

PUBLIC-PRIVATE PARTNERSHIP IN INFRASTRUCTURE SECTORS: A REDISCOVERED OPTION

Albena Vatrlova

Climate, Atmosphere and Water Research Institute, Bulgarian Academy of Sciences

Abstract: Governments around the world turned to public-private partnerships (PPPs) to design, finance, build and operate infrastructure projects in the 1980s and particularly the 1990s. This increased cooperation between the public and private sectors for the development and operation of infrastructure in a wide range of economic activities was provoked primarily by the limitations of public funds to cover investment needs but also by efforts to increase the quality and efficiency of public services. During the global financial crisis of 2008–2010, interest in PPP models for delivering public services significantly decreased worldwide. Still, there has been sustained attention towards this form of cooperation for the implementation of projects benefitting society on the part of international institutions. Public-private partnership as a management tool entails a paradigm shift from paying for public services to focusing on delivering better services. The present study examines and analyses the essence of PPP. The need for PPP in infrastructure sectors is justified, while its characteristics and main models are also examined. The mechanism of its implementation is described, and the role of the various stakeholders is discussed. Finally, the necessary business environment conditions are formulated, and conclusions regarding the successful implementation of PPPs are drawn.

Keywords: public-private partnership; infrastructure sectors; public services; natural monopolies

JEL codes: H41; H54; L12; L32; L51; L90; R42

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Introduction

In general, a public-private partnership (PPP) is a transaction or structure between public and private entities to implement a project or service in the public interest – one traditionally provided by the public sector – in which the costs, benefits and risks

are shared to the mutual benefit of both parties (Vatralova, 2023). Hence, the term "privatisation" is used in a broader sense within public services, including, for example, the privatisation of a service without selling the existing tangible assets necessary for its implementation. This is a political process, and the stakeholders involved have different and sometimes conflicting interests; it is therefore necessary for those in power to be trustworthy.

The global experience with PPPs includes a range of projects that vary widely from highly successful ones to complete failures. They encompass a number of complex aspects, making it difficult to reach general and universally applicable conclusions. Indeed, countries and the conditions for PPPs in them are quite differentiated: rich or poor, an efficient or inefficient public sector, sufficient fiscal resources or significant fiscal constraints, a well-developed or marginal private sector, high-functioning or poorly developed banking systems and capital markets. Such differences have generated a large number of dimensions in the assessment of the business environment and its impact on PPP outcomes (Sakatsume & Chirmiciu, 2012).

Infrastructure sectors (water supply and sanitation, energy, transport, telecommunications, municipal waste management) share typical characteristics of public services. Governments around the world turned to public-private partnerships to design, finance, build and operate infrastructure projects in the 1980s and particularly the 1990s. The United Nations Economic Commission for Europe understood the importance and challenges for governments in implementing PPPs and began working on this area in the late 1990s when PPPs were still in their infancy and few countries had active programmes in this direction. Since then, PPP has become a priority topic in the Commission's activities (Alkalaj, 2012).

However, during the global financial crisis of 2008–2010, societies turned to the state as a "saviour" or "refuge" of last resort, and interest in public-private partnership for delivering public services significantly decreased worldwide (Vatralova, 2023). Cancellations of PPP infrastructure projects have also been observed with the tendency to increase during years of financial crises: in the late 1990s during the Asian financial crisis and in 2012 during the European economic crisis, in the aftermath of the global financial crisis (Martijn et al., 2023).

Still, international institutions have maintained their focus on this form of cooperation for the implementation of projects beneficial towards society. In February 2012, the United Nations Economic Commission for Europe organised "PPP Days" at the Palais des Nations in Geneva, jointly with the Asian Development Bank and the World Bank, bringing together PPP experts from almost 90 countries. The key message

of the event was that innovative ways must be urgently found to meet countries' sizable investment needs, including through successfully implemented PPP models (Alkalaj, 2012).

