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PUBLIC-PRIVATE PARTNERSHIP AS A TOOL FOR FINANCIAL SUPPORT OF THE ENERGY SECTOR IN UKRAINE: ANALYSIS, MECHANISM, FINANCIAL REPORTING

ABSTRACT

Based on the analysis of the dynamics of implementation of public-private partnership (PPP) projects in Ukraine, key problems have been identified and its priorities in financial support for the recovery of the native energy sector have been determined. It is appointed that PPP concession agreements are the main mechanisms for attracting investment in the global electric power industry. The expediency of using the concession model on BOT terms for the implementation of large projects in the energy sector is substantiated, which will contribute to the intensification of investment attraction and will allow to distribute risks between the state and business. Recommendations on the formation of an information platform for participants in the implementation of PPP projects on the basis of disclosure of information on the effectiveness of concession operations in accounting and financial statements have been developed. The tools for the formation of the financial mechanism of public-private partnership, where the priority is budget and venture financing, are substantiated. To make decisions on the implementation of PPP investment projects, an approach to assessing the financial support of project initiatives is recommended, the basis of which is the proposed criteria for compliance with financial security, the choice of funding sources, indicators of scenario analysis and efficiency. The proposed methodical approach to assessing the effectiveness of PPP allows us to assess the synergistic effect, which reflects the totality of economic, social and environmental effects. The formulated recommendations for improving the relationship between the state and business will contribute to the intensification of the attraction of private investment resources on the basis of PPPs for the restoration of the energy sector in Ukraine.

Keywords: public-private partnership, energy industry, investment projects, world experience, financial mechanism instruments, analysis, efficiency evaluation, synergetic effect, financial reporting

JEL Classification: L94, M10, M40

INTRODUCTION

In the modern conditions of war and energy crisis in Ukraine, there is a growing need to increase the production of renewable energy (RES – Renewable Energy Sources) — more economical, and climate-neutral, which will require the introduction of new technologies. The post-war revival of the Ukrainian economy is based on the restoration of a sustainable, investment-attractive energy sector, in the context of green transition and energy security, decarbonisation of industry, minimization of environmental losses and efficient use of waste for energy production.

Ukraine, as a member of the Energy Community, has implemented EU Directive 2009/28/EC on the promotion of renewable energy. The need to develop renewable energy in Ukraine is associated with the damage to the country's energy infrastructure due to hostilities, which is about 50%, the depletion of its own energy resources (according to prognoses, oil and natural gas reserves remain for 40-50 years) and the high energy potential of the main types of renewable energy sources (RES). At the beginning

of 2023, about 40% of the total infrastructure and generating capacities of Ukraine's energy system were damaged.

The renewable energy sector in Ukraine is quite "young", but it has already demonstrated significant investment potential. In the period from 2009 to 2022, 10 GW of capacity generating electricity from renewable energy sources was commissioned in Ukraine. The volume of investments amounted to about EUR 9,3 billion. In 2022, despite the war, 314 MW of renewable energy capacities in the production structure were built and received a "green" tariff. In the autumn of 2022, about 75% of wind farms and 45-50% of solar power plants were forced to be decommissioned. The mechanism for implementing PPP projects is designed to create appropriate conditions for the balanced development of renewable energy sources and promote investment in the development of distributed generation, bioenergy, and hydrogen energy. In the world practice of attracting investments, PPP occupies a leading place in the implementation of large-scale innovative projects for the development of infrastructure and the economy as a whole. In particular, innovative tools for financing PPP projects and new approaches to building public-private consortia and associations are actively used.

The implementation of large projects for the innovative development of the energy sector in Ukraine is possible if funds from private investors are attracted while maintaining control by state authorities. At the same time, state support can reduce the risks of private investment and increase the reliability of investment projects for credit institutions. However, in Ukraine, the practice of implementing a small number of investment projects on the basis of PPPs does not yet create the necessary prerequisites for the accelerated development of the energy sector and the national economy as a whole. The development of PPP in Ukraine is hampered by the imperfection of the current legislation, high investment risks, unregulated relations between partnership participants and credit institutions, lack of trust from private investors, imperfection of the financial mechanism and methods for evaluating the effectiveness of PPP projects, and administrative obstacles. The problems of the institutional capacity of state bodies include the problem of communication in the field of PPP through the separation of powers between public authorities and their activities. In Ukraine, there is no single strategy for the development of relations between private and state-owned enterprises. Therefore, this issue is entrusted to the relevant ministries, which are not vested with the appropriate powers. The balance of interests of the state and private investors is often violated through the fault of the state due to the financial insolvency of budgets. These obstacles necessitate a comprehensive study of the development of methodological, organizational and information support for effective interaction between the state and private investors on the basis of PPP, taking into account the current conditions of the economic environment and the interests of stakeholders in the implementation of socially significant investment projects.

Intensification of interaction between the state and private business, and effective regulation in the field of attracting investments for the restoration and development of the energy sector requires an in-depth study of the scientific problem of improving the mechanisms and tools of the financial mechanism for the implementation of PPP projects.

LITERATURE REVIEW

In the context of the discussion on the definition of public-private partnership mechanisms, peculiarities of individual mechanisms, means, methods and instruments of state regulation of PPP, there are different views of scientists on approaches to research on the development of PPP in certain sectors and spheres of public activity.

Theoretical and practical aspects of the problems of public-private partnership relations were considered by foreign scientists: Y. Arzhanik, D. Bosso, M. Villisov, D. Hrimzi, M. Harvin, D. Delmon, A. Zeldner, M. Karr, D. Koppenian, E. Savas, H. Hem, H. Hodzh, N. Budina, H. Polackova Bixi, T. Irwin etc.

The issue of the formation of the mechanism of public-private partnership and the implementation of projects on its basis was studied by native scientists, including O. Amosha, N. Bondar, V. Kruhlov, O. Vinnyk, M. Zabashtanskyi, I. Kosach, A. Dehtiarov, F. Uzunova, A. Kuznetsova, O. Klipkova, V. Maslov, I. Boiarko, V. Rudevskaya, V. Vyhovskiy, O. Vyhovska, O. Poliakova, T. Lipska, O. Kuchynska, R. Kushlyk.

The theoretical and methodological foundations of the formation of mechanisms of state regulation of the development of public-private partnership in Ukraine and ways to increase its effectiveness in the process of decentralization are disclosed in the works of V. Kruhlov [41], I. Kosach, A. Dehtiarov [24], O. Poliakova, T. Lipska, O. Kuchynska [38], M. Zabashtanskyi, R. Lomonos, R. Lomonos [18], P. Tarabanovskiy, L. Hrytsenko, A. Samoilikova, P. Buła [45].

Approaches to the formation of tools for the implementation of public-private partnership projects and assessment of its effectiveness are highlighted in the works Y. Komarynska, O. Kryshevych, N. Linnyk, V. Karelin, O. Kofanova, V. Kruhlov [41], A. Kuznetsova, O. Klipkova, V. Maslov [27], V. Vyhovskiy, O. Vyhovska [15], D. Zatonatskiy, S. Lieonov, S. [35].

Measures to support the introduction of a public-private partnership mechanism in the region are reflected in some of the tasks assigned to regional development agencies, approved by the Resolution of the Cabinet of Ministers of Ukraine "Some issues of the activities of regional development agencies" dated 21.10.2022 № 1203.

