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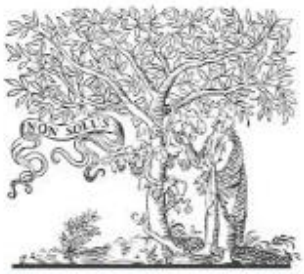

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Legal and institutional aspects of promoting Private-Public Partnership (PPP) in infrastructure and innovation within triple helix cooperation model

Abstract: This article is devoted to the theoretical study of the formation and implementation of PPP models, here are offered suggestions regarding the effectiveness of their application in various economic and social sectors. The author offers the new approach to the methodology of partnership relations between subjects of public and private law in the innovation sphere, basing on the triple helix cooperation

Keywords: Public-private partnership, the sphere of infrastructure, innovation, innovative relationships, national innovation system triple helix cooperation model.

1. Introduction

The concept of PPP as a means of attracting individuals' funds to perform socially important infrastructural projects has deep historical roots. This refers to concession relations known in the days of ancient Rome. In the time of Roman Empire, munisips used to transfer the control over the objects of antique infrastructure such as post stations, ports, markets, baths to private individuals. Concessions were also applied by the construction of the famous Roman water supply system.

In the XVIII century in Europe bridges, canals, dams were built basing on the concession contracts as well as many public utilities were operated in such a way. In England, a group of British noblemen formed road construction trusts, which borrowed funds from private investors for road repairing purposes and returned the loan through collection of transportation tolls. Construction of the great London bridges had been funded by special bridge trusts up to the middle of the XIX century, and at the end of the XIX century the Brooklyn Bridge in New York was built using the same scheme with the participation of the private capital. In France, under concession terms (the model "user pays") there were constructed canals, tunnels etc. Concessions gained rapid development in the XIX - XX centuries with a view to the construction of railways, urban sewage systems and other infrastructural objects. All the railways in prerevolutionary Russia were constructed by means of concessions.

European legislation has more than a century long history of concession relationships. Meanwhile, there are significant differences in the interpretation of the concept "concession", noted in the Interpretation of the Commission of Interpretative Communication on Concessions under EU Law (CICC, 2000), adopted by the European Commission in 1999. So, there were indicated significant differences between ties that are formed inside the concession agreements and those of the usual governmental contracts of subordinate type, governed by the EU Directive 93/37/EEC (EEC, 1993) that allow to consider the concession relationships as the partnership. In particular it refers to the joint private and public interests. Concessions are characterized as

transfer of the exclusive rights to operate and manage state owned infrastructure facilities and public services from public authorities to individuals, under condition the last takes over the economic risks. Public services are interpreted within the meaning of the Directive 92/50/EEC (EEC, 1992) regarding public services' contracts, that are provided by legal entities of public law (national, regional and local authorities and organizations that are created by these authorities) to meet the needs of society and have no industrial and commercial nature.

The involvement of private partners for implementation of projects in the public sector in its modern sense originated in the UK. In the early 90s the government of John Major provided the Private Finance Initiative (PFI) - the first systematic program aimed at stimulating private investments, which appeared as a result of concerns about increasing of the governmental debt in the standard model of public procurement in 80s. On the initiative of PFI the state ordered the construction of capital facilities that required large investments to the private contributors for their own account. After the facility's construction had been completed it was taken in the long-term lease by the state. Thus, the private investments were remunerated by paying rents, and after the expiration of the lease period the facility was transferred to the state ownership at a symbolic cost or even free. In many cases, a contributor was involved in the subsequent operation of the facility and earned an income from this. Infrastructure objects (such as highways and railroads, schools, hospitals, prisons, etc.) could become the subject-matter of the private financial initiative. Within the period of only 5 years from 1997 to 2003 of zenith in the UK PFI mechanism there were implemented 563 projects having a total value of 35.5 billion pounds. Attraction of infrastructure technologies and the quality of services involving private investments were the matters of great importance for Great Britain.

In the practice of Western countries the applying of PPP has significantly expanded and become an alternative to privatization (semi-privatization) of essential facilities in the fields of electricity, transport, utilities, health, education and national security. Germany and Austria used PPP as a mechanism aimed at reducing of governmental intervention, particularly by administrative decision-making in sectors that were traditionally state-owned: energy, heavy industry, mining industry, banking (Scherrer, McQuaid, 2011). PPP projects are well adapted to the sphere of medicine, namely to the construction of hospitals. In Germany and Austria PPP contracts are concluded for the period of 25-30 years.

