

SCIENTIFIC REVIEW

MARKETABILITY IN THE WATER AND ENERGY SECTOR - THE BASIS FOR ESTABLISHING AND FUNCTIONING OF PUBLIC-PRIVATE PARTNERSHIPS IN SERBIA

Marko Bajcetic¹⁸, Zvonko Brnjas¹⁹, Vladimir Grbic²⁰

ABSTRACT

The use of hydropower potential in the Republic of Serbia is dependent on the demand for electricity and implies meeting the basic and special needs for energy, certainty of delivery to the consumers, attaining lower prices, aligning the development of the energy sector and economic and societal development and rational production, transmission and distribution of electrical energy. By establishing a specific public-private partnership model (PPP) the water sector can use the renewable potential of the amounts and quality of water and manage its water resources to gain indirect, induced and direct supply that may impact the private energy efficiency and that meets ever growing demand of the energy sector, that is their supply in the energy market. Today's conditions under which the water sector is functioning and the attitude towards energy demands need to be changed by establishing a relationship between the public and the private domains in accordance with the principles and requirements that apply on PPP and under conditions that are based on the national and EU legislation.

KEY WORDS: marketability, partnership, water, services, hydropower production

JEL:Q42

UDC: 658.114.2(497.11)

339.138:620.92(497.11)

COBISS.SR-ID 227953676

¹⁸ Corresponding author, The International Management Teachers Academy, Novi Sad, Serbia, bajceticmarko@gmail.com

¹⁹ Institute of Economic Sciences, Belgrade, Serbia

²⁰ John Naisbitt, Beograd, Serbia

INTRODUCTION

Serbia is facing significant limitations in its attempts to effectively use the available hydropower potential due to the absence of appropriate regulation of economic and market relationships in using the basic natural resources and public resources which all merge together to form an economic resource - water for hydropower production. The current management systems in the domain of water and hydropower production and energy production are reduced to global, primarily cost-driven relationships that need to be changed if the goal is to increase the usage of water resources, particularly in the domain of energy production. Changes can be introduced through public-private partnership (PPP) models which entail special contractual or institutional relationships between a private and a public partner.

WATER RESOURCE MANAGEMENT AS A FUNCTION OF USING HYDROPOWER POTENTIAL

The total hydropower potential in the territory of the Republic of Serbia is 27,200 million kWh/y, of which technically usable 19,200 million kWh/y, of which 17,500 million kWh/y may be used for facilities 10 MW and bigger. The use of hydropower potential requires precise regulation of water resources management, facilities and water measures. The creation of conditions for efficient water resources management along a drainage basin requires aligning the national legislation with the EU Water Framework Directive and individual EU directives about the use of waters and risks in flood control. The energy sector (Udovičić, 2004) requires harmonization with the European Energy Charter, the so-called "Green Book" and the EU Directive for the Liberalization of Electricity Markets.

The management of water resources as a public good gives us an answer to the question – how to protect from waters and at the same time obtain quality water resources and environmental protection by using the hydropower potential in different time and spatial dimensions (Bajčetić, 2012). The water resources management implies targeted identifying and positioning of the water sector for the use of water sources and potential in electricity production.

Water services include public and business (water management) individual services such as extraction, catching, intake, retention-accumulation, drainage, treatment and distribution of ground and underground waters, that is all those services that are necessary for the use of hydropower potential of water and water resources in electricity production (European Communities, 2004). Public services are activities that pertain to administrative processes necessary for the regulative and administrative functions and processes in using of water and water protection and the environment. The end result of the private services in the water sector is manifested in the value of water management services.

An important segment of the activities pertains to the organized activity of the public (European Communities, 2004) that have to be accepted in the water policy, the water sector and water management activity. Such type of activity may be used to exert influence on management in the water sector through citizens' associations that suggest measures for more efficient water management, and in particular for the terms, conditions and manner of use of the hydropower potential of water.

PUBLIC AND MARKET CHARACTERISTICS OF GOODS AND RESOURCES IN THE WATER SECTOR AND THAT OF A PRIVATE PARTNER

Energy is a commercial product produced by using hydropower potential, that is, the usable values of water sources when, due to undelivered services and use of the usable values, water becomes specific economic good, that is, a resource. It is not possible to have a completely free market in the water sector (because of market failures) and therefore it must be made complete by using planning (Bajčetić et al., 2015). A limited effect of the free market in this domain is manifested in the following: relationships between the stakeholders in the water sector, the energy sector and energy consumers include strong retroactions/feedback characterized by the presence of externalities and asymmetric information; events and results that pertain to supply and demand are not created in one, but in different periods in time; there are active yet unidentified elements which affect the multiplier - accelerator model in economic events at the level of the region and state (Adžić, 2011); interests of individual stakeholders in the sectors do not have to be in accord with the collective and joint interests because of the poor degree of market development and market risks.