Despite the presence of a significant number of scientific papers on this problem, in the vast majority of them, the main attention is focused on the disclosure of state regulation and tools of public-private partnership in relation to specific sectors of the economy. At the same time, today's new challenges require a comprehensive rethinking of the problem of developing public-private partnership mechanisms in the practical plane of improving the tools for implementing investment projects to restore the energy sector, which is key in the national economy. The solution to the problem of development of the financial mechanism is actualized in the plane of improving the tools for the implementation of PPP projects, which provides: substantiation of approaches to the selection of sources of financing depending on the conditions for the implementation of the PPP project; determination of the instruments of the PPP financial mechanism; assessment of the synergistic effect of project implementation for business entities; reflection in the accounting and financial statements of transactions on the effectiveness of the PPP project in order to increase the awareness of its participants.

AIMS AND OBJECTIVES

The purpose is to develop theoretical and methodological foundations for determining the instruments of the financial mechanism for the implementation of PPP projects and assessing their effectiveness in the context of ensuring the development of the energy sector.

To achieve this purpose, the following objectives were performed:

- to study the state, prospects and opportunities for the implementation of the world experience of attracting investments on PPP terms in Ukraine;
- to identify mechanisms for attracting investment in the development of the energy sector in Ukraine;
- to develop recommendations to ensure the awareness of participants in the implementation of PPP projects;
- to determine the tools for the formation of the financial mechanism of public-private partnership;
- to substantiate a methodical approach to assessing the financial support for the implementation of PPP investment projects.

METHODS

The methodological basis of the research is the dialectical method of cognition of phenomena and processes. In the process of preparing a scientific publication, general scientific and special methods were used: *induction*, *deduction*, *scientific abstraction* and *comparative method* – to determine trends in the development of practices for the implementation of PPP projects, both in Ukraine and at the world level; *observation* and *comparison* – to study the characteristic features of concession agreements as the main mechanisms for attracting investment in the global electric power industry; *analogy* and *abstraction* – for the development of organizational and methodological recommendations for the formation of an information platform on the effectiveness of concession operations based on accounting and financial reporting data; *system-structural method* – to develop an approach to assessing the effectiveness of financial support for project initiatives for decision-making on the implementation of PPP investment projects; *analytical method* – for reviewing literary sources and drawing conclusions.

RESULTS

The prospects for the economic development of Ukraine under martial law are determined by a strategy that outlines social values, innovative orientation, and consolidation of the interests of society, including within the framework of the institution of public-private partnership. The interaction of state institutions and the private sector in the current conditions of Ukraine's reconstruction is designed to reduce the funding gap for important capital-intensive and socially significant investment programs. Most of the energy problems are national, so they need to be solved at the state level, which is due to the relevance and importance of energy supply to the economy and the population due to the presence of powerful-branched energy supply networks (a single energy system for the supply of electricity, gas transportation and oil transportation systems, etc).

Analysis of the dynamics of PPP project implementation in Ukraine and financing of project initiatives: problems, prospects

The development of PPPs in Ukraine is constrained primarily by the imperfection of institutional and regulatory support. Regulation of interaction between the state and private investors is regulated by many legal documents, which complicates the distribution of mechanisms for regulating procedures [20; 21; 22; 42].

However, the role of PPPs in solving problems related to the recovery and modernization of the national economy, including in the Ukrainian energy sector, is underestimated. The dynamics of the implementation of PPP projects in Ukraine for various industries are shown in Table 1. The indicators of 2018-2023 signify a decrease in the trend in the number of contracts concluded on PPP terms.

Table 1. Sectoral dynamics of PPP project implementation in Ukraine. (Source: [30])

Areas	Sectoral PPP agreements (projects) in Ukraine, %			PPP projects on 01.01.2022, (item)	PPP projects on 01.01.2023, (item)
	2018	2019	2020		
Generation, distribution and supply of electricity	6	6	8	3	
Natural Gas Production/ Transportation/ Supply/Distribution	19	15	21	8	5
Water collection, treatment and distribution	40	40	33	8	5
Waste management other than collection and transport	2	2	5	4	1
Infrastructure	11	13	8	3	
Health care	7	4	5	2	4
Tourism, rest, recreation, culture and sports	2	6	13	2	2
Search and exploration of minerals	2	2	0		
Property Management	3	0	0		
Other	8	12	8	1	3

Among the 10 key priorities for the existence and development of Ukraine in 2023, after the security of citizens and Ukraine's integration into the EU and NATO, the energy front ranks 3rd place [44].

Therefore, examples of successful implementation of PPP projects related to energy will be useful:

- In 2015, Malyn (Zhytomyr region) for the first time in Ukraine implemented a project on the use of renewable biofuels, straw pellets instead of natural gas, which demonstrated the feasibility of using biofuels and involving the private sector in solving urgent energy problems in Ukraine.
- Within the framework of the PPP implementation (2015), an agreement on joint activities was concluded between the territorial community of the city of Oster represented by the Oster City Council (Chernihiv region) and the corporation "Ukratomprylad" for the reconstruction of individual components of the integral property complex of the heat supply system; construction of a heating main; optimization of heating networks, ensuring stable operation; - provision of high-quality services for the production of thermal energy and supply of thermal energy.
- The largest PPP project (2015) in the energy sector is the "Ukraine-European Union Energy Bridge". The initiator of the project was a consortium consisting of EDF Trading (Great Britain), Westinghouse Electric Sweden (Sweden), and Polerergia International (Luxembourg). The estimated cost of this project is EUR 243.5 million in 2017 prices, and the goal is to create conditions for the integration of the unified energy system of Ukraine into the European energy system ENTSO-E by ensuring the export of electricity from power unit № 2 of Khmelnytsky NPP, which will increase the level of use and increase the capacity of nuclear power units (South Ukrainian NPP, Zaporizhzhya NPP), create conditions and tools necessary for SE "NNEGC Energoatom" to attract funds for financing the development of energy infrastructure, thereby expanding the generating capacity of Ukrainian nuclear power facilities and increasing the efficiency of power units [33].

Among the main problems hindering and deterring the effective implementation of development projects in the electricity sector with the participation of the state and business on the terms of mutually beneficial cooperation, the following should be highlighted: a full-scale war in Ukraine; imperfection of native legislation; weak development of financial institutions and capital markets: lack of a state strategy for infrastructure development and powerful institutional investors; imperfection of the system of state control over the implementation of infrastructure projects at all levels; low level of attraction of

funds from venture funds due to high risk, lack of experience and desire of financial entities to invest in PPP instruments; weak legal protection of investments; low institutional and professional capacity of the public partner; imperfection of the regulatory framework; the impact of political and geopolitical risks; lack of a unified transparent mechanism for planning cooperation within the PPP, insufficient motivation of partners to establish PPP, lack of up-to-date databases on potential and existing PPP facilities; distrust of private partners in the government, high level of corruption; lack of state guarantees in the process of implementation of PPP contracts.