Public-private partnership as a management tool entails a paradigm shift – not a change in the way the public sector approaches payment for public services, but a radical conceptual and cultural shift reflecting a fundamentally different understanding of delivering better public services. However, in much of Europe prior to the economic crisis of 2008–2010, the focus was predominantly on PPP as a means of delivering hard infrastructure. In the post-crisis financial environment, the role of PPP has been clearly defined as delivering better value for money services, i.e., “service-led PPP” rather than “construction-led PPP” (DLA Piper & EPEC, 2009).

Analysing the water supply and sanitation sector, Delmon (2015) concluded that after the crisis period the PPP market turned out to be radically different from that of the 1990s (dominated by the large concession model and private investors' appetite for financing projects) or the 2000s (contract terminations and nervousness about the potential benefits of PPP). Developing countries started looking at PPPs as an option worth considering. Public utilities applied lessons learned from the past, using water PPPs in a more focused way to manage specific activities, such as increasing energy efficiency and better management of non-revenue water, with greater emphasis on performance and payments against outputs. Some of the contracts were smaller in value and less complex than in previous decades, also involving regional and local players and industries.

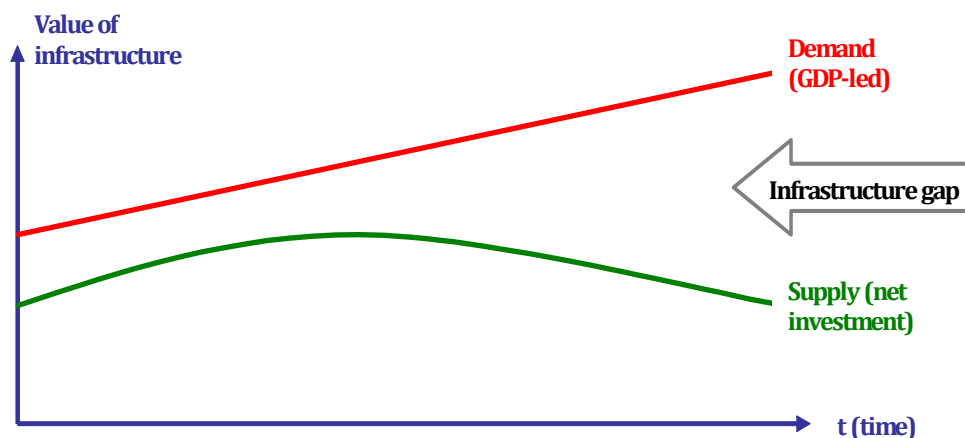
New analyses, reports and guidelines appeared in subsequent years. According to the International Monetary Fund and the World Bank, PPPs have become an important procurement method for public infrastructure and services across a vast number of economies, with a global estimate from 1984 (Febiola et al., 2024) of more than 6.4 million projects by 2020. In the EU, most PPPs have been implemented in the field of transport, which in 2016 accounted for one third of the entire year's investments, ahead of healthcare and education (European Court of Auditors, 2018). In 2024, the European Commission published a report (Smith et al., 2024) that analysed the possibility of public-private partnerships to promote investment and innovation in fusion energy technologies.

Following the revived interest in PPPs and reconsidered approach towards them over the past decade, the present study examines and analyses the main features of this alternative for implementing infrastructure projects from a current perspective.

Need for and benefits of public-private partnership

Increased cooperation between the public and private sectors for the development and operation of infrastructure in a wide range of economic activities has been provoked primarily by the limitations of public funds to cover investment needs, but it has also been led by efforts to increase the quality and efficiency of public services.

Modern infrastructure is essential for the development of societies. Rising incomes lead to increasing demand for public infrastructure at high standards. This posed major challenges for the public sector in the early years of the 21st century because there was a shortage of capital, including borrowed capital (most countries having budget deficits), a limited tax base and a competitive international financial market with numerous industries competing for resources. Lack of capital is problematic against a growing need for investments in infrastructure maintenance, renovation and expansion (Figure 1).



Source: Howcroft, 2003.