A famous German scientist describes the changes in the social role of the state when its primary purpose becomes not the authoritative influence, but the provision of "the life support" on the basis of private law beginning with the simplest ones - supply of water, gas, electricity and services that meet the most demanding needs: public transport, postal, telephone, telegraph connectivity, and social protection (Forsthoff, 2007) . Thus, the state is seen as a kind of agency for the production of public services. Some of these services can be produced by the state itself, and a part them only with the involvement of the private sector (Rubinstein, 2007). Each partner acts in his own interests and in the interests of the society, namely acquires a social function.

2. The model of PPP for infrastructure and social cervices

The PPP model in the sphere of traditional social responsibility, namely in the field of infrastructure and public services has been implemented by many countries, whose experience has been studied at the EU level. Its concept is footheld in the Green Paper on PPP and EU law on public contracts and concessions (CEC, 2004). The document provided the concept of PPP according to which PPP was interpreted as various forms of cooperation between public

authorities and businesses, which serve to provide financing, construction, modernization, management, operation, infrastructure or services.

Amongst the features of PPP in infrastructure and public services' sphere there were specified:

- The relative temporal duration of cooperative relations between public and private partners on various aspects of the planned project;
- Private investing, sometimes co-financing on the basis of an agreement between the parties;
- The important role of the private partner as an operator (manager), which is significantly involved in the various phases of the project (design, completion, implementation, funding); the participation of the public partner concentrates primarily on defining the objectives to be achieved in terms of public interest, the quality of services provided, pricing and general control over the implementation of the goals set;
- Distribution of risks between the public and private partners, determined in each case separately according to the capabilities of the parties to evaluate, monitor and overcome said risks.

The introduction of PPP into the sphere of infrastructure and public services had the following advantages: attracting of private financing due to limited budgetary (public) funds; use of know-how and working methods of the private partner; creating of the added value for customers and society at large and the optimal use of resources; following this model the state moved away from the role of the direct manager, passing it to the private partner. This model of PPP took place on a contractual basis by means of public contracts' and concession agreements' conclusion, and covered a range of activities that were to some extent fulfilled by the private partner with regard to the engineering, financing, design, maintenance, operation or provision of public services. Selection of a private partner occurred on a competitive (tender) basis.

In the Green Paper there was also launched an opportunity to institutionalize these relations into a joint stock company established basing on a joint public-private property, involving the public partner into this JSC; but this form of interaction was not given enough attention.

World Bank conducts structuring of PPP projects (Worldbank, PPP Glossary) in the following areas: production, transmission and distribution of electric energy; transmission and distribution of natural gas; telecommunications; airports; sea ports; railroads; toll highways; sewage treatment facilities; utilities; and offers a classification of PPP models in infrastructure and public services:

1. *Contracts for the operational management and leasing (lease) contracts (Management and Lease contracts):* a private company obtains an object of the public property for operational management or under leasing (lease) terms for a certain period of time.
   - *In the operational management contract* the state remunerates the management services of the private partner and bears operational risks;
   - *In the lease contract* the state gets rental from the tenant, and operational risk falls on the private company.

2. *Concession*: The government provides powers of possession and operation of existing concession facilities on a contractual basis to a private entity for a fee under the terms of repayment. Public partner possess the facility (realty), while the private partner shall be entitled to rehabilitate and improve it within the time period defined in the concession agreement. A

private company bears all operating and investment risks. WB points out the following types of concessions:

- *Rehabilitation - operational management - transfer (Rehabilitate - Operate - Transfer, ROT)*: private entity rehabilitates (reconstructs) the existing facility, operates and maintains it at his own risk for the entire period of the contract;
- *Rehabilitation - lease - transfer (Rehabilitate - Lease - Transfer, RLT)*: private entity rehabilitates (reconstructs) the existing facility at its own risk, leases or rents it from the government, operates and maintains the facility at its own risk during the period of the contract;
- *Building - rehabilitation - operation - transfer (Build - Rehabilitate - Operate - Transfer, BROT)*: private entity builds adders to the existing facility or completes partially the constructed object (facility), rehabilitates existing assets (capital assets), operates and maintains the facility at his own risk.

3. *Projects presupposing construction of a new facility (Greenfield projects)*: a private company or a public-private joint venture builds and operates a new facility within the time period indicated in the contract. The following types of projects are singled out:

- *Building –lease – ownership (Build – Lease – Own, BLO)*;
- *Building – operational management – transfer (Build – Operate – Transfer, BOT)*;
- *Building – ownership – operational management (Build – Own – Operate, BOO).*

4. *Asset sale, privatization (Divestiture):* a private company buys shares of a state-owned enterprise as a result of asset sales, public offering, or mass privatization program in two ways:

- *Privatization*, i.e. the transfer of 100% of the shares of a state-owned enterprise to private individuals (persons);
- *Partial transfer of shares of a state-owned enterprise* which either presupposes or does not the transition of the object's management to private individuals.