Therefore, the presented energy projects, within the framework of the PPP implementation process in Ukraine, are characterized by low cost and slow implementation, including due to the imperfection of the investment environment, in terms of attracting private investment. Whereas, in the countries of the world, through the transfer to the private sector of initiatives for the financing, construction, reconstruction, operation, and management of state-owned infrastructure facilities at the rule-making level (1992, Great Britain "Private Finance Initiatives") with a clear definition of the conditions; there are opportunities to actualize the attraction of private investment and organizational potential in the development and implementation of PPP projects and the implementation of effective risk management in the implementation of projects [3].

These problems do not reduce the attention to the PPP cooperation mechanism and require immediate solutions. Today, in the direction of financing development projects in the electric power industry with the participation of the state and business on the terms of mutually beneficial cooperation, the Innovation Development Fund and the State Finance and Institution for Innovations have been established as part of the implementation of the Development Strategy in the field of innovation activity for the period up to 2030, and the development of funds for the commercialization of new technologies, the modernization of existing energy supply infrastructure and the introduction of innovative technologies, including smart grids, capture technologies, carbon storage and reuse technologies, as well as industrial production and use of hydrogen.

The next source of funding should be considered the newly created State Fund for Decarbonisation and Energy Efficient Transformation, which provides for the targeted focus of environmental taxes on energy efficiency and decarbonisation, following the example of application by 21 EU countries, that is, the funds accumulated in the fund will be directed exclusively to financing energy efficiency programs and measures, in particular state target programs in the field of energy efficiency, the use of renewable energy sources and alternative energy sources fuels, decarbonisation; compensation, reduction in the cost of loans and leasing obligations attracted by individuals and legal entities for energy efficiency measures, energy service, "green" projects, reduction of CO₂ emissions; fulfilment of debt obligations on loans received by the state for the implementation of investment projects in the field of energy efficiency, renewable energy, decarbonisation [17].

The country's government counts on soft loans from partners, international financial organizations, banks, grant support and individual contributions, for which the United24 platform has already been created with the wide involvement of private both foreign and domestic businesses on the terms of cooperation in the framework of project implementation (PPP).

Regarding the implementation of PPP projects on renewable energy, we believe that the most effective form of partnership is equity financing, which involves participation in the project by the state, private businesses, local authorities and the population. Many years of experience in using this form of partnership have been accumulated in the wind energy industry in Denmark, where more than 3000 installations operate, the joint owners of which are about 150 thousand citizens.

It is also appropriate to use mixed forms of partnership that combine individual elements of the types of contracts described. They create opportunities for combining development, financing, management, and other transactions with the subject of the contract. Participation in the capital of a state-owned enterprise by a private investor may constitute corporatization or the creation of a mixed enterprise [30].

Global experience in attracting investments under PPP conditions

World experience and global trends in economic development have shown the high efficiency of PPP as the main mechanism for attracting investment in various infrastructure projects, the social sphere, energy, and health care both at the state and local levels. Cooperation between the state and business within the framework of PPPs in European countries, in contrast to traditional forms of interaction between the parties, is a real mechanism for stimulating the flow of investments; accelerated infrastructure development; modern, high-quality services for the population and stabilization of the economy as a whole. The priority areas of interaction between state institutions and the private sector are environmental policy aimed at improving the quality of the environment, reducing the level of local man-made load on the environment;

development of infrastructure and transport communications; economic development of the industrial complex on the basis of innovations; social policy focused on the stability of the standard of living of the population.

The current state of PPP development in the world is characterized by a significant number of projects and the total volume of investment attractions. The leaders in the development of the institution of public partnership are the United Kingdom, the United States, France, Germany, and Canada.

PPP mechanisms are implemented in the fields of transport, electricity, housing and communal services. According to the EIB for the period 2006–2017. The vast majority of projects were carried out in the social sphere [4].

By region of the world, according to the World Bank, for the period from 1990 to 2018, 7,205 PPP projects totalling USD 1,788 billion were implemented in developing countries [11].

The main way to attract significant investment in the UK is through the Private Finance Initiative (PFI), according to which private enterprises finance the design, construction and maintenance of new social infrastructure. In the period from 2020 to 2050, the UK government intends to spend 1-1.2% of GDP on infrastructure development [6; 14].

Over the entire period of the PFI model in the UK, for example, more than 700 PPP projects with private investment of about 56 billion pounds have been launched, after the abolition of this form in 2018, the country's Treasury approved an infrastructure plan until 2028, which provides for investments of 600 billion pounds, of which 50% should be attracted from the private sector.

In France, the volume of investments in projects under the "Marché de partenariat" scheme (partnership agreements) exceeds EUR 40 billion, and the number of various forms of concessions and similar structures ("Délégations de service public") exceeds 15,000. According to the European PPP Development Center, the share of PPP projects in total infrastructure investment in France reaches 12% [6; 14].

In Canada, PPP schemes have launched about 250 large capital projects worth more than USD 10 billion, and the return to the state from each dollar invested in PPP projects is USD 3,6 [13].

In these countries, all projects must undergo a preliminary independent assessment by VfM. An effective system of control over the implementation of infrastructure projects at all levels, which are interconnected through national infrastructure plans, has been created.

A look at the implementation of Canada's Investing in Canada infrastructure plan shows investments in infrastructure of more than USD 187 billion during 12 years, which is almost 50% complete [8]. Thus, according to the Canadian Center for Economic Analysis every dollar invested in PPP projects in different provinces generated from USD 1.1 to USD 4.2 of economic activity: the primary impact on the economy is the cost of the initial contractor, the secondary impact is the costs of the suppliers of these contractors, then the generated income in the form of wages and profits is spent on consumption and investment - the induced impact, and finally, new infrastructure facilities provide an increase in economic activity, directly related to the initial investment – systemic impact [13].

Thereby, in industrialized countries, support for investment projects in the electricity sector is provided by both national and international development institutions (using non-financial and financial instruments). At the same time, state control over the implementation of international PPP projects is carried out along the entire technological chain. In most European countries (Austria, Great Britain, Belgium, Ireland, Denmark, Italy, the Netherlands, Sweden, Norway, France, and Finland), the stages of transmission, distribution and supply of electricity are controlled, while in the United States, the share of state participation in PPP projects is minimal.

The main mechanisms for attracting investment in the global electricity industry are PPP concession agreements. Table 2 presents the main parameters of PPP infrastructure projects in the United States. Abbreviations refer to the types of concession agreements consisting of different stages: D – "Design", B – "Build", F – "Finance", M – "Maintain", O – "Operate", T – "Transfer", R – "Rehabilitate", L – "Lease". One of the most common types of DBFM (Design-Build-Finance-Maintain) concessions includes the following stages: design - building - financing - maintenance [1]. Thus, there are many types of concession agreements, differing in the role of the private sector in them.

Table 2. Key Parameters of US Infrastructure Projects in Different PPP Models. Note: PP – private partner; PubP – public partner; FC – final consumer.

