на реалізацію концепції «адаптивної території», що відповідає сучасним вимогам і дає найбільший синергетичний ефект під час його реалізації. Було обґрунтовано експертно-аналітичну методіку відповідності проекту державно-приватного партнерства цілям і принципам підходу «адаптивної території», в основу якого було покладено виявлення пріоритетів територіального розвитку, процедури оцінки вкладу суб'єктів державно-приватного партнерства у вирішення завдань містобудівної діяльності, а також розрахунку коефіцієнта відповідності. Запропонована методика дозволяє комплексно оцінювати результати реалізації проектів державно-приватного партнерства як на стадії завершення, так і на стадії експлуатації проекту.

Ключові слова: соціально-економічний розвиток; економічна політика; інноваційний просторовий розвиток; державно-приватне партнерство; адаптивна територія.

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Использование государственно-частного партнерства для реализации инновационной градостроительной политики и формирования «адаптивной территории»

Аннотация. В статье обосновано использование государственно-частного партнерства для реализации инновационной градостроительной политики и формирования «адаптивной территории», направленной на реализацию современных реалий развития в условиях технологической и социальной трансформации экономики. Предложены концептуальные основы реализации инновационной градостроительной политики на основе ГЧП, отличительная особенность которых заключается в комплексном учете факторов, влияющих на градостроительную деятельность, а также ориентации инновационных проектов на реализацию подхода «адаптивной территории», отвечающего современным требованиям и дающего наибольший синергетический эффект при его реализации. В результате проведенного нами исследования обоснована экспертно-аналитическая методика соответствия проекта ГЧП целям и принципам подхода «адаптивной территории», базирующаяся на выявлении приоритетов территориального развития, процедуре оценки вклада субъектов ГЧП в решение задач градостроительной деятельности и расчете коэффициента соответствия. Предложенная методика позволяет комплексно оценивать результаты реализации проектов ГЧП как на стадии завершения, так и на стадии эксплуатации проекта.

Ключевые слова: социально-экономическое развитие; экономическая политика; инновационное пространственное развитие; государственно-частное партнерство; адаптивная территория.

1. Introduction

Modern trends in the development of the world economy consider the latest technologies and innovations as indicators that determine the directions of economic growth and economic security of any country. It is the innovative scenario that contributes to the rapid spread of new information technologies in society, its technologization and digitalization, adaptation of the general directions of development of innovations to the specifics of a particular country, as well as the development of the infrastructure of a post-industrial society, which is being formed in modern realities due to

technological and social transformations. This is why the economic systems of many countries are in search of effective ways to use the achievements of the innovation mechanism for economic growth and obtaining of additional competitive advantages in the world market, including urban planning policies. The innovation environment, where the interaction of subjects (commercial and non-profit organizations, public authorities and individuals) and resources of innovation takes place, should include the achievements of technologization and digitalization of the economy in order to ensure its development. To achieve these trends, a transformation, aimed, among other things, at ensuring innovative spatial development and providing a high standard of living, is required. This mechanism contributes to the development and formation of the *adaptive territory*. Moreover, it should be noted that in the implementation of urban development policy, measures are formed to provide comfortable housing, production, transport, as well as social and other engineering infrastructure. Providing the population with this infrastructure currently causes a number of problems associated with a budget deficit, which limits, for example, the ability to provide high-quality and timely replacement of engineering networks. To achieve the greatest synergistic effect, it is necessary to coordinate the interests of the state and business in order to increase the functioning of the tools to implement the state economic policy. An effective approach in this area is public-private partnership (PPP), which makes it possible to optimally coordinate the work of both the state and businesses. Only with close interaction between the state and individuals is it possible to obtain the maximum effect that ensures the country's economic growth at a high rate. Despite rather a deep study of this problem in theory and the availability of extensive empirical material, the issues of using PPP in the implementation of innovative urban planning policies caused by modern development trends remain unresolved.