Figure 1. Financial driver for PPP

For example, the combined GDP of the Central and Eastern European (CEE) countries in 2004 was approximately 550 billion euros. Analyses from that time indicate that approximately 5% of annual GDP – i.e., 27.5 billion euros – would need to be invested annually for a period of over 20 years in order to realise the investment needs of 515 billion euros and reach the average EU standard. Between 2000 and 2003, public investment in infrastructure in the CEE region was approximately 3.5% of the countries' average annual GDP, 19.25 billion euros per year. Therefore, to be on

track for reaching the average EU level, it was falling approximately 8 billion EUR short on an annual basis (Kadrev, 2005).

Thus, the first PPPs were established due to a lack of capital in the public sector. Innovative methods of financing have allowed the public sector to remove the burden on taxpayers in the case of revenue-based PPPs (DLA Piper & EPEC, 2009). At present, new technologies, including those for mitigating the negative effects of climate change, are constantly improving, but they are also becoming increasingly expensive. As public resources remain limited, the need for cooperation with the private sector increases.

Large companies apply the latest technologies. They invest significant funds in research and development and continuously improve the quality and efficiency of construction technologies, processes and equipment. An additional benefit is that the private sector assumes a range of risks that would otherwise be taken by the public sector in traditional public procurement (Fondatsia „Evropeyski institut“, 2006).

When properly structured and implemented, PPPs can advance the efficient and cost-effective development, provision and operation of public infrastructure and public services by harnessing the skills, resources, expertise and/or finances of the private sector on a long-term basis. Bureaucratic rigidities and lack of organisational ability and incentives are often a constraint for public sector entities to manage large, long-term projects effectively and efficiently. In contrast, a dedicated private company can have the right incentives and tools to do so because its profits depend on the success and cost-effectiveness of the project over its entire lifespan. Whether in design, construction, rehabilitation, operation and/or maintenance, this can stimulate new funding and investment opportunities, raise the quality of public services and improve the public's access to these services (Martijn et al., 2023; Zverev & Ilic, 2020).

Role and functions of parties in the PPP

Each party has certain functions and plays an important role within the partnership (Figure 2) (Vatralova, 2006).

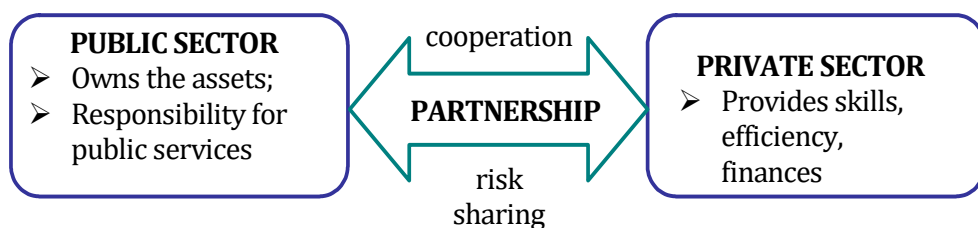


Figure 2. Role of the parties in a public–private partnership

The government must create conditions to attract investment and achieve a long-term commitment to PPPs across all political groups. It must ensure political and economic stability, appropriate legislation, an understanding of the real costs to the public sector of the given activity as well as which risks should be transferred, the ability to define performance indicators and specifications and the ability to negotiate and interact effectively with private sector companies (Davie, 2003). In turn, experienced private contractors will provide improved infrastructure, better capital mobilisation, cost-effectiveness, delivery of more and better services, innovation, transparency, reduction of financial overruns and better asset management.

PPP characteristics

The main objective of PPP is to get good value for money. This does not necessarily mean achieving the cheapest service but rather a balance between the price and quality of service. To achieve this, a PPP project must have the following characteristics:

a) Competitiveness: All public procurements above a certain threshold must be announced in official publications, and the procedures must be carried out in accordance with relevant local laws and European directives. This generates greater competition and achieves lower prices and improvement of the services offered.