Model (type) PPP in the USA		Scope of completed works and structure			Ownership	Mechanism of return of investments to a private partner	
		Projecting	Building	Exploitation			
Creation of a new infrastructure object	DB DBF	PP	PP	PubP	PubP	PubP/FC	
	DBO DBFO DBM DBFM DBFOM	PP	PP	PP	PubP	PubP/FC	
	DBOO	PP	PP	PP	PP	PubP/FC	
	BTO	-	PP	PP	PubP	PubP/FC	
	BOT	-	PP	PP	PubP	PubP/FC	
	BOO BOOT	-	PP	PP	PP	PubP/FC	
	BLT	-	PP	PP	PubP	PubP/FC	
	Operation of the current infrastructure object	O&M Concession	-	-	PP	PubP	PubP/FC
		ROT	-	-	PP	PubP	PubP/FC
LTL		-	-	PP	PubP	FC	
LOT		-	-	PP	PubP	FC	
SC		-	-	PubP	PubP	PubP	

The presented parameters of infrastructure projects in the United States indicate a significant advantage of the private sector at all stages of their implementation in various PPP models. Depending on the nature of the tasks solved within the framework of PPPs, there are many forms of partnership, which are divided into separate types (models), namely organizational models, financing and cooperation models. The main models used in the world practice of implementing PPP projects are:

- *Management agreements* – a private partner assumes the management of a state-owned facility for a period specified in the agreement when ownership and investment rights remain with the state.
- *Lease agreement*, the private partner, using the right to use state property, is responsible for the operation and maintenance of the facility.
- *Concession agreements* provide for state-initiated construction or reconstruction of the facility by a private investor at its own expense [41].

Use of the concession model as a tool for investing in the development of the energy sector in Ukraine

Ukrainian legislation [20] has outlined the relevant possibilities of using various models of PPP implementation by concluding a concession agreement, a property management agreement, a joint venture agreement, and other agreements, including mixed ones, in accordance with the terms of the civil legislation of Ukraine. The most common is the PPP concession model, which is regulated by the Law of Ukraine [21], which provides for its application in all spheres of economic activity at the national and local levels. According to the Ministry of Economic Development and Trade, 86% of all PPP projects are implemented under concession agreements due to the availability of specialized regulatory regulation and experience in implementing PPP projects in this form, the dynamism of development and continuous improvement of the concession mechanism in world practice. In addition, cooperation in the form of concession contributes to achieving a balance of interests of both partners, as it guarantees the preservation of the function of control over the implementation of the PPP project by the public sector and a sufficient level of non-interference in the economic activities of the private partner.

The energy industry has great potential for the development of concession relations due to its high capital intensity and long-termism, including in terms of return on financial investments, as well as the priority importance of the industry as a component of the national security of the state. At the expense of concession agreements and their various models (Ta-

ble 3), the state assists private investors within a certain period of time to modernize energy facilities with further operation, creating conditions for a competitive environment in one of the monopolized spheres of activity, which is the energy industry.

Table 3. Characteristic features of concession agreements.

Forms	Models				
	Characteristic	Implementation	Project Management	Investment	Ultimate Ownership
Contracts for the performance of works and the provision of public services; Supply of products for household needs	BOT (Build, Operate, Transfer – Building, Operation/management, Transmission). It is used in concessions.	Projects «from scratch», Concession	Private	Private	Partly private
Technical Assistance Contracts	BOOT (Build, Own, Operate, Transfer – Building, Ownership, Operation/Management, Transmission).	Projects «from scratch», Concession	Private	Private	Partly private
Management Contracts	BOO (Build, Own, Operate – Building, Ownership, Operation/management)	Projects «from scratch», Concession	Private	Private	Private
Lease, Finance Lease (Leasing)	BTO (Build, Transfer, Operate – Building, Transmission, Operation/management)		Private	Private	State
Production Sharing Agreement	BOMT (Build, Operate, Maintain, Transfer – Building, Operating, Maintaining, Transmission).		Private	Private	State
Invitation of an investor on a parity basis	DBOOT (Design, Build, Own, Operate, Transfer – Design, Building, Ownership, Operation, Transmission).		Private	Private	State
Investment Contract	BLO (Building, Leasing, Ownership).	Projects «from scratch», Concession	Private	Private	Private
Joint Ventures	ROT (Reconstruction, Operation, Transmission).	Concession	Private	Private	State
Concession	BROT (Building, Reconstruction, Operation, Transmission).	Concession	Private	Private	State

The implementation of PPP projects according to the concession model, namely on the terms of BOT (build, operate and transfer), BOO (build, own, operate), BOOT (build, own, operate and transfer) allows the investor, in addition to financing the project, to take an active part in the management of the investment project, adding competencies, experience and motivation – while improving the organizational potential.

When financing PPP projects on a concession basis, it is necessary to: identify potential non-financial instruments for the redistribution of risks between project participants: government entities/grantors (guarantees of minimum profitability and tariff policy, compensation for lost revenue, lease of non-financial assets), private partner (pledges and sureties), financial market entities (operational risk insurance, securitization of liabilities); evaluate the financial efficiency of the PPP project; to form an information platform for disclosure of information on the effectiveness of concession operations in the financial statements.

Financial reporting and its role in ensuring the awareness of participants in the implementation of PPP projects

In the current conditions of uncertainty, the problem of compliance of financial statements with information requests of participants in the implementation of PPP projects, assessment of the level of its objectivity and transparency is actualized. Disclosure of information on the effectiveness of concession operations in the financial statements plays an important role in the formation of confidence of interested users of reporting, understanding of systems, processes, and risks of electricity market participants [7].

The carried-out study indicates the presence of gaps in the regulatory documents and IFRS in the procedure for preparing and filling the financial statements. The accounting of concession transactions is not sufficiently regulated. In particular, the National regulations (standards) of accounting [36; 37] do not determine the specifics of accounting for concession

transactions. International Financial Reporting Standards (IFRS) provide only general interpretations and interpretations disclosed in IFRIC 12 Agreement on the concession of services [43] and SIC-29 Service Concession Arrangements: Disclosures [44]. The procedure for determining shares in the ownership of created (newly built) facilities that are jointly partially owned by a public and private partner, as well as the conditions and procedure for alienation of a share in the right of joint partial ownership are determined by the public-private partnership agreement.

The concession agreement, in accordance with the current legislation, provides for the procedure for accounting and financial reporting of the concessionaire, payment of customs duties, value-added tax and excise duty when importing material values in connection with the performance of concession obligations by the concessionaire. The main condition is to determine the payment of concession payments, which are made regardless of the result of the concessionaire's activities. Public-private partnership objects are reflected on the balance sheet of the private partner and are separated from its property. Thus, according to Instruction № 291 [9], and IFRS, values that do not belong to the company, but are temporarily in its use and disposal, should be reflected in off-balance sheet accounts. With respect to such property, the private partner does not reflect the concession objects in the accounting of fixed assets and does not accrue depreciation. Such an approach to concession accounting does not allow to reliably reflect the effectiveness of concession operations in the concessionaire's financial statements.

Also, the regulatory documents of tax and accounting of transactions under the concession agreement are insufficiently regulated. In tax accounting, concession objects are reflected in fixed assets. Therefore, it is advisable to reflect the concession objects as part of non-current assets. However, according to IFRIC 12, the balance sheet reflects only capitalized expenses incurred for the construction or modernization of concession facilities, or the expected financial compensation from the state for them [44], as for SIC-29, it provides only for the disclosure of the terms of the concession in the notes to the financial statements [43]. There is also an unresolved issue regarding the reflection of losses by the concessionaire, subject to the termination of the project agreement, regardless of the reimbursement of its investments or repayment of debts. Losses may also be incurred by the ordering body, which will have to make additional investments or significant costs, for example, to ensure the completion of the construction of the facility or the further provision of relevant services.