One of the WB experts J. Delmon states: "... commercial agreements and contractual structures that apply to PPP are extremely diverse in forms. WB classification is not a restrictive requirement for the public sector to use specific schemes out of the mentioned above, but rather examples of methods through which a private company may be involved into the project ... there exists no ideal scheme, except the one which takes into account in the best possible way the conditions of the country, industries involved into the project or the content of problems to be solved." (Delmon, 2009)

3. The model of PPP in the innovation sphere within the Triple Helix Cooperation

PPP model is peculiar in **the sphear of research, development and innovation.** This model has other historical background and is relatively young, but not less successful that is used in practice of many countries of the world. The purpose of this model is to organize relations within the innovation system that will allow to involve all participants of innovative processes to the joint decision making, to take into account and harmonize their interests and to achieve the optimal combination of commercial and social effects of innovation activities. In some works (Scherrer, McQuaid, 2011), this model applies to the organizational model of PPP.

Organizational PPP allow to provide the interaction between the public, private and the third sector (is meant the society as such) in order to promote economic and social policy in the field of development. Just within this model, PPP is seen as one of the options for implementing investment and innovation policies at national and regional levels. Such partnership can be applied to development objects of any form of property, not just the governmental ones, as well

as the public partner in it is not only the state as the owner, but other entities of public law. In the PPP model in the innovation sphere there are primarily involved public research organizations (institutions), universities, laboratories and others.

Initially PPP is regarded as relations of cooperation in the sphere of R & D, formed nearby the industry, government and universities, playing the instrumental role in introducing of the new technologies to the market (Wessner, 2003). The founder of the modern concept of PPP in the innovation sphere A.Link (Link, 2006) notes, that this term was chosen to show the development dynamics of relationships between the government and private research institutes, from the time the first acted as a customer of research until then he became a partner in the research, i.e. the evolution of the role of public entity in partner relationships. C. Coburn uses this term as a synonym for collaboration (cooperation) in the sphere of research, joint public-private initiatives (Coburn, 1995).

Some more narrow definition of partnership as a research joint venture (Research Joint Venture) is used by A. Link and L. Bauer (Link, Bauer, 1989). According to the definition of the USA Council on Competitiveness (CC, 1996), partnerships are seen as cooperation agreements involving companies, universities and government agencies and laboratories in various combinations with the combining of resources within the framework of common objectives' implementation in the sphere of R & D (OECD, 1997). Different forms of scientific collaboration and cooperation have been actively developing in the U.S. and the countries of Western Europe since the 80s years of XX century.

In 1997 OECD defined a national innovation system as "a set of private and public sector institutions, which separately and in interaction contribute to the development and spread of new technologies within a state." (OECD, 1997) If initially these relations have linear, vertical (between the government and other entities) and horizontal (between science and business) nature as in Figure 1, then gradually they become more complex and occur on a helix (Figure 2).

Fig.1

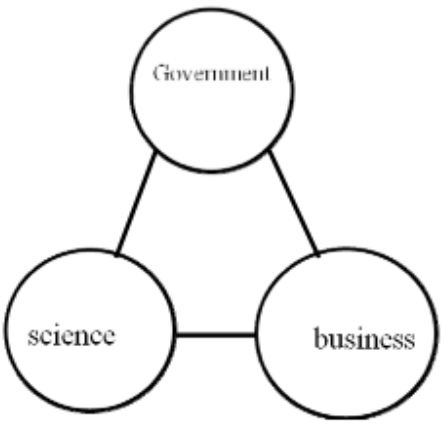
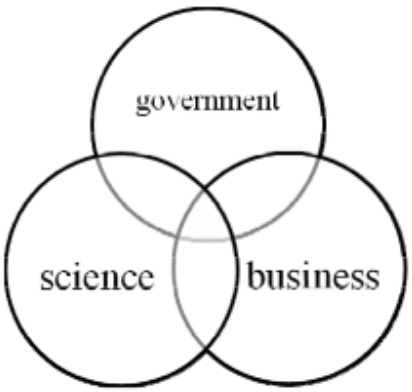


Fig.2



The founders of the non-linear model of "triple helix" are H. Etzkowitz (USA) and L. Leydesdorff (Netherlands) (Etzkowitz, Leydesdorff, 2000). In the theory of triple helix formation NIS is characterized by complex multilateral infrastructural linkages between

elements: government, science and business, and by the origin in areas of mixed layers of public-private organizational forms, that facilitate the spread of innovations.

