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Public–Private Partnership and its Importance for Energy Investments

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It is understood that energy investments, as a necessity and reality of life, are now shaped–within the framework of advanced technology and ecology that characterizes the 21st century, at whose beginning we still stand–by the tripod of “geo-economics, political economy, and the knowledge economy.” From this perspective, the role of the Public–Private Partnership (PPP) model–considered an innovation–is primarily examined within a theoretical framework in the context of energy investments. Since energy is a vital resource worldwide, energy investments possess a strategic character and, accordingly, have evolved into a vast market. In this market, where both benefits and burdens are substantial, it is evident that neither the public sector nor the private sector can act alone, nor can either establish monopoly power sufficient to determine prices independently. Therefore, energy investments have acquired the nature of a shared–and collectively structured–market in which the public and private sectors distribute roles, and accordingly share both risks and profits; in other words, they engage in cooperation and division of labor.

The state’s invitation to the private sector to participate in energy investments as a “partner actor,” through its regulatory, supervisory, enforcement, and incentivizing roles exercised via legal and political instruments, is technically a requirement of the liberal–capitalist system. The implementation of the PPP model–through which the state, even when capable of acting independently, shares the growing “pie” of energy investments

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(that is, returns and risks) with private enterprises—ensures the existence and continuity of this system. Future projections for a world that is increasingly populous, industrialized, and urbanized—and therefore experiencing rising potential energy demand—indicate the necessity of this model at both global and national levels.

Despite certain constraints imposed on the state in liberal economies, cooperation between public and private sectors in infrastructure investments—particularly in energy—has reached an advanced stage and has become widely recognized worldwide under the abbreviation “PPP” or “3P” (public-private partnership). This cooperation is expressed in various forms, such as “Public-Private Sector Cooperation,” “Private Participation in Infrastructure (PPI),” “Public-Private Cooperation,” “Public-Private Alliances,” “Public-Private Partnership,” “Public-Private Sector Partnership,” “Public-Private Partnership Model,” “Private Finance Initiative (PFI),” “partial concession,” “value for money (VfM),” and joint provision of goods, services, or operations. According to the general definition of the World Economic Forum (WEF), PPP refers to agreements in which risk is shared between public and private sectors within the scope of an investment or project, and in which the private sector provides and/or undertakes services such as design, construction, management, and maintenance. In large-scale investments, where inefficient projects are eliminated and only efficient ones are pursued, the state acts as guarantor in the name of public interest, while the private sector contributes entrepreneurial techniques and mobilizes financing; thus, projects are completed in the fastest and most cost-effective manner possible.

Both the public sector (state, region, municipality)—motivated by public interest—and the private sector—motivated by profit—show particular interest in infrastructure investments. Infrastructure consists of drinking water networks, energy (electricity, natural gas transmission and distribution), and transportation (roads, tunnels, bridges, ports, airports). In PPP-based infrastructure investments, the proportion of public and private participation is crucial: theoretically, if a state-centered economy is designed, the public share in PPP ranges between 51% and 90%; conversely, in a private-oriented liberal economy, this ratio may be reversed. PPP projects are characterized by “2U”: uniqueness and uncertainty. Because projects are unique operations, they

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inherently involve a certain degree of uncertainty. Organizations that produce projects typically divide them into stages—initiation, planning, execution, completion, monitoring, and control—to ensure efficiency and continuity; the combination of these stages is called the “project life cycle.” Within this cycle, input procurement, time, cost, communication, and risk management are critically important for project success. (See Pal, 2026; Steelyana and Aulia, 2024; Asin and Sanchez, 2021).

Depending on economic needs and country-specific practices, the PPP model has many types or phases; therefore, it is not standardized and varies according to circumstances. An infrastructure investment project may begin and end under one PPP model (“x”), transform into another model (“y”) during implementation, and eventually take the form of a third model (“z”). Thus, there is no hierarchical order among models; rather, there exists a “non-directional cycle.” Their common feature is that the public sector is typically the initial designer, builder, operator, and transferor, while the private sector is the recipient or lessee. Governments negotiate and contract with private firms for infrastructure projects that serve public interest. The PPP model may consist of at least one phase (e.g., leasing) or up to four phases (“design-build-operate-maintain”), taking its name from these stages. Sub-models dominated by the public sector include “design-build,” “design-build-maintain,” and service or management contracts, whereas the private sector is dominant in concession-based models such as “leasing,” “design-build-operate,” “build-own-operate,” and “full privatization.”