To ensure the reliability of financial statements and awareness of the participants in the implementation of concession projects, it is necessary to carry out the following measures: 1) improving the organization of accounting for concession operations, taking into account the legal, economic and sectoral features of the public-private partnership project on the basis of expanding the subject field, grouping accounting objects in the context of business processes for the implementation of the concession project (modernization of the object, acquisition of resources, distribution of financial results and payment of concession payments), identification of costs and revenues at the stages of implementation of the concession project and allocation analytical accounts for reflecting concession objects in accounting; 2) determination of the financial effect of the implementation of the concession agreement, which is an indicator for decision-making on the choice of project initiatives by investors in the analysis of investment projects and comparison of the companies parties to the concession with other companies that are not involved in the concession.

This approach ensures the reliability of accounting and reporting information, the formation of information to monitor the implementation of the concession project, as well as the assessment of potential opportunities for attracting investment resources.

Instruments of the financial mechanism of public-private partnership

Decision-making on the financial support of PPP projects requires the development of an appropriate financial mechanism. A set of ways to manage financial relations in the interaction of the state and business in the process of solving socio-economic problems in the long term is the basis for understanding the essence of the financial mechanism of PPP, which ensures the implementation of financial policy and forms conditions for achieving priority goals and objectives. Accordingly, it is based on the norms of national law and includes financial and credit support, financial and credit regulation, regulation, financial planning, performance analysis and control. In view of the above, it should be stated that the financial mechanism of PPP should combine the best practices of public and private financial management, which is in some way reflected in all its components. In the context of transformational changes, PPPs should be considered as a component of improving the management of public investments through financial support [29].

Of key importance is the consideration of the system of managing the influence of the financial mechanism of PPP projects, which is represented by financial mechanisms, methods and tools. Governments support and stimulate PPPs through financial mechanisms: credit, mixed (attracting partners' own funds) and hybrid (a combination of own and borrowed funds). The financial support of PPP mechanisms by the state depends on the priority of projects; the level and conditions

of financial support; efficiency of the use of financial resources provided by the state; transparency and accountability of the project company regarding public funds, etc., and is provided in the form of:

- direct support (monetary or material form: covering the costs of construction, allocation of land, provision of means of production, compensation for the costs of participation in the tender, compensation for losses from the price (tariff policy of the state), subsidies, grants, investments in the authorized capital);
- fiscal support (provision of tax holidays, write-off of tax debts);
- credit support (provision of financing in the form of government loans);
- transfer support (financing of "shadow" tariffs and/or subsidizing tariffs for certain categories of consumers (for example, insolvent categories of citizens), etc. These PPP financial mechanisms can be used in combination with measures to provide indirect state support, in the form of guarantees, including loans, exchange rates; obligations regarding procurement of products (services), receipt of payments for services, guaranteed level of tariffs and/or volume of demand for services, compensations in case of termination of the contract, etc.; guarantees of compensation for damages, for example, in case of non-payment by public authorities; insufficient revenues or excess of expenditures, etc.; state insurance or hedging of project risks; conditional loans, e.g. in the form of liabilities for future loans, or in the form of support for the yield or current liquidity of the project, etc [18].

The effectiveness of cooperation between the state and business is ensured through the effective use of financial instruments in the implementation of the priorities of the financial policy of the state and business structures. The analysis showed that the economic model of cooperation between the state and the private sector in each country is the same and is based on the principle: the desire of the private sector to make a profit and the search by the public sector for ways to attract extra-budgetary investments that will allow the implementation of significant projects for the country using the following PPP financial instruments: income, budget, debt, equity and hybrid.

Thanks to profitable financial instruments, the state is able to fill the budget. The dominant role belongs to tax revenues, which are characterized by the features of universality, unconditionality and comprehensiveness. Performing fiscal and regulatory functions, they influence the decision of a private partner regarding the feasibility of implementing joint projects with the state.

On the one hand, the gratuitous and irrevocable nature of budgetary financial instruments (subventions, grants, subsidies, grants) stimulates business entities to participate financially in the implementation of PPP projects, minimizing their risks, uncertainty in the return of funds, maintaining the financial "viability" of the project, and the excessive volume of their provision reduces the motivation of private partners to increase the profitability of the PPP project.

Most often, debt financial instruments (about 60-80%) are used to finance PPP projects, represented by government loans, including those of other governments, loans from international institutions and organizations, bonds of state-owned enterprises, local loan bonds, commercial loans, bank and syndicated loans, corporate and project bonds.

This direction of financing instruments has its own peculiarities: debt holders receive investment income in the form of interest accrued on the principal amount of debt, and borrowers receive social or economic benefits.

A variety of sources and structures of income are united by common features: debt security, maturity and terms of repayment, type of interest rate, and cost of capital raised, which should not exceed the expected level of investor's profit from the implementation of the PPP project.

The most expensive means of financing PPP projects are equity financial instruments (ordinary shares), which should be used in case of a lack of other sources of financial resources or the need to cover the commercial risks of the PPP project in the event of its default. The use of equity instruments in the financing of PPP projects leads to a high degree of integration of capital, which requires an increase in liquidity and the value of shares, ensuring the degree of financial transparency and information openness, capitalization growth, improvement of financial condition and image [23].

To finance PPP projects, they also use "quasi" or hybrid financial instruments that have the features of both debt and equity instruments, providing flexibility for financial market liquidity. Quasi-instruments may include subordinated convertible debt, preferred shares with a yield, and warrants or options that provide for a claim on assets [23].

Today, the state and local private investors, due to hostilities, have lost the opportunity to provide the necessary amount of funding for various projects, including renewable energy production, or "green projects" on their own.

An effective instrument of state support for innovation is venture financing, based on partnership between the state and venture funds, which contributes to increasing innovation activity and competitiveness of national economies. Cooperation between these entities is implemented in two key areas: 1) financing of venture funds created in countries with the

participation of state capital from the state budget or extra-budgetary funds; 2) participation of state and regional authorities in the management of venture funds in the form of:

- *direct participation* – introduction of state representatives to the board of directors of companies, assistance in solving critical problems in the implementation of projects, promoting the commercialization of R&D results within the framework of projects financed by venture funds;
- *indirect participation* – development of national and regional networks of venture investors; launch and management of business incubator programs; facilitation of technology transfer; development and implementation of innovation, industrial policy, and regional cauterization policy.

In world practice, cooperation between the state and venture funds is implemented according to the following models:

- The "fund of funds" model — the state forms a national venture fund at the expense of state and extra-budgetary funds. This model is the most common in Europe, since 1994 the European Investment Fund (ELF) has been operating – the result of a partnership between the European Union and the European Investment Bank.
- The "pilot region" model is used in countries with uneven regional economic development according to two strategies.

First strategy. A public-private venture fund financed by the state budget, the regional budget and funds of private investors is created in the most economically developed area of the country. Under the pressure of competition and the search for promising investment objects, venture capital is expanding to other regions. The second strategy. A public-private venture fund is created in a depressed region, where venture capital plays the role of a catalyst for the formation of high-tech innovation clusters. Thus, there is a "technology push" of the economic development of a depressed region at the expense of venture capital.