Marketability in the water and energy sectors, judging from the perspective of a public and a private partner within a PPP, represents a relationship of the total indirect, induced and direct demands and supplies that are established in time and space to serve the purposes of water resources management and electricity production.

GROUND FOR APPLYING MARKETABILITY IN THE WATER AND ENERGY SECTORS TO PPPS

A PPP can be most broadly defined as a set of joint initiatives of a public and a private, non-profit and profit sectors, where each party brings to the table specific resources and assets. In a narrow sense a PPP implies a cooperative relationship in which the public and private sectors joint means or assets and expertise and through appropriate allocation of assets, risks and rewards, meet the public needs and the private interests.

The basis of a PPP is contained in the risks, that is, in identifying the types of risks and managing them (Bajčetić, 2008). In the process that leads to establishment of a PPP risks are defined: in risk identification by phases, in assessment of the tangible value of the risk, in setting risk limits and in allocating the risk to the partners to address the problem with the risk. The risk is shared between partners in phases, based on a principle that a partner strong enough to bear the risk does so and in exchange for the risk this partner receives certain gain (financial or techno-economic).

Partnerships can be built around investments of a private partner made in electricity production with the aim of gaining return on invested capital and make a profit. Water, services and energy that are the subject of a partnership are not public services but private (business) values.

In addition to a PPP, the private sector may be engaged in electricity production in the water sector by using other models, or by means of: (1) conclusion of management contracts for water companies, (2) leasing water companies and facilities, (3) concession and (4) privatization of the company operating in the water sector.

MODELS OF PUBLIC-PRIVATE PARTNERSHIPS IN THE WATER SECTOR

Long term contracts between the public, or water, sector and the private sector may include activities of financing, implementation and operationalization of a project that pertains to the construction of a water facility or providing water service that can be (Brnjaš, Stošić, 2015): (i) Design – Build (DB): the private sector designs and builds infrastructure in line with the specifications made by the water sector, most frequently at a fixed price; (ii) Operation & Maintenance Contract (O&M): a private partner operates the property owned by the water sector on the basis of a contract and under the specified conditions; (iii) Design – Build – Finance – Operate (DBFO): a private partner designs ideas, finances and builds water facilities and then rents the facilities based on a long term lease agreement and operates them until the expiry of the lease agreement at which point they are returned to the water sector; (iv) Build – Own – Operate (BOO): a private partner finances, builds and operates and owns the facilities; the water sector has the right to use other circumstances to limit the use of the facility specified in the basic contract; (v) Build – Own – Operate – Transfer – (BOOT); a private partner is awarded a franchise to finance, build and operate the facilities as well as the right to charge and collect water usage fees for a specified period of time, after which the water sector reclaims them as their owner; (vi) Buy – Build – Operate (BBO): a private partner purchases and restructures and technically improves water facilities and gains the right to use them in a specific period; (vii) Operation License: a private partner becomes an operator based on a license to deliver water service in a specific period of time; (viii) Finance Only: a private partner is a financial organization that directly finances the project and uses various mechanisms of long terms investing or leasing securities.

STAGES OF A PPP ESTABLISHED FOR ELECTRICITY PRODUCTION

The stages of a PPP in the water sector, i.e. in construction, maintenance and usage of dams, artificial lakes- reservoirs, water supply systems, irrigation and drainage (according to the Law on PPP) are: project identification, project award, project implementation and project hand-over, i.e., handover of the facilities and the system.

In the **project identification** stage, the public, or water, sector defines a feasible plan of activities that a PPP needs to implement in accordance with the government and water sectors' strategic plan. Proposals for the plan and project tools that are the subject to a PPP may be offered by both national and international investors.

The second stage of a PPP is **project award** that unfolds in line with the rules governing public procurement through public auction, direct negotiations and competitive negotiations.

The third stage is **project implementation** that involves assessment systems and specific terms and conditions set by the water sector such as identifying water sources, determining amounts of water, water quality, time and spatial dimensions, water balancing (by using natural and artificial holding areas), integral and integrated water management and water facilities, resource and environmental standards. PPP establishment involves technical, financial, economic, societal assessments and an assessment of the PPP's environmental impact.

The fourth stage of a PPP is **project hand over**, i.e., handover of the constructed and/or used water facilities when the private partner delivers all the assets and rights to the public, that is, the water sector.