2. Brief Literature Review

In modern domestic and foreign science, a significant number of works are devoted to the problems considered in this article. The issues of innovative development of the economy were studied by Russian researchers (Bodrunov, (2017); Kuznetsov & Budanov (2003); Plotnikov (2018); Danchikov, Gureva, Polozhentseva, Chernenko & Varavenko (2017)), as well as by foreign authors (Santos-Vijande, López-Sánchez, Pascual-Fernández, & Rudd (2021); Kalar, Primc, Erker, Dominko, & Ogorevc (2021); Rosienkiewicz, Helman, Cholewa, Molasy, & Krause-Juettler (2021)). The use of the experience of public-private partnerships, including the implementation of urban planning policy, was considered by foreign authors (Asplund, Björk, Magnusson, & Patrick (2021); Callens, Verhoest, & Boon (2021); Cherkos & Jha (2021)) and Russian researchers (Galochkina, Kosheleva, Grozovskaya, & Zmievsky (2021); Vertakova, Polyanin, & Golovina (2018); Makarov & Plotnikov (2018)). In spite of such an established scientific apparatus on the topic of research, it should be noted that the innovative development of urban planning activity is a broader field for research than it was previously thought. It includes the creation of a new development paradigm for the implementation of the adaptive territory approach, when innovation will be a system-forming factor in its development.

3. The purpose of the paper is to form the foundations for the use of public-private partnerships to the implementation of innovative urban planning policies in the era of technological and social transformation, which makes it possible to substantiate the proposed authors' approach of the adaptive territory to ensure the strategic goal of economic development in any country, i.e. increasing the living standards of the population. Applied research and calculations have been done on the example of the Russian economy, taking into account its inherent specificity, and a comparative analysis of a number of countries on the use of the considered tools in this object-subject area has been carried out.

4. Results

Modern global trends are based on a transformational concept that synthesizes the transition of the country's economy to an innovative development path with the priority of digitalization and technologization to ensure a technological breakthrough (Bodrunov & Plotnikov, 2017).

These circumstances cause institutional and technological transformations of the economic system of any country. This is especially true in the context of the transition of many countries of the world to the post-industrial era, based on the restructuring of productive forces for a new technological order within the framework of the fourth industrial and technological revolution

(Vertakova & Babich, 2017). At the same time, this restructuring, in accordance with historical experience, forces the world economies to carry out a significant transformation of the infrastructure, territorial organization of the economy and settlement, which belongs to the urban planning policy. It should be noted that there are various interpretations and tools of urban planning policies of the countries of the world in theoretical developments and regulatory legal acts. Therefore, a comparative analysis of the peculiarities of the implementation of urban planning policies in individual countries of the world has been carried out (Table 1).

It has been established that the modern urban planning policy in the context of increasing globalization and digitalization of the economy, with a simultaneous increase in the role of participatory planning of self-organization of the active part of the population, should be focused on an innovative development path aimed at solving problems in urban planning activities and increasing living standards of the population.

The implementation of innovative opportunities should be carried out in a complex combination with the use of innovations at various levels, which is shown in Figure 1.

One of the main tools for the implementation of the innovative urban development policy is spatial (territorial) planning, which, as a rule, in foreign countries consists of: 1) strategic; 2) complex; 3) software (sectoral and territorial principle) and 4) design planning.

The authors have formed a classification of the main approaches to the definition of territorial planning as an instrument of the innovative urban planning policy:

- 1) municipal - aimed at ensuring the well-being, improvement of the municipal territory for the comfortable living of citizens;

Table 1:
Analysis of the features of the implementation of urban planning policies in individual countries

Characteristic	Country			
	Russia	USA	Germany	United Kingdom
Availability of legislation	Urban Planning Code of the Russian Federation, Land Code of the Russian Federation, Federal Law «On land management», etc.	There is no legislation at the national level	Law «On Regional Planning» (Raumordnungsgesetz), German Building Code (Baugesetzbuch)	Town and Country Planning Act; National Planning Policy framework
Role of the state	Strong, direct impact	Restricted	Strong, direct impact	Medium
Subjects of implementation	National, regional and local levels	State, local level	National, local level	National, local level
Basic spatial planning documents	Spatial development strategy; General Plan; territorial planning scheme of the Russian Federation; long-term plans for the socio-economic development of cities; state program of the Russian Federation in the field of integrated development of rural areas; analytical programs for the territorial development of macro-regions	Master plan (not available in all states); Comprehensive plan (advisory nature); plans for fragments of the urban environment; legal zoning of the territory; surveying; other local regulations	State Spatial Development Strategy; regional plan; two-level system of territory zoning: 1) preliminary land use plan, 2) basic land use plan; additional industry plans	London development plan (London plan); Core strategies / local plan; neigh-borhood plan
Spatial level of urban planning	National, local level	Local level	National, local level	Local level