The model of "investment innovation companies", which are created and managed by private investors who use the funds of federal ministries and departments in their activities on a competitive basis. This model has been developed in the United States, where its success is ensured by the legislative framework. The companies operate on the principles of venture business and act as a catalyst for the growth of both innovative activity in the regions and attention to it on the part of regional authorities. They also act as intermediaries that provide access to the federal budget for small research companies, provided that they participate in the implementation of state target programs.

Evaluation of the effectiveness of PPP projects

The issue of the effectiveness of PPP projects is multidimensional, lies in the planes of obtaining certain benefits for each of the partners and is determined by economic, environmental and social indicators, but today there is no methodology that would allow a comprehensive assessment of the effectiveness of PPP projects. Since there are two PPP participants, project evaluation indicators are considered for both the state and the private partner. The simplest indicators, which are most often used to approximate and quickly assess the attractiveness of projects, are profit, costs, break-even points of the project, and the payback period (return period) of investments. However, these indicators have certain disadvantages, which consist of the assumption of equal significance of income and expenses related to different periods of time.

Determining the effectiveness of the PPP project lies in the plane of using methodologies for assessing the effectiveness of the project for the state, region, territorial entity, individual sectors of the economy, and business entities and requires the search for modern approaches to the development of a methodology for objective calculation of the effectiveness of the PPP project, taking into account the subject-object composition and the effects obtained, including rapid implementation of infrastructure projects; accelerating the development of regions; increasing the efficiency of the use of financial resources on a macroeconomic scale; optimization of the financing structure by obtaining the opportunity to use support and new access to sources of financial resources; transformation of approaches to the provision of individual services; distribution and reduction of investment risks; easing the burden on the state in terms of infrastructure project management [2; 27].

Based on the specifics of PPP as a special system of relations between business and government, which is formed for the purpose of producing goods, there is a set of methods for analyzing and evaluating the effectiveness of this type of partnership, which includes:

- analysis of the implementation of the PPP project in the context of the budget efficiency of the PPP using the appropriate coefficients;
- analysis of the financial indicators of the PPP when considering it from the perspective of the investment project and the implementation of current activities;

- analysis of the social efficiency of the project, which considers PPPs from the point of view of the volume and quality of public goods produced and accompanying externalities (budgetary and socio-economic efficiency) [27].

Particular attention should be paid to the aspects of determining the structure of sources of financing an investment project and the financial instruments used to attract them, as well as assessing the performance indicators of investor financing. Potential financial instruments include shares, budget loans (for a public partner); shares, loans (for a private partner); shares, loans, bonds, and mezzanine instruments (for financial market entities).

To make decisions on the implementation of PPP investment projects, the criteria for compliance of financial support for the choice of funding sources are proposed: indicators of scenario analysis and efficiency of project initiatives of compliance with financing. The criteria for financial support for the implementation of the PPP project are minimum cost, financial stability, profitability and liquidity of private partners, efficiency, and acceptable level of risk. The criterion for choosing the source of financing for the PPP project is to minimize its cost, taking into account the debt coverage ratios, the limits of the debt position of the electric power company (debt coverage limit, financial leverage, debt service coverage, medium-term liquidity in accordance with the credit policy).

Particular attention needs to be paid to the study of the compliance of project financing, which is proposed to be carried out on the basis of optimal values of analytical indicators that characterize financial independence, financial stability, profitability, and current liquidity, taking into account their optimal values.

The current Methodology for identifying the risks of public-private partnership [32] provides for the justification of economic and financial indicators of PPP implementation (net present value of PPP implementation – NPV, internal rate of return – IRR, profitability index – PI, discounted payback period – DPP (Table 4), social results of the project, environmental consequences and environmental impacts of the project, comparison of the growth of project efficiency with the participation of a private partner with option for implementing the same project without the participation of a private owner. An assessment of the risks of PPP implementation is carried out, the form of PPP implementation is determined, and socio-economic and environmental prospects at the stage of termination of contractual relations are determined.

Table 4. Indicators of the expected PPP scenario. (Source: [35])

Indicator	Payback project	Project break-even point	Non-payback project
Net present value (NPV), UAH thousand	NPV > 0	NPV = 0	NPV < 0
Internal rate of return (IRR), %	IRR > discount rate	IRR = discount rate	IRR < discount rate
Discounted payback period (DPP), years	DPP < project term	DPP = project term	DPP > project term

Estimation methods based on the calculation of NPV allow you to predict the financial performance of the project. The international practice of implementing PPP infrastructure projects shows the use of various approaches to assessing financial performance in the project selection procedure, which are based on the following indicators: internal rate of return (IRR), net present value (NPV), profitability index (PI), payback period and a number of other indicators.

The net present value indicator is a significant criterion for the financial assessment of investment performance, which determines the discounted amount of the project's cash flows minus the discounted amount of investment. The positive value of NPV demonstrates the financial efficiency of the PPP project. Since the effect for each of the project subjects (public authority, creditor, investor) may vary, each of the participants is evaluated according to the following indicators: value for money (VfM) – for the public partner; profitability and maturity of the loan – for the lender; NPV and IRR are for the investor. It should be noted that as a result of combining the interests of the subjects of the project, investment participation, taking into account the risks, it is possible to achieve favourable conditions for the implementation of PPP projects. Traditional approaches have their limitations (for example, NPV is sensitive to changes in the discount rate, which significantly changes the final cost. One of the modern approaches is the method of real options, which gives a choice of options to a private owner to make a final decision on participation in the project. In the method of estimating the value of real options, a binomial model is used, which is based on a demonstration of the possibility of choosing from several states.

In world practice, methods based on the concept of the optimal ratio of project cost and quality of its implementation – VfM (Value for Money) [26] are widely used: Cost-Benefit Analysis (CBA) – cost-benefit analysis (Germany), Public Sector Comparator (PSC) – comparative analysis of public sector costs (Japan, Ireland, the Netherlands), competitive bidding (France) [25].

In order to obtain an objective conclusion on the effectiveness of the implementation of PPP projects, a methodical approach is proposed, which involves four stages.

The first stage is the formation of an information base, a plan for the implementation of the PPP project and its qualitative assessment. The criteria for qualitative evaluation are the strategic significance of the project, the presence of positive social effects, and the impossibility of implementing the project without state support. Of key importance in planning the implementation of a PPP project is the amount of state support, which is influenced by the discount rate [34].

$$PV_{\text{ДП}} = \sum_{t=0}^n \frac{CF_t^{\text{ДП}}}{(1+i_{\text{ДП}})^t} \quad (1)$$

where $PV_{\text{ДП}}$ is the discounted amount of state support for the relevant form of state support; $CF_t^{\text{ДП}}$ - the amount of state support for the relevant form of state support in the relevant period; $i_{\text{ДП}}$ is the discount rate of the amount of state support; t is the number of the period (year) for which the discounting is carried out. The current period is defined as period "0"; n is the total number of discounting periods (years).

The PPP project is recognized as an appropriate criterion of financial efficiency if the confirmed value of the net present value (NPV), calculated taking into account the use of state support, positively, and the internal rate of return (IRR) exceeds the weighted average cost of capital (WACC).