There are numerous factors that make PPP implementation attractive in infrastructure investments. These range from reducing government budget expenditures and transferring income to the private sector, to lowering project costs and promoting local economic development. The logic of PPP rests on the fact that the public sector may lack sufficient funds to finance all infrastructure projects, may seek to save on expenditures, may prefer to defer spending, or—even if financially capable—may prefer to allocate resources, revenues, and market shares to private partners rather than directly invest its own capital. As Hadjuka (2014) states, PPP should increase the transactional value of money by providing clear benefits in terms of quantity, quality, service, cost, and risk transfer. However, one factor that may undermine PPP’s success in the eyes of the electorate is

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its vulnerability to general political risks and corruption.

A key success factor of PPP models is transparency toward economic governance and the public. Transparency is a requirement of democracy in economics. As Greve and Hodge (2011) note, transparency ensures citizens' freedom of information, openness in relations between administrators and stakeholders, predictability in decision-making processes, and the fight against corruption. However, some concerns or myths persist regarding the philosophy underlying PPP. For example, Tadimalla (2020) argues that claims such as the incompatibility of private profit motives with public service objectives, increased user costs, additional burdens on the private sector, or the limited role of private actors are misconceptions; in reality, PPP carries positive implications.

PPP-based investments are also related to the "X-efficiency" thesis in microeconomic theory, which reduces firm efficiency problems to input-output relationships. Defined by Leibenstein (1966, 1973), X-efficiency refers to a situation in which a firm, as a decision-making unit, allocates resources internally to achieve maximum output (or minimum cost) given its technical capabilities and managerial skills. In a perfectly competitive market, minimizing input costs is essential, and such firms may represent private entities operating under PPP arrangements. However, when markets become monopolized and conditions such as incomplete contracts, asymmetric information, high transaction costs, and bounded rationality prevail, "X-inefficiency" may arise—meaning that maximum output cannot be achieved from given inputs.

In order to maintain current welfare levels and secure future prosperity, the modern world continuously plans and invests in energy projects. According to Schmidt (2010) and Vagliasindi (2013), there are four major reasons why governments must take energy investments seriously:

i) Due to urbanization and globalization, energy demand is projected to increase by 49% between 2007 and 2035 (even today, more than 1.5 billion people lack access to electricity).

ii) Despite the Kyoto Protocol, excessive energy consumption leading to high carbon emissions continues to negatively impact the global climate.

iii) Renewable energy sources such as solar, wind, biogas, and geothermal are growing rapidly as alternatives to

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fossil fuels, yet they attract limited attention from PPP investors.

iv) Competition across all energy resources—including renewables—has intensified, increasing energy consumption and prices, thereby creating inflationary risks.

Governments have also allocated billions of US dollars in financial resources under global "green stimulus" programs, creating a foundation for PPPs in clean energy investments. The European Union's Green Paper (EUR-Lex, 2007) distinguishes between two types of PPPs: (i) contractual PPPs, based entirely on agreements between public and private actors; and (ii) institutional PPPs, which involve independent entities beyond contractual arrangements. All such frameworks emphasize "energy efficiency," a key component of the EU's Europe 2020 Strategy, including a 20% energy-saving target across all sectors.

The ultimate goal of PPP is to achieve and sustain energy efficiency (EE). However, financing EE faces several barriers, including limited internal funds, information gaps, small project sizes, high development costs, risk assessment challenges, and institutional capacity constraints. To address these issues, policy frameworks should include evaluating PPP design, managing performance and contracts, assessing implementation, identifying priority markets, and overseeing execution processes.

PPP for renewable energy investments is supported politically by major international financial institutions such as the World Bank Group (see 2026), Asian Development Bank (ADB), European Investment Bank, European Bank for Reconstruction and Development (EBRD), Inter-American Development Bank (IDB), and African Development Bank (AfDB). These institutions generally advocate for PPP laws that encourage private participation, ensure fair concession sharing, allow negotiation of contracts, permit guarantees, and secure collateral rights.

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