Source: Compiled by the authors

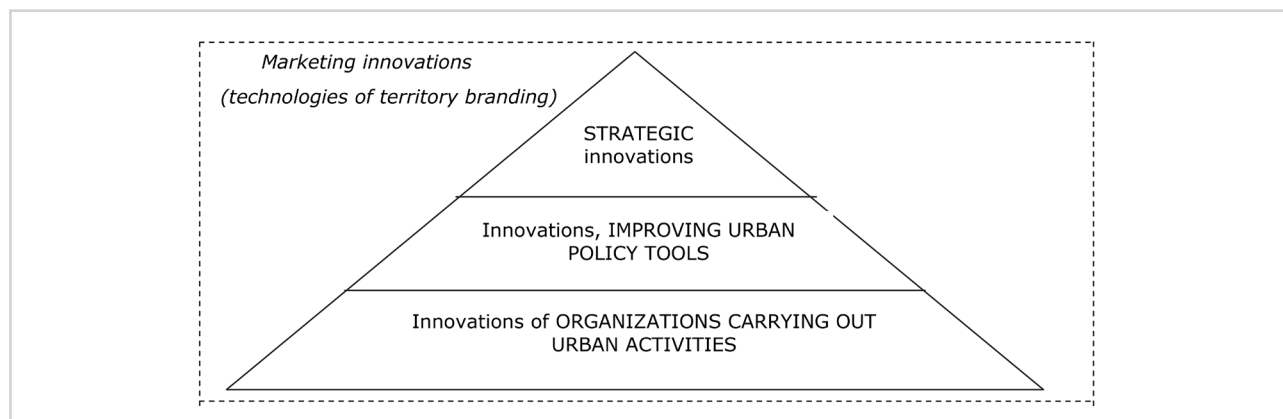


Figure 1:
Pyramid of innovations aimed at development of modern urban planning policy

Source: Developed by O. S. Lebedenko

- 2) racial - the object of this approach is the city;
- 3) engineering - implies the need to technologize urban planning activities through the development of the engineering infrastructure;
- 4) systemic - defines an adaptive territory as a system consisting of various subsystems;
- 5) legal (regulatory) - considers the development of territories with the help of the tools specified in the urban development legislation;
- 6) managerial - the emphasis is on methods of managing urban construction activities by the relevant authorities for establishing and approving regulations on the development of urban planning, as well as locations of objects for state and municipal needs. With this approach, territorial planning can be strategic, tactical and current;
- 7) methodological - a branch of practical activity that uses various methods of territorial planning;
- 8) adaptive territory - a complex and integrated approach that considers the territory as a producer of services for the population of a given territory, while the territory is defined as a «service», which is assessed by using a specialized system of indicators based on the reaction of consumers, which naturally includes the right of self-government. This approach assumes that the organizational structures which form and conduct urban planning policy should be based on the synchronization of the interests of public authorities, businesses, and the population living within the given territory.

The implementation of the adaptive territory approach, in addition to the basic principles outlined in the Urban Planning Code of the Russian Federation, should also be based on the following provisions of:

- participation - formation of directions of urban planning policy based on the interests of the population living within the given territory with their direct participation in this process;
- sustainability - development of long-term plans, prospects and development forecasts, including the concept (strategy) for the development of urban planning activities; it should be noted that many countries do not have a strategy aimed at achieving sustainable development of the territory in order to improve the quality of life;
- balanced development of territories - synchronizing the interests of various subjects and ensuring proportionality in the development of territories;
- digitalization and consistency of information - the development of urban planning activities by using digital technologies and the interconnection of information at all levels of government;
- holism - alignment of interests vertically and horizontally, territorial and sectoral interests;
- efficiency - achievement of the set goals with the greatest effect at a minimum cost, as well as the use of modern tools that correspond to modern trends in economic development;
- synergy - combining the potential, resources and forces of institutional subsystems for the socio-economic and innovative development of territories.