According to the theory of triple helix NIS participants actively interact with each other through the exchange of financial, material and intellectual resources, forming a variety of organizational forms, responsible for innovations. The results of this process are incubators, science parks, venture funds and other specific participants of innovation infrastructure. Active interaction and cooperation between elements of NIS is also implemented in joint innovation activity of public and private law subjects on contractual and institutional basis.

Unlike NIS model, which implies non-interference of the government as a ruling entity in the horizontal relationships between major actors of innovation relationships: research organizations and private business entities (Fig. 1), in the helix model, presented in Figure 2, the twist of the basic structural elements (government, science and business) form more complex and diverse relationships in which the leading role can switch from one element to another, depending on the economic and social conditions.

The origin of the triple helix model occurs when the government and science, represented by scientific organizations and private business entities take joint efforts to stimulate mutually the efficiency of each other. Typically, the formation of a triple helix is initiated by the government or regional authorities, who organize together with scientists and businessmen discussions on the economic development of the whole country or the particular region or form joint bodies responsible for innovation development. For that purpose representatives of the three sectors: science, business and government meet together for brainstorming, initiatives' forming, finding resources for national and regional development.

When the new knowledge becomes the basis for the creation of new companies, science begins to dominate in the triple helix model, while government and business play a supporting role in the development of scientific research. At this stage, research and scientific centers are established, there occur interdisciplinary (integrated) studies, science gets extra resources for research from business. With the support of the state and private business entities science becomes a source of intellectual capital for venture business and the creation of start-ups. Science sector through incubation infrastructure creates companies and provides technology transfer. Industrial enterprises form in their turn structures providing research and educational process on the basis of scientific institutions and universities. The mobility of individuals (experts, professionals) from one helix to another - from the state administration to business, from business to science, from science to state administration – becomes an important element of the triple helix. Such personnel shifting stimulates the generating of new ideas, joint projects, provides the interaction between the components of the NIS.

In 2004 Organisation for Economic Cooperation and Development (OECD) conducted a study of PPP mechanisms in innovation sphere (OECD, 2004). Based on analysis of the studied experience OECD defined PPP *as any formal (official – note of the author) relationships or arrangements for fixed / unlimited period of time between public and private participants in which both parties interact in decision-making process and invest limited resources such as money, personnel, equipment and information to achieve specific goals in a particular field of science, technology and innovation.*

There were also highlighted **the features of PPP in the innovation sphere**:

1. *Institutionalization or formalization of relationships*. PPP relations bear formal character, i.e. are made and fixed on the official legal basis (contracts, agreements, contracts, etc.). PPP can also have institutional basis (background) that is be realized in a separate

organizational and legal form. Out of formal relationships there can arise informal relations and arrangements.

2. *The participation of the state or another public partner*. In the person of public partners act governments, local authorities, government laboratories, research institutes, state universities, government agencies, organizations and enterprises, and associations.

3. *Equitable nature of the relationships and the existence of common goals and aspirations.* Interaction of the parties have an equal partnership nature which is achieved by parity, balance of interests of the state (social orientation) and private partners (profit) and the availability of joint unidirectional interests.

4. *Co-investment of resources, contributions of the parties and the active involvement of partners in the decision-making process.* Partial investment of resources includes money, property, human resources, intangible assets, equipment, intellectual property, know-how, technology, expertise, information and more. Co-investment implies the active involvement of both partners in administration, management, decision-making as to the area of activities.

5. *Distribution of risks, costs and profits* in proportions according to mutual agreements.

PPP Model was opposed to the measures which are used in traditional politics in the innovation sphere:

- Public procurement system having the target orientation;
- Implementation of R & D (research and development) in the public sector and technology transfer from the public sector;
- target subsidization of the business R & D through direct and indirect methods of financing;
- Infrastructure assistance to the business R & D.

It was noted, that such a traditional model has led to the formation of a "split" between the sphere of knowledge generation and the sphere of knowledge application that means in fact between science and innovation. The science, which was financed from the budget, focused no longer on the real needs of the industry and business, and the latter lost the motivational levers for innovations, because their interests were not actually considered. Moreover, a programming technique of resources' focus primarily on technological achievements, which were given priority, resulted in the losses of potential in the non-technical fields of science.