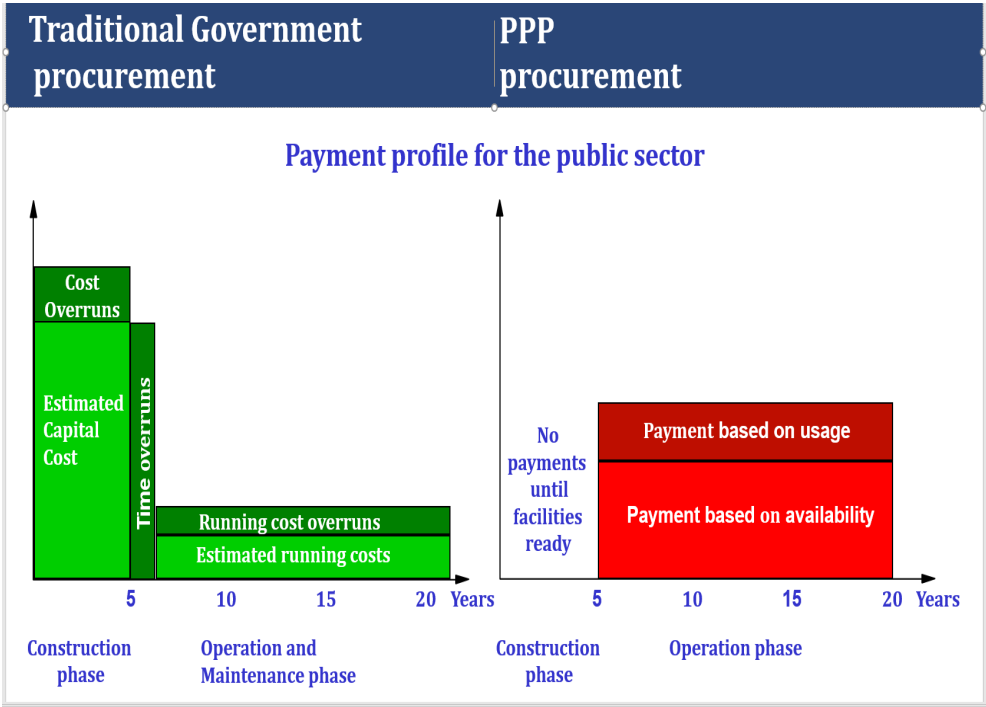
b) Service outcome requirements: This does not interfere with asset or solution management and encourages flexible, innovative approaches to achieving the required parameters.

c) Experience of the private contractor in asset management and operation.

d) Payment by performance: The main principles are that payments are made while the asset/facility is in operation and delivering the service, and they are reduced when standards are not met.

e) Appropriate transfer of risks: Each risk should be borne by the party best able to manage it.

Public-private partnership is an alternative to the mechanism of traditional public procurement, with the contractor becoming a long-term provider of services, rather than simply a builder of assets that it sells to the state without further commitments. These two alternatives differ in the payment profile of the public sector (Figure 3). The traditional approach requires payments during the construction phase. This leaves the contractor with less incentive to build its facility as quickly as possible.



Source: Howcroft, 2003.

Figure 3. Payment profile for the public sector in both alternatives

Nevertheless, there are also arguments against PPPs when compared to traditional public investment financing mechanisms. Key drawbacks include (after Martijn et al., 2023): a) increased cost due to the complexity of PPP structures; b) inflexibility of long-term commitments with the private sector regarding the regulation of necessary changes in the project when unforeseen circumstances arise; c) questionable cost efficiency of PPPs in practice, especially for small-scale projects; d) “saved” government resources being offset by future revenue flows that now go to the private company; e) risky by nature, infrastructure projects contracted through a PPP structure still pose risks; f) when governments use their political power to prompt regulatory decisions to lower prices, weakening PPPs’ finances and leading to potential quality issues with these projects.

PPP models in infrastructure sectors

Table 1 shows the basic PPP contract types according to the broader understanding of PPP, which also includes short-term commitments.

Table 1. Distribution of public and private sector participation in the different models

Type	Operation and maintenance	Capital investments	Commercial risk	Asset ownership	Contract term, years
Service contract	Public/ Private	Public	Public	Public	1–2
Management contract	Private	Public	Public	Public	3–5
Operation contract (lease, affermage)	Private	Public	Shared	Public	8–15
BOT, etc.	Private	Private	Private	Private/ Public	>20
Concession	Private	Private	Private	Public	>25

Source: Vatrlova, 2023.