Implementation of the «adaptive territory» approach in urban planning activities can also be based on public-private partnerships (PPP). Therefore, an analysis has been carried out based on the practical experience of using PPP in Russia and abroad. It has been established that at present the PPP instrument is widely used in various countries. [Table 2](#) presents a fragment of the comparative analysis of individual countries regarding the use of PPP in the urban planning policy.

After analyzing the world data on the implementation of PPPs, it was found that the most common PPP projects in urban planning in world countries are water supply, sewerage systems, energy, transport and ICT infrastructure. For example, PPPs are most commonly used in water supply and sewerage systems in China, Brazil, India and Russia ([Figure 2](#)).

In terms of the volume of investments of public-private partnerships in energy and transport, Latin America, India and Brazil have the leading positions ([Figure 3](#)). Also, this tool is widely used in this area by China, Russia, Egypt, Turkey and other countries.

[Figure 4](#) shows the dynamics of investments with the participation of PPPs in the energy sector in countries where there is a steady dynamics of the use of this tool in this industry.

According to the figure, the largest investments involving PPPs in energy in recent years have been observed in Latin America and Brazil.

A methodology has been developed for the compliance of PPP projects with the goals of the adaptive territory approach, based on the use of identified priorities for territorial development, procedure for assessing the contribution of PPP subjects to solving urban planning activities and calculation of the compliance ratio, which allows a comprehensive assessment of the feasibility of PPP projects either at the stage of completion or at the stage of project operation.

Table 2:
Fragment of the comparative analysis of individual countries regarding the use of PPP in the urban planning policy

Country	Availability of the Law «On Public-Private Partnerships» at the macro level	Applicable types of PPPs	PPP support measures
Russia	Federal Law dated 13 July 2015 No. 224-FL «On PPP, MPP in the Russian Federation and Amending Certain Legislative Acts of the Russian Federation»; FL dated 21 July, 2005 No. 115-FL «On Concession Agreements»	BTO, BOT, DBOT, BOO, DBOO, BOOT, DBOOT, DBFO, PFI	Fiscal measures, government guarantees, grant payments, transaction support
Germany	Law «On accelerating PPP» as of 2005; amendments to a number of legislation	No preferred types of PPPs or special regulations related to PPPs, general civil legal framework and regulatory requirements for PPP projects are applied	N/A
China	The concession law or procurement regulation allowing PPP projects The concession law defines the type of services that can be procured under them	O&M, MC, BOT, BOO, BOOT, TOT, ROT	Payments on grants, subsidies, transaction support
United Kingdom	Implements a common law approach to solving PPP problems	Private Finance Initiative (PFI) since 1992 and a pioneering model for publicly owned PPPs; implementation of multiple PFI projects	state guarantees
France	the adopted public procurement and concession agreements can be considered as a law on PPP: Introduction of a PPP Contract - Government Decree No. 2004-559 as of 17 June, 2004; Law «On PPP Contracts» No. 2008-735 as of 28 July 2008	Concession agreements are used, which serve for the implementation of large infrastructure projects, and there are also «partner contracts» for PPP	government guarantees, grant payments
Australia	Implements the common law approach to solving PPP problems. National PPP policies and guidelines are developed	Infrastructure projects are categorized into two categories: «projects» that have received an economic justification and have been assessed for feasibility, and «initiatives» that are at an earlier stage of preparation for which a business case has not yet been completed	payments on grants, subsidies, transaction support
Japan	The Law «On the Encouragement of Private Financial Initiatives» can be considered as a law on PPP	PFI and concessions are often used	N/A
USA	N/A	Widely used design-build, management contracts, concessions, public corporations	Fiscal measures, government guarantees, payments on grants, subsidies, transaction support
Turkey	Specific legislation in the form of laws and regulations which are adopted in accordance with specific PPP models; a draft law «On PPP» is under consideration	BOT, BLT, BO, TOP and concessions in various sectors such as transport, energy, mining, health and the environment	Fiscal measures, government guarantees, transaction support