In 2006, the European Commission publishes a program of actions, consisting out of 10 paragraphs "Putting knowledge into practice: a broad-based innovation strategy for the EU" (EC, 2006), which laid the foundation for the creation of the market of innovative products and services. It was stated there that Europe should keep the tradition of a strong and responsible public sector and at the same time realize in full the potential of a private enterprise in the innovation sphere of Europe.

The document contained references to Esko Aho Report "Creating an innovative Europe" (Aho, 2006), which emphasized the necessity to make the business at the most focused on innovation as core object of interest "until it is not too late". He also stressed the implementation of a broad PPP strategy in the sphere of financing of innovations, the creation of technological platforms and collaborative technological initiatives. This strategy also paid attention to the regional aspect of PPP and the creation of innovation clusters.

In 2006, the vice-chairman of the Commission on Innovation and Competition Policy of UN EEC Albert N. Link, whose researches are extensively used by the National Science Foundation, the OECD and the World Bank, proposed conceptual approaches to the PPP doctrine in the sphere of innovations. He points out that despite the fact that in the definition of "public-private

partnership", the words "public" and "private" are paramount, the main emphasis should be placed on "partnership" (Link, 2006). A. Link claims that PPP should be considered as:

- Formal and informal relationships (i.e. official and unofficial – the note of the author) between public and private parties to R & D processes (to public partners he attributes all the entities that use state, federal and local funds, including federal governments, state governments and local authorities, while to private partners - any legal form, using private funds, especially specialized commercial companies);
- Organizational (institutional) combination of public and private, finance, infrastructure and research resources embodied in a contractual or institutional format. Moreover, the participation of the state can be either crucial or not, depending on the purpose and specific area of partnership.

In the PPP model by A.Link the government in the true sense becomes a "partner" rather than "a catalyst" and even more than a "regulator" in the sense that involves unilateral effect. Thereby in PPP relationships the government acts not as an authority, but as an equal partner, as an entrepreneur, who is ready to share the risks of the innovation activities. This view is expressed by him in the concept «Goverment as Enterpreneur», enounced in the same-titled book (Link, 2009). The author notes that the benefits of joint participation of the government and other public entities are associated with a combination of commercial and social components of innovation processes. Thus, the collaborative partnerships on the one hand, can cause the increase of the commercial potential of scientific institutions' researches, and on the other hand encourage private companies to implement socially significant projects in the sphere of R & D, when investment prospects are evaluated as long-term and poorly predictable, and risks of commercialization are considered as significant.

Models of PPP in infrastructure and innovation spheres, offered in this article are alternative models of relevant fields' development. Both models are aimed at improving relations between the subjects of private and public law and harmonization of their interests in respective segments of the economy, but at the same time, they have significant differences. Let us recap them at the table given below:

PPP Models	In Infrastructure	In Innovation Sphere
Objects	Typically of the exclusive state ownership and natural monopolies	No limitations are set
Subjects	The public partner - the government and local authorities; the private partner - private companies	The public partner is seen more widely as any entity of public law, including public institutions and organizations
Interests	Public interests of the state as the owner + private ones. Indirectly interests of the community (society) as a beneficiary	Public + private interests. Interests of the society represented directly by scientific institutions
Relationships	Bilaterally reciprocal	Multilateral aimed at achieving of a common goal
Organizational forms	Most often contractual: concessions, property management, rentals, leasing and other	Partnerships with/without forming of legal entities, cooperative agreements
Forms of property	Public (state, municipal, federal) without transfer of ownership	Can imply the transfer of ownership or property (exceptional) right to the object
Positions of the partners	Typically, the private partner is a more defenseless party, while the public partner as an owner has certain advantages	Equal, depending on the proportions specified in the contract. Often a controlling stake is given to the private partner

We believe that the PPP model of the triple helix allows providing of a real partnership nature of relationships' organizing and effective combination of interests and intentions of partners to achieve the determined goal. The model presented encourages the private partners for cooperation through real financial mechanisms: joint investment of resources, proportional distribution of profits and responsibility. The government acts in it as an entrepreneur willing to share the risks of the innovation. This is especially effective in the case where:

- Studies do not have an obvious market attractiveness;
- Research and development have the social focus (health, environment) and require significant investments;
- Innovations are highly risky and require quite a long time to obtain the expected profit.

In general, it can be defined that PPP in the system of triple helix constitutes a system of multilateral infrastructural links between institutions representing public, private and social interests with the composing of mixed public-private organizational forms, that contribute to the creation and spread of innovation in any field .

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