The discount rate can be:

- the minimum return on an alternative risk-free method of using capital (for example, the interest rate on securities or the interest rate on a bank deposit);
- the existing level of return on capital;
- the cost of capital that can be used for this investment project (for example, the interest rate on an investment loan).

The second stage is the analysis of future economic benefits from the implementation of the PPP project, on the basis of which conclusions about the effectiveness of partnerships are formulated. To assess the economic benefits of implementing a PPP project, depending on its specifics, various methods and tools for analyzing economic, financial, and social indicators that characterize the probable costs and benefits are used. The criterion for the feasibility of the project is the positive value of the economic net present value ($ENPV$), calculated on the basis of the use of the appropriate discount rate (the difference between the total discounted social benefits and costs).

$$ENPV = \sum_{t=1}^n \frac{B_t - C_t}{(1+i)^t} \quad (2)$$

or

$$ENPV = \sum_{t=1}^n \frac{B_t}{(1+i)^t} - \sum_{t=1}^n \frac{C_t}{(1+i)^t} \quad (3)$$

where $ENPV$ is the economic net present value; B is the total benefit (i.e. the change in the benefit to users (consumers) in year t ; C is the total economic expenditure in year t ; i - social discount rate; t is the number of the period during which benefits and costs are discounted; n is the total number of periods. A project is effective if the economic net present value of the project is greater than or equal to 0.

The third stage, the assessment of the social efficiency of the PPP project implementation, involves checking the compliance of the achievement of socially important and economically beneficial goals. It is necessary to agree with the scientists A. Kuznetsova, O. Klipkova, and V. Maslov, who studied the methodology for evaluating the effectiveness of PPP projects, on the need for an integrated approach, that is, a combination of several methods to determine indicators of economic, social, technological, environmental and regional results [27].

Taking into account the complexity of the processes of the electric power complex, as a system of industries covering the fuel industry and the electric power industry with their enterprises, communications, and management systems, to assess the socio-economic effect of innovative projects within the framework of PPP, it is necessary to use the weighted average value of the point assessment of the relevant technical and economic parameters according to the formula (4):

$$z_k^{ed} = \sum_{k=1}^n z_k^{ed} * d_k^{ed} \quad (4)$$

where z_k^{ed} – scoring of the relevant value of the relevant technical and economic parameter $k = 1...n$ project for the construction/reconstruction of power grids; d_k^{ed} – coefficient of significance of the relevant technical and economic parameter $k = 1...n$ of the project for the construction/reconstruction of power grids.

To assess the social effect of the introduction of renewable energy facilities, it is appropriate to use the following formula:

$$E\Phi^{COII} = \sum_{n=0}^t * \sum_{i=1}^k \frac{B_{COII\ ni}}{(1+r_{COII})^n} - \sum_{n=0}^t * \sum_{i=1}^k \frac{3_{COII\ ni}}{(1+r_{COII})^n} \quad (5)$$

where $E\Phi^{COII}$ is the social effect of the use of renewable energy sources, UAH; $B_{COII\ ni}$ social benefits from the application of projects in the n -period; $3_{COII\ ni}$ social costs from the use of renewable energy sources (RES) in the n -period; r_{COII} - social discount rate.

If $E\Phi^{COII} > 0$, then the project is socially significant for the economy. The social discount rate is used in various projects of the public sector of the economy. Its value in foreign countries varies from 3% to 6%) [35].

The fourth stage is the assessment of the synergistic effect of the implementation of the PPP project. Improving the efficiency of the state and business by combining them contributes to obtaining a synergistic effect as a result of the implementation of PPP. At the same time, the effect of the partnership exceeds the sum of the effects of the activities of each business entity separately. The manifestation of the synergistic effect is the improvement of the characteristics of the components:

- economic – due to: increasing the reliability of public investment and increasing the likelihood of obtaining the expected economic result; improvement of the investment climate; improving the quality of services; efficiency of the use of public funds by reducing the cost of the project; reducing the level of risks in the course of economic activity; access to innovative and modern information and communication technologies; deregulation due to a decrease in the number of projects implemented under the control of state bodies; optimal distribution of powers to control the joint implementation of the project; expansion of opportunities for obtaining preferential loans under state guarantees from international financial institutions;
- social – due to: intensifying the development of entrepreneurial initiative and increasing corporate social responsibility; promoting the integration of "state – civil society – business" (development of the appropriate institutional environment); improving the quality of socially significant services; improving the quality of life of the population through the development of territories and the formation (reconstruction) of infrastructure facilities; creation and preservation of jobs;
- ecological – due to: minimization of the impact on the environment through the introduction of the latest technologies in the field of environmental economics; energy saving and energy efficiency; utilization and management of industrial and household waste; reducing the environmental burden on the territory and increasing the level of environmental safety through the introduction of environmentally friendly innovative technologies [22].

Since the implementation of the project contributes to the growth of profitability and cash flows of the entities involved, the level of synergistic effect from the implementation of the PPP project should be presented:

$$C_t = D(PN)_t + D(PA)_t + (EE)_t + DI_t + DT_t \quad (6)$$

where t – estimated time period; C_t – the effect of the PPP project; $D(PN)_t$ – estimated additional profit from expanding the scope of activity; $D(PA)_t$ – estimated additional profit from risk reduction with the help of intra-industry diversification of activities; $(EE)_t$ – savings in current production costs; DI_t – additional investment in reconstruction and improvement in the involved industry; DT_t – increase (savings) in tax payments.

It should also be emphasized that it is possible for business entities involved in the implementation of the project to expect an increase in the current value and an increase in the efficiency or market price of shares for shareholders, where the level of synergy can be represented by the cash flow discounting formula:

$$Synergy = \sum_{i=1}^T \frac{\Delta CF_t}{(1+r)^t} \quad (7)$$

where ΔCF_t – time difference t between the subject's cash flows from the current activity to the activity with participation in the project; r – mathematical expectation of the discount factor.

The following measures will contribute to improving the efficiency of relations between the state and business within the framework of PPP projects:

- identification of specialized PPP development management bodies at the regional and local levels, their powers, duties and responsibilities;
- creation of a clear mechanism of state regulation of the process of providing public funds on a reverse basis to business structures participating in PPP, including guaranteeing the protection of the interests of participants in PPP projects;
- creation of a mechanism for repayment of public debt obligations with the property and assets of the debtor – PPP participant;
- ensuring the awareness of project participants by generating information on their effectiveness in the financial statements;
- improvement of the methodology for assessing the effectiveness of PPP project implementation;
- introduction of venture financing mechanisms (with the participation of private foreign and Ukrainian financial and credit institutions);
- auditing the implementation of PPP projects.

For more efficient use of state-owned objects and implementation of infrastructure projects on a national scale, it is expedient to develop a strategy for the development of public-private partnership. The implementation of the above areas depends in part on the government's policy and its actions to accelerate activity and synergies from the implementation of projects in the energy sector.

DISCUSSION

The proposed study is aimed at developing theoretical and methodological foundations for improving the tools of the financial mechanism for implementing PPP projects and assessing their effectiveness in the context of ensuring the development of the energy sector.