Source: Compiled by the authors

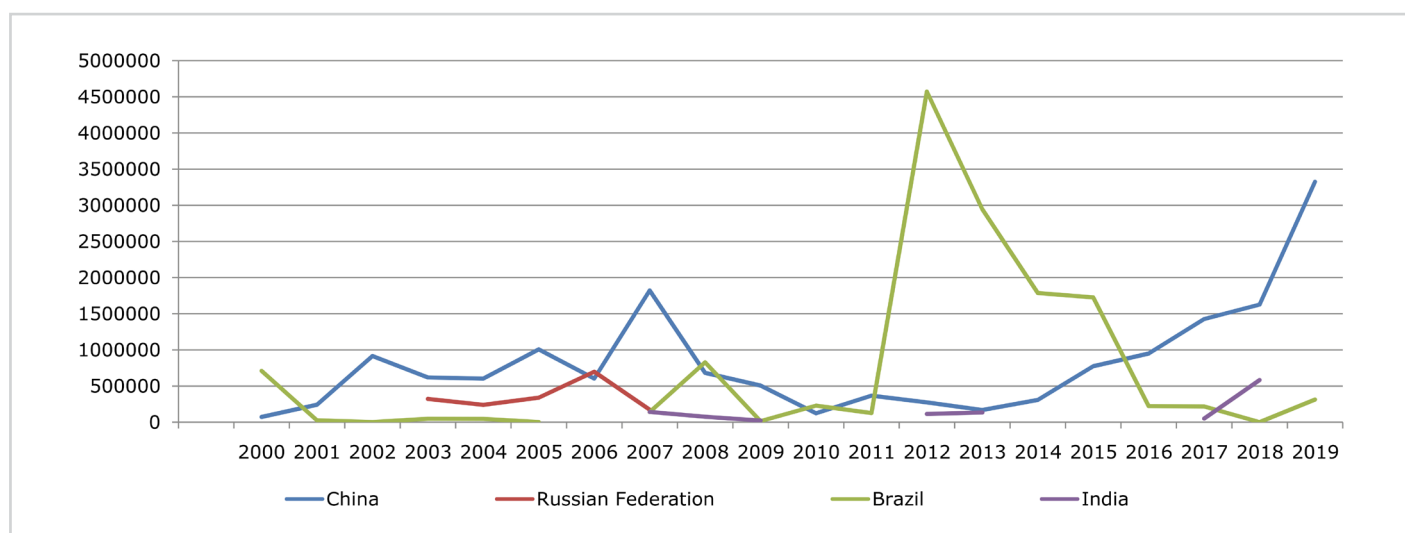


Figure 2:

Investments of public-private partnerships in water supply and sewerage systems of selected countries (USD thousand)

Source: Compiled by the authors based on data from the World Bank (2020)

The main criteria for choosing a project for the development of a territory to attain the goals of the adaptive territory approach are compliance of the project goals with the logic of the approach, fulfillment of the stated terms of implementation, priority of extrabudgetary funding, achievement of planned objects, socio-economic impact, the possibility of transferring the experience of project implementation, invariability of the number of project participants and quality of project implementation. As a way to assessment, a five-point scale was proposed, according to which the highest score (*Snorm*) corresponds to the maximum estimate. Compliance is made by comparing the actual scores obtained with the maximum possible result based on the match factor:

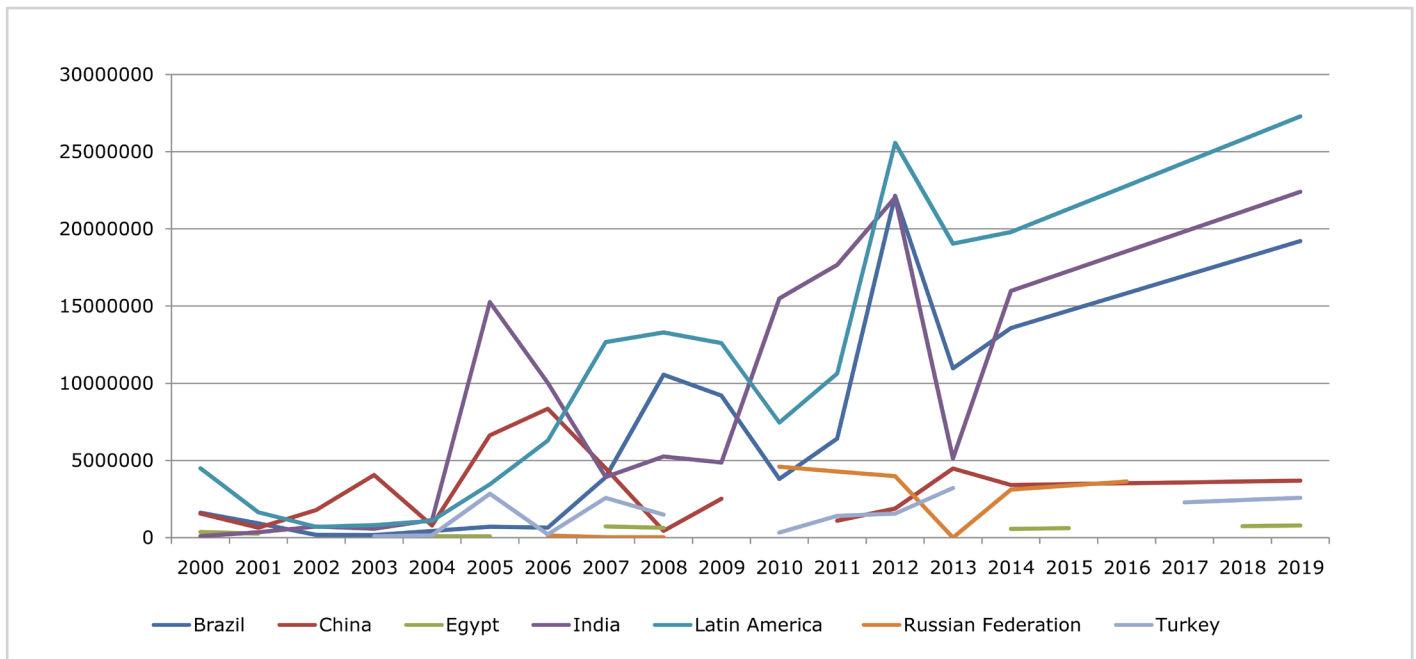


Figure 3:
Investments of public-private partnerships of individual countries transport (USD thousand)
 Source: Compiled by the authors based on data from the World Bank (2020)