MECHANICS OF PARTNERSHIP OF THE WATER SECTOR AND THE PRIVATE SECTOR IN ELECTRICITY PRODUCTION

In a PPP problems can surface at the very beginning, in the initial phase of project identification, during award, during project implementation and hand over – of the facility for further usage or after it has been used for a period of time. Amongst other things, they can appear as the consequence of:

- Political instability and consequently volatile normative and institutional framework that regulates the usage of resources and methods of elimination of risk factors in a PPP;
- Absence of conditions for transparent, clear, precise manner of sharing information about the terms and conditions and types of PPP that can be established and be operational;
- Complex administration, i.e., sluggish bureaucratic apparatus responsible for issuing terms and conditions, approvals and licenses that enable design and implementation of a PPP;
- The method of price calculation which does not necessarily have to reflect objective and real costs and the amount of the engaged financial assets;
- Uncertain provision of budget funds in a longer period of time represents a problem given the periods of construction and the usage of water facilities and water.
- Absence of rules and strategies in the sector, in particular those that regulate the goals of water resources management; problems occur because of unspecified water management structure for certain areas;
- Lack of assessments of types and intensity of risks in all stages of the project implementation process beginning with the preparation, planning, organizing, managing, implementation to control and supervision.
- Impossibility to disclose the achieved, and in particular, added values which are created by merging resources of the water sector and the private sector.

Problems and limitations occurring in the process of establishing a PPP and its operation may be taken care of by a precise, clear and transparently defined PPP, determined based on a special law and the Green Book issued by the European Union with defined and regulated terms and conditions and different forms of cooperation of the public and the private sectors. Problems are avoided by risk sharing which is assessed for all stages of construction and usage of the facilities. Allocating dues depends on the form of a PPP which may be contractual or institutional: the contractual form pertains to a partnership based on contractual obligations, while the institutional form relies on the creation of a special company.

CONCLUSION

The public and market interests of the water sector and that of the private partner rest upon the usable values of water and marketable values of water services which are indispensable for hydropower production and further development of the energy market.

One of the factors that cause problems in establishing PPPs in the water sector and in particular in hydropower energy is tied to the existence of monopoly of institutions and companies operating in this sector. PPPs in the water sector and hydropower production

need a system of monopolistic competition with a given number of participants. Participants are differentiated by different methods applied in water resources management, in production, transmission and distribution of energy. By increasing the number of participants, water services and energy products will become even more differentiated thanks to innovations that improve the quality, cut prices of service delivery, and affect transmission and distribution of electricity.

REFERENCES

- [1] Adžić, S. (2011). Regionalna ekonomija Evropske unije, Ekonomski fakultet, Subotica, Serbia
- [2] Bajčetić, M. (2008). Ekonomija vodoprivrede u partnerstvu privatnog i javnog sektora, Prometej, Novi Sad, Serbia
- [3] Bajčetić, M. (2012). Integritivnost ekonomije u vodnom (javnom) sektoru“, Prometej, Novi Sad, Serbia
- [4] Bajčetić, M., Brnjas, Z., Drašković B. (2016). Economic Efficiency of Water Protection within Environmentally Friendly and Integrated Water Resources Management, International Review, Belgrade, Serbia
- [5] Brnjaš, Z., Čurčić M., Stošić I. (2015). Assessment Of The Socio-Economic Impact Of The Chemicals Environmental Contamination, International Review, Belgrade, Serbia
- [6] Brnjaš, Z., Stošić I. (2015). Investment projects implementation through public-private partnerships models; In: New economic policy reforms, Belgrade Banking Academy, Belgrade, Serbia
- [7] Brnjaš, Z., Stošić I., Dedeić P. (2015). Socio-ekonomska analiza u upravljanju rizikom od zagađenosti životne sredine; Ecologica, Beograd, Serbia
- [8] European Communities, (2004). “Common Implementation Strategy – Guidances” available at WFD - CIRCA
- [9] Ministarstvo poljoprivrede, šumarstva i vodoprivrede – Republička Direkcija za vode (2005). „Okvirne Direktive EU o vodama“, Udruženje za tehnologiju vode i sanitarno inženjerstvo, Beograd, Serbia
- [10] Ministarstvo poljoprivrede, šumarstva i vodoprivrede – Republička Direkcija za vode (2009). „Direktive Evropske Unije o vodama(2006-2009)“, Udruženje za tehnologiju vode i sanitarno inženjerstvo, Beograd, Serbia
- [11] Nikolić, M., Mihajlović-Milanović, Z., Mandal, Š. (2003). Ekonomika energetike“, Ekonomski fakultet, Beograd, Serbia
- [12] Udovičić, B. (2004). Neodrživost održivog razvoja“, Kigen, Zagreb, Croatia
- [13] Uredba o utvrđivanju vodoprivredne osnove Republike Srbije („Službeni glasnik RS“ br. 11/02, Belgrade, Serbia
- [14] Zakon o javno – privatnom partnerstvu („Službeni glasnik RS“ broj 88 /2011), Begrade, Serbia
- [15] Zelenović, M. D (2011). Inteligentno privređivanje, Prometej, Novi Sad, Serbia

Article history:

- **Received 25 October 2016**
- **First revision 25 November 2016**
- **Accepted 4 December 2016**