Difference schemes are chosen depending on the sector, needs and investment interest, while combinations of the main models are also applied. Joint ventures between the public and private sectors are arranged, as well, particularly in Build-Operate-Transfer (BOT) or concession projects, when the contracting authority acquires an equity stake (shares) in a newly created company for the project, or when an existing public utility sells a stake in that utility to a private company.

There are no standard solutions; dozens of options for individual cases around the world and a number of contradictory concepts exist. Until 2004–2005, most of the transition countries of Europe and Central Asia were predominantly implementing concessions as a form of PPP, according to EBRD analyses. In the first decade of the 21st century, however, legislative trends slightly shifted the focus towards a wider range of models across the PPP spectrum, including “lighter” arrangements, such as management contracts of shorter duration (Zverev, 2012).

Regulation of PPPs in infrastructure utilities

Infrastructure sectors are natural monopolies, and simply converting a public sector monopoly into a private one provides no competitive incentives for the utility to operate efficiently, make appropriate investments, or respond to consumer demands. It is inevitable that some form of continued public regulation over private companies will be necessary. In practice, regulation is as much about creating the conditions under which private firms can operate effectively and efficiently as it is about protecting specific customer and public interests (Rees, 1998).

Regulation should define and control compliance with standards for the level (quality) of service, as well as determine tariffs for consumers and other economic and legal requirements for PPPs. The general standards and parameters are regulated at the

national level, while the specific conditions for PPPs are defined by their contracts.

A potential problem with privatisation in public services is that the private operator in a monopoly – often a powerful foreign company, given the huge investments required – initially has greater experience and knowledge in this business than the regulatory authority. In such cases, some countries (e.g., England and Wales) appoint an independent, experienced supervisor to monitor the adequacy of information being submitted by the operator to the regulator (Vatralova, 2023).

Due to the monopolistic nature of infrastructure public services when they are delivered by the private sector, the state should demonstrate its social function by providing support to low-income consumers through targeted subsidies: for example, in the form of vouchers distributed to socially disadvantaged households for making payments to operating companies.

The quality of regulation is a critical component of the PPP ecosystem. Although it is just one of many factors, empirical evidence consistently demonstrates a positive relationship between regulatory quality and investment in PPP infrastructure projects (Ruiz Nunez et al., 2024).

PPPs' implementation mechanism

The main aspects of managing infrastructure public services include identification of needs, policy development and strategic planning. The implementation of a public–private partnership goes through several main stages:

- 1) Pre-project stage – identification of a project and assessment of PPP feasibility. Technical, financial and legal analyses (due diligence) are carried out here.
- 2) Preparation of project and contract documentation.
- 3) Selection of a partner/contractor – technical, financial and legal expertise are also required from the public party.
- 4) Structuring of financing – primarily financial and legal expertise is necessary.
- 5) Implementing PPP – requires technical, financial, legal, organisational and managerial expertise.

Key for the effective implementation of a public–private partnership are its design, planning and financing. When designing and planning a PPP, there should be a vision and long-term strategy for the project. This is a fundamental task for the public authority, and it is essential for the latter to have political and public support. The public party should start preparing any PPP investment very early by gauging interests within the private sector to ensure that adequate economic, technical and financial conditions are present in order to implement the PPP mechanism. In general, many infrastructure PPPs require land acquisition and have an impact on the quality of life of the local population (e.g., noise, pollution), thus provoking protests.

Therefore, high standards in project preparation and an open consultation process with all stakeholders are of key importance. The lack of a broad consensus on solving environmental problems negatively affects the terms of foreign and local lenders (Marquet & Barrett, 2012).

PPPs in infrastructure sectors are mainly implemented with project financing. The latter is based on long-term loans against assets and cash flows generated by the project itself. The financing structure is determined according to operational efficiency in order to secure long-term cash flows. Other sources of financing are equity and grants from donor programmes. Investments should be planned to achieve higher value for money. The aim is to achieve a good balance between capital and operating costs, long-term efficiency and affordable tariffs.

The contract always provides for revisions and updates – periodically or due to unexpected events. Regular reviews are carried out to update prices and other terms due to inflation, changes in the business environment and technical requirements, or significant investments made.