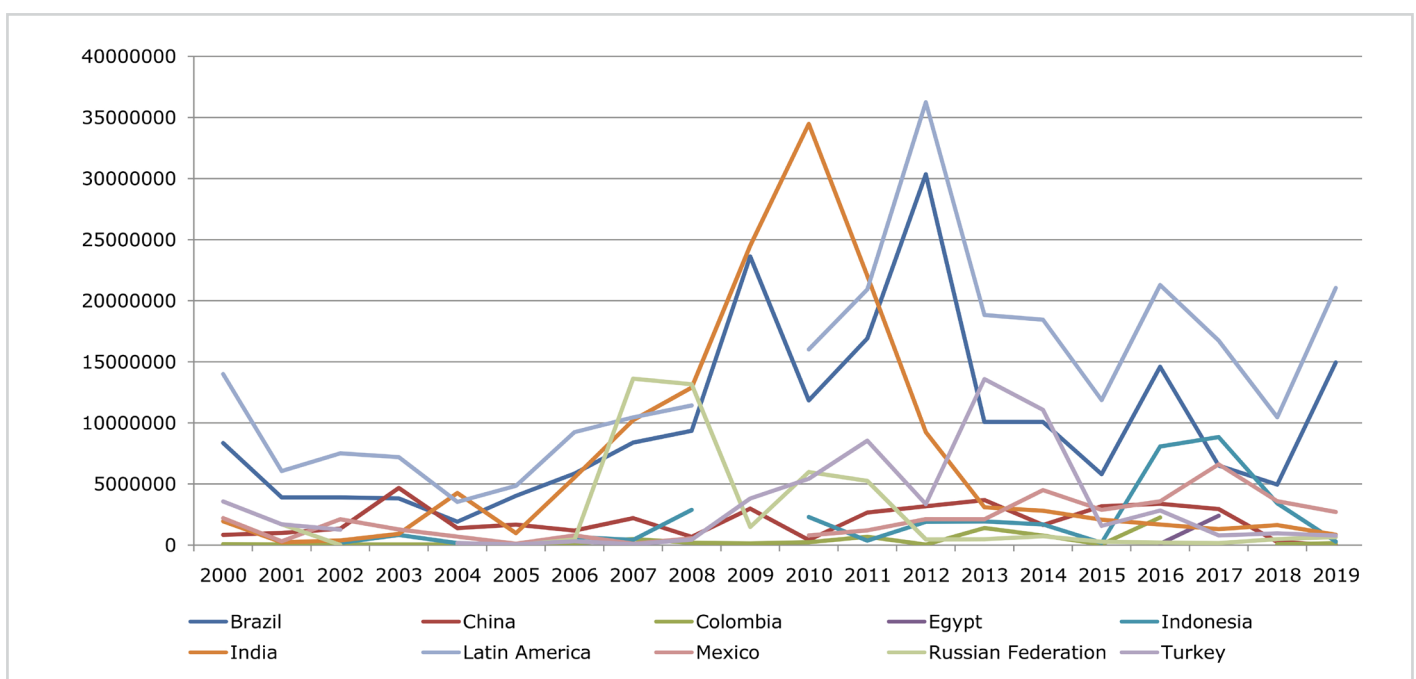


Figure 4:
Investments of public-private partnerships of individual countries in the energy sector (USD)
 Source: Compiled by the authors based on data from the World Bank (2020)

$$\text{Compliance ratio} = \frac{S_{fact}}{S_{norm}} * 100\% , \tag{1}$$

where:

S_{fact} is the actual value of the project’s compliance with the adaptive territory approach;

S_{norm} is a standard value (equal to a five-point assessment).

The actual value of the project compliance with the adaptive territory approach is determined by the formula (2):

$$S_{fact} = \sum_{i=1}^n Oicp * Vi, \tag{2}$$

where:

$Oicp$ is the arithmetic mean expert assessment for i -criteria;

Vi is the the i -criteria weight coefficient.

The adaptation of the proposed methodology was carried out on the example of the Russian Federation (Moscow region, a distinctive feature of which is the widespread use of the PPP mechanism in the field of infrastructure projects). A fragment of the related calculations is presented in Table 3.

As a result, the actual value of the project compliance with the adaptive territory approach is 4.513. Therefore, the compliance ratio will be 90.26%. To assess the strengths and weaknesses of the ongoing PPP project «Modernization of the heat supply system of Moscow region», it is recommended to build a compliance polygon (Figure 5).

This ratio is significantly high. Therefore, the implementation of this PPP project should be considered expedient.

Table 3:

Determination of compliance of the PPP project «Modernization of the heat supply system of Moscow region»

Criteria	Oiam.	Snorm	Vi	Sfact
Compliance of project objectives with the logic of the approach	4.7	5.0	0.2	0.94
Fulfillment of the stated terms of implementation	5.0	5.0	0.133	0.665
Prioritization of extra budgetary funding	2.5	5.0	0.067	0.1675
Reaching planned objectives	3.2	5.0	0.133	0.4256
Socio-economic impact	5.0	5.0	0.167	0.835
Ability to transfer project implementation experience	5.0	5.0	0.1	0.5
The invariability of the number of project participants	4.7	5.0	0.067	0.3149
Quality of project implementation	5.0	5.0	0.133	0.665
Total	-	-	1	4.513