We agree with the authors [15; 18; 24; 31; 41; 45] on underestimating the role of PPPs in solving problems related to the recovery and modernization of the national economy, including in the Ukrainian energy sector. Accordingly, the development of PPPs in Ukraine is hampered by the imperfection of institutional and regulatory support.

We are convinced that the study of the experience of economically developed and developing countries [2; 6; 8; 13; 14; 25; 26] is useful for the development and justification of a public-private partnership strategy since in each country PPP has its own distinctive features: types of interaction between the state and business, legal and institutional environment, forms of implementation and disclosure of information.

The implementation of PPP projects (capital-intensive and long-term) in the energy sector should take place on a concession basis, which will allow the modernization of energy facilities, creating conditions for a competitive environment. In our opinion, models on the terms of BOT (build, operate and transfer), BO (build, own, operate), BOOT (build, own, operate and transfer) will allow the investor, in addition to financing the project, to take an active part in the management of the investment project, while improving the organizational potential (adding competencies, experience and motivation). However, compared to other forms, the concession model is considered riskier for a private partner, where the key risk is the risk of effective demand, so the distribution of risks between partners requires a detailed study.

In order to ensure the awareness of the participants in the implementation of concession projects and the reliability of financial statements, recommendations for improving the organization of accounting based on the reflection of the effectiveness of concession operations and the financial effect of the implementation of the concession agreement are proposed. The subject of a separate study is the issue of reflecting losses of the concessionaire and the customer in the event of termination of the project agreement, regardless of the reimbursement of their investments or repayment of debts, since the National Accounting Regulations (Standards) and the International Financial Reporting Standards do not determine the specifics of accounting for the effectiveness of concession operations.

An integrated approach allows us to study the mechanisms for the implementation of PPP projects based on the norms of national law, which regulates financial and credit security, financial and credit regulation, regulation, financial planning, performance analysis and control.

We are confident that the use of financial instruments, namely income, budget, debt, equity and hybrid, will ensure the effectiveness of cooperation between the state and business, the interaction of which takes place according to the following principles: the desire of the private sector to make a profit and the search by the public sector for ways to attract extra-budgetary investments for the implementation of significant projects in the country. The most effective instrument of state support for innovation activity is venture financing, based on partnership between the state and venture funds, which contributes to increasing the innovation activity and competitiveness of national enterprises.

In contrast to the traditional methods of assessing the financial support of project initiatives based on the coefficient analysis, in the proposed approach the emphasis is placed on assessing the compliance of the choice of the source of financing the project by the criterion of minimizing its cost, taking into account the debt coverage ratios, the limits of the debt position of the electric power company (limit on debt coverage, financial leverage, debt service coverage, medium-term liquidity in accordance with the credit policy). It is necessary to discuss the issue of determining the optimal structure of sources of financing for the PPP project, which depends on the attraction of financial instruments, in particular shares, budget loans (for a public partner); shares, loans (for a private partner); shares, loans, bonds, mezzanine instruments (for financial market entities), as well as assessment of financing performance indicators (for investors).

The issue of choosing a methodology for a comprehensive assessment of the effectiveness of PPP projects is debatable due to the multidimensionality of the process and features of the PPP effectiveness for both the state and business. Also, the subject of discussion is the definition of indicators of the methodology, which would allow to adequately assess income and expenses at different stages of the project.

In the study, we proposed a sequence of stages in the process of evaluating the effectiveness of PPP projects and used the indicators outlined in the current Ukrainian legislation [16; 32; 33; 34; 39; 40]. Taking into account the regulatory provisions gives priority to the proposed consistency, especially for projects in the electricity sector, which is a key component of the country's national security. Particularly relevant is the issue of the post-war recovery of the energy sector, based on an innovative development strategy and the search for financial resources for the development of renewable energy sources. We plan to reveal these problems in further research.

CONCLUSIONS

The study, based on the substantiation of the possibility of implementing the world experience of PPP mechanisms, highlights the priority areas for determining the instruments of the financial mechanism for the implementation of PPP projects, which will contribute to the intensification of attracting investment from private investors for the restoration of the energy sector in Ukraine.

The energy sector has great potential for the development of relations between the state and business on the terms of concession agreements due to its high capital intensity and long-term nature, including in terms of return on financial investments, as well as the priority importance of the industry.

An integrated approach allows to study the mechanisms for implementing public-private partnership projects and substantiate the directions for improving the tools of its financial mechanism. The use of the proposed methodical approach to assessing the financial support of project initiatives, based on the criteria for assessing the compliance of the choice of sources of project financing and indicators of scenario analysis of efficiency, provides an opportunity to make appropriate decisions on the implementation of PPP investment projects. The proposed methodical approach to assessing the effectiveness of PPP allows to assess the synergistic effect, which reflects the totality of economic, social and environmental effects.

Further research consists in the development of methodological provisions for improving the mechanisms of project financing for the restoration of the energy sector, on the basis of public-private partnership through the expansion of the variety of tools and the development of an algorithm of actions, by diversifying sources of financing with a gradual decrease in the weight of international assistance.

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The Authors declare that there is no conflict of interest.

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ДЕРЖАВНО-ПРИВАТНЕ ПАРТНЕРСТВО ЯК ІНСТРУМЕНТ ФІНАНСОВОГО ЗАБЕЗПЕЧЕННЯ ЕНЕРГЕТИЧНОЇ ГАЛУЗІ В УКРАЇНІ: АНАЛІЗ, МЕХАНІЗМ, ФІНАНСОВА ЗВІТНІСТЬ

На основі аналізу динаміки реалізації проєктів державно-приватного партнерства (ДПП) в Україні виявлено ключові проблеми та визначено його пріоритети у фінансовому забезпеченні відновлення вітчизняної енергетичної галузі. Установлено, що концесійні угоди ДПП є головними механізмами залучення інвестицій у світову електроенергетичну галузь. Обґрунтовано доцільність використання концесійної моделі на умовах BOT для реалізації великих проєктів в енергетичній галузі, що сприятиме активізації залучення інвестицій і дозволить розподілити ризики між державою та бізнесом. Розроблено рекомендації з формування інформаційної платформи для учасників реалізації проєктів ДПП на основі розкриття в бухгалтерському облікові й фінансовій звітності інформації щодо результативності операцій концесії. Обґрунтовано інструментарій формування фінансового механізму державно-приватного партнерства, де пріоритетним є бюджетне та венчурне фінансування. Для ухвалення рішень щодо реалізації інвестиційних проєктів ДПП рекомендовано підхід до оцінки фінансового забезпечення проєктних ініціатив, підґрунтям якої є запропоновані критерії відповідності фінансового забезпечення, вибору джерел фінансування, показники сценарного аналізу та ефективності. Запропонований методичний підхід до оцінки ефективності ДПП дозволяє оцінити синергетичний ефект, що відбиває сукупність економічного, соціального та екологічного ефектів. Сформульовані рекомендації щодо покращення відносин держави та бізнесу сприятимуть активізації залучення приватних інвестиційних ресурсів на засадах ДПП для відновлення енергетичної галузі в Україні.

Ключові слова: державно-приватне партнерство, енергетична галузь, інвестиційні проєкти, світовий досвід, інструменти фінансового механізму, аналіз, оцінка ефективності, синергетичний ефект, фінансова звітність

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