Risk allocation

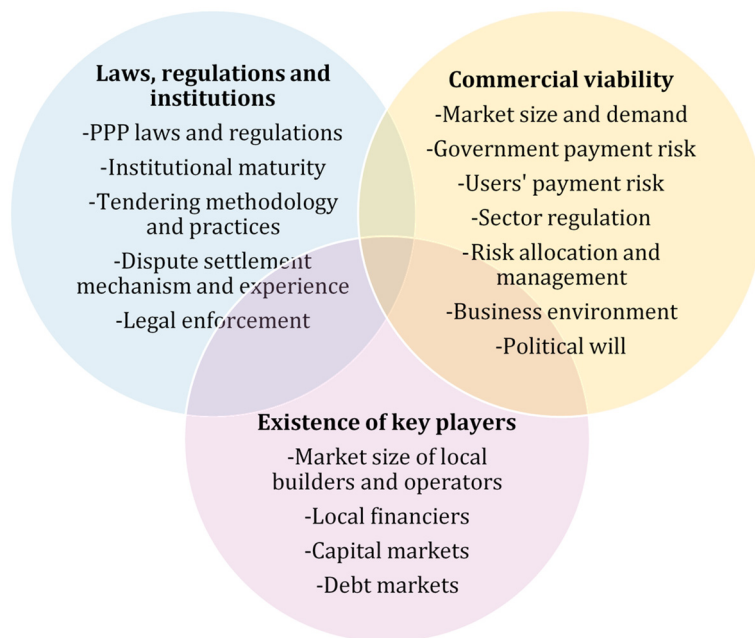
In investment PPP projects, risks can be conditionally divided into those due to the economic environment, arising from the specific activities under the contract, and from unforeseen events caused by force majeure. The economic situation entails, for example, political, regulatory, market and currency risks. Some of them are largely the responsibility of the state, but they are usually borne by the private partner in the PPP.

It is generally accepted that in PPP transactions the private sector does not assume risks that are considered political unless reasonably priced insurance is available to cover them. Examples of such risks include currency risk, nationalisation/ expropriation of financial assets or changes in the law. Other risks are usually shared by both parties (through a pre-agreed index system), such as insurance risk, permits, force majeure, or inflation risk (Marquet & Barrett, 2012).

There are cases where the private party refuses to bear the risks beyond a certain point and early termination may occur to minimise losses, leaving the public party to cover the debts or costs incurred. PPPs are thus not always a viable alternative to projects undertaken by the public or private sector separately (Febiola et al., 2024).

Conditions for a successful PPP

The arrangements and structures for successful PPP development are complex. Key elements of the environment, selected from past practical experience are given in Figure 4, and policymakers should consider them when developing a PPP framework and projects.



Source: Sakatsume & Chirmiciu, 2012.

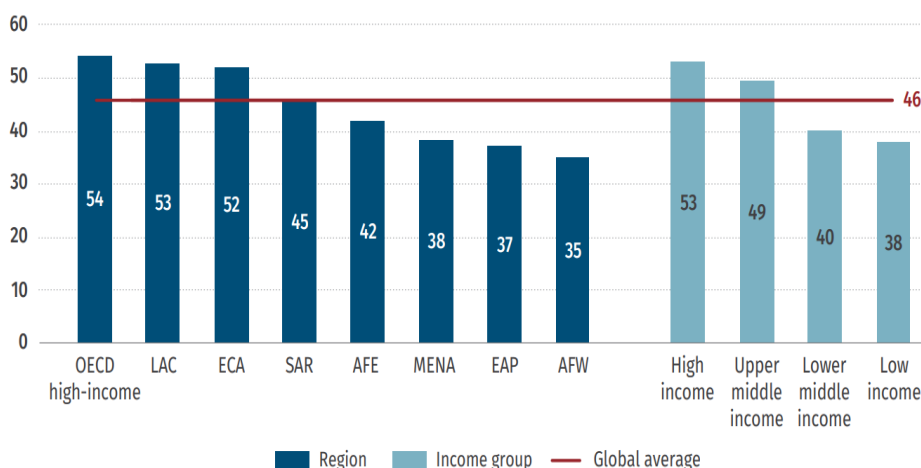
Figure 4. The major elements of the PPP environment

The necessary conditions for successful private sector participation in public services are strong and stable political support, a broad consensus of stakeholders as well as financial viability and the opportunity to operate, as ensured by the regulatory framework. The legal framework must be clear, consistent and predictable, avoiding conflicts with other legislation or unjustified legal restrictions.