Source: Compiled by the authors

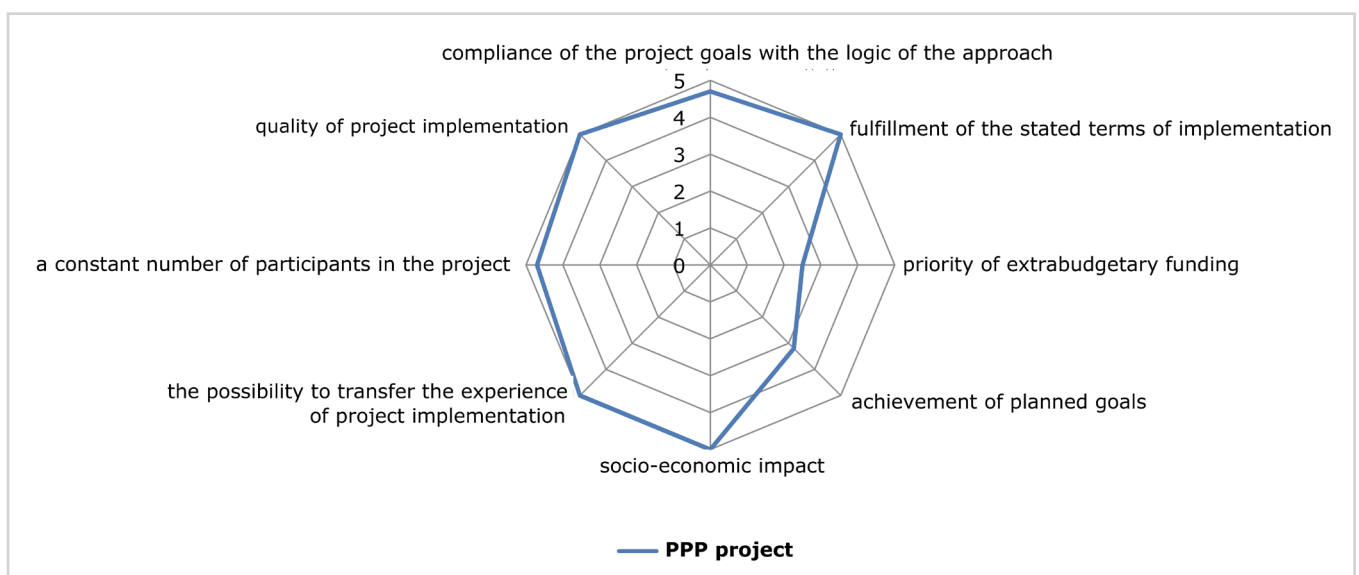


Figure 5:

Model of compliance of the PPP project «Modernization of the heat supply system of Moscow region» to the objectives of the «adaptive territory» approach

Source: Compiled by the authors

5. Conclusions

The following conclusions can be drawn:

1. The evolution of the urban planning policy requires modernization to ensure the innovative vector of development of the country's economy in the context of technological and social transformation to improve the living standards of the population.
2. In theoretical developments and normative legal acts, there are various interpretations and tools of urban planning policies of different countries. Therefore, a comparative analysis of the features of its implementation in individual countries has been carried out in order to identify the distinctive features and form the main innovative directions of its development in modern conditions.
3. It has been established that modern urban planning policy in the context of increasing globalization and digitalization of the economy, along with a simultaneous increase in the role of participatory planning of self-organization of the active part of the population, should be focused on an innovative way of development aimed at solving problems in urban planning and increasing living standards of the population.
4. We have formed a classification of the main approaches to the definition of territorial planning as an instrument of innovative urban planning policy. At the same time, it is proposed that urban planning activities should be oriented towards the implementation of the adaptive territory approach, which most fully meets the current global development trends.
5. Taking into account the approach of adaptive territory, we have added classification of the principles for the implementation of urban planning policy, namely participation, sustainability, balanced development of territories, digitalization and consistency of information, holism, efficiency and synergy.
6. It is necessary to reconcile the interests of the state and businesses in order to improve the functioning of the tools for implementing the state economic policy. An effective approach in this area is PPP, which will allow the implementation of innovative projects in the urban planning policy. Therefore, the world data on the implementation of PPPs have been analyzed and it has been found that the most common PPP projects in the urban planning of world countries are water supply, sewerage systems, energy, transport and the ICT infrastructure. According to the World Bank, the most frequently used PPPs in water supply and sewerage systems are in China, Brazil, India and Russia. PPP investments in transport are often made in Latin America, India and Brazil. Also, this tool is widely used by China, Russia, Egypt, Turkey and other countries. The largest investments in energy with the participation of PPPs in recent years have been observed in Latin America and Brazil.
7. A methodology has been proposed for the compliance of a PPP project with the goals of the adaptive territory approach, based on the use of identifying priorities for territorial development, a procedure for assessing the contribution of PPP entities to solving problems of urban planning activities, and calculating the compliance ratio, which allows a comprehensive assessment of the feasibility of a single PPP project either at the completion stage or at the operational stage project. The adaptation of the methodology was carried out on the example of the Russian Federation (Moscow region).
8. Being one of the priority instruments of social development, the mechanism of public-private partnership, can become a source of constant economic development of the territory in the future. At the same time, the experience at all levels of government shows that it is not enough to announce the transition to PPP. It is necessary to purposefully implement a new type of public policy - the policy of public-private partnership, while realizing the approach of adaptive territory within the framework of the innovative urban planning policy.

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