Political will is crucial when public services are outsourced to a private economic entity throughout the project's life cycle. To attract large private investors in public infrastructure activities, political and regulatory risk must be reduced, which depends entirely on the three state authorities – legislative, executive and judicial. From there, the investor will calculate the market, financial and technical risks.

Implementing successful PPP projects requires considerable administrative capability that can be ensured only through suitable institutional and legal frameworks and long-lasting experience in this area (European Court of Auditors, 2018). The European Court of Auditors has found that these are available only in a limited number of EU Member States. Therefore, the situation does not match the EU's aim to implement a greater share of EU funds through blended projects, including PPPs.

While PPPs remain a small proportion of the procurement of infrastructure, they constitute an important channel to attract private sector financing into infrastructure projects. However, lack of government capabilities to prepare, procure and manage such projects constitutes an important barrier to attracting private sector investments (IBRD, 2018). This is clearly presented in Figure 5 which rates the economies of 140 countries in the year 2023 according to their application of good practices in the preparation phase of infrastructure PPPs, such as identification and prioritisation of suitable projects, assessment of the project's viability, definition of the structure of the PPP transaction, developing quality documents as required to launch a procurement process, etc. The average score is only 46 out of 100. The OECD and the high-income economies in general outperform all other regions and income groups, but their scores of 54 and 53, respectively, are far from the maximum. There is a steady trend: the higher the income level of an economy, the higher its scores.



Source: Benchmarking Infrastructure Development 2023.

Note: AFE = Eastern and Southern Africa; AFW = Western and Central Africa; EAP = East Asia and Pacific; ECA = Europe and Central Asia; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; OECD = Organisation for Economic Co-operation and Development; SAR = South Asia.

Source: Ruiz Nunez et al., 2024.

Figure 5. Preparation of PPPs: Average score by region and income group (score 1–100, number of countries N=140)

Figure 6 summarises the estimations of PPP implementation in a few European economies (out of the 140 assessed in 2023) which had relatively good results for project preparation, procurement and contract management.



Source: Ruiz Nunez et al., 2024.

Figure 6. Thematic scores for PPPs in selected European countries

Conclusion

Modern infrastructure is a prerequisite for sustainable growth, and governments around the world are making great efforts to bring the infrastructure in their countries up to 21st century standards due to its significant role in the quality of public services and the development of a competitive economy in international markets. Yet public funds alone are insufficient to meet these goals. Additional local and international financial sources are needed, and the private sector is an alternative for financing infrastructure. Public-private partnerships remain a small proportion of the procurement of infrastructure, but they constitute an important channel for attracting private sector financing into infrastructure projects. Furthermore, PPP as a management tool entails a paradigm shift from paying for public services to focusing on delivering quality and efficient public services.

Implementing successful PPP projects requires considerable administrative capacity in this area. Good preparation of PPP is the basis for success. When designed and

negotiated well, private participation in the provision of public infrastructure can introduce new technologies, ensure greater accountability and achieve more cost-effective operations and financial sustainability.

The guiding principle in the preparation and implementation of a PPP is to ensure a balance between the interests of all parties, including special guarantees for the protection of the public interest.

While there are benefits to a well-designed and implemented PPP project, it could be a complex and lengthy scheme that comes with a societal cost and is not a panacea for solving all problems in public services. PPP cannot turn a bad project into a good one. It must only be preferred over other approaches if it is proven that it achieves added value, that it has an effective implementation structure and that the objectives of all parties in the partnership can be met.

Conflicts of Interest

The author has no conflicts of interest to declare.

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Albena Vatralova, PhD, is a Chief Assistant Professor at the Climate, Atmosphere and Water Research Institute, Bulgarian Academy of Sciences, albenav@cawri.bas.bg

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