

## **INNOVATIVE ORIENTED DEVELOPMENT OF THE SOCIAL SPHERE OF THE REGIONAL ECOSYSTEM' SCIENTIFIC AND PRODUCTION CLUSTER**

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### **ABSTRACT**

The purpose of the publication is to determine the prospects of innovatively oriented development of the social sphere of scientific and production clusters of regional ecosystems with the preferential use of public-private partnership tools. It is concluded that the modern method of managing the development of the social sphere is the state innovation regulation of public management of public-private partnership with the use of e-Government facilities; management of virtual networks; fundraising; outsourcing; creation of social technology platforms; crowdfunding; meeting the needs of stakeholders in obtaining high-tech social services; the formation of educational production clusters, "nodes" of stabilization and development, technical, intellectual, information, social "centers of excellence"; top-priority designing on the periphery of forward-looking, innovative and technology-intensive technologies.

**Keywords:** innovation; innovative oriented development; social sphere; scientific and production cluster; regional ecosystem; public-private partnership

**Introduction.** Social sector of national economy (SSNE) is a specific environment for the direct functioning of the system of expanded reproduction of civil society in the process of implementation of the state social policy on the use of products and services of the real sector, ensuring the maintenance of life of all segments of the population, meeting social needs through the implementation of mechanisms for the appropriation of means of life and existence.

SSNE – a set of technologically interconnected entities, organizations and institutions, whose activities are aimed at the implementation of the target function of satisfying the needs of the population in labor, socio-economic activity, spiritual culture and regulated by sectoral and sectoral government and self-governance. The branches are united in the complex of social economy of the post-industrial economy, not in terms of technical and technological features and the place in the industrial cooperation of labor, but in the public value of the goods and services provided.

The modernization of scientific approaches to regulating the development of the social sector of the post-industrial economy takes place on the basis of a creative combination of the provisions of the theory of the public sector, public services and the development of sectoral / regional innovation ecosystems.

The growth of the dynamism of the development of socio-economic systems, the transition to a collaborative model for innovation at the level of mostly virtual stakeholders of the stakeholders, whose participants form networks of regional stable interconnections of growth within the framework of the deployment of the four-linked "science-business-government-society" spiral, have for as a consequence of the rapid development of the theory and practice of the ecosystem approach to the formation of an innovation policy for regulating the social sector of the national economy.

The essence of public-private partnership (PPP), is a power tool of the innovative development of social sphere, consists in functioning of a complex of partner business relations between representatives of the authorities, business, public sector of society, local communities regarding the redistribution of powers in the field of formation of innovative infrastructure of collective use, production of socially significant goods and services currently in existence in the state monopoly.

**Literature review.** The international practice of state regulation of the development of the social sphere of the national economy has a rather long history and involves the use of several fundamentally different models.

The generalization of the characteristic features, theoretical foundations and practical features of the implementation of the described and analyzed by the mentioned scientists of certain varieties of models of functioning of the social sphere allows them to be differentiated according to separate classification features [1].

Summarizing the essence of the processes of evolution of national models of social policy of developed countries, which takes place under the influence of external factors of the environment and internal laws of development, it is permissible to conclude that the need to study the phenomenon of Regional (Territorial) Innovative Societal Ecosystem (R(T)ISES).

R(T)ISES is a dynamic and adaptive globally networked territorially community of stakeholders in the post-industrial economy whose activities are aimed at implementing integrated, mutually beneficial actions to combine their own and other available resources in order to create knowledge flows, support technological development and commercialization of innovations in the field of creation, perception and satisfaction of needs of self-organized consumers of social

services in the course of implementation of a unified social policy of the executive authorities of Ukraine state. Innovative enterprises/firms are closely interconnected elements of the ICES; innovative infrastructure; subsystem of commercialization of innovations; subsystem of innovation financing.

The peculiarity of the functioning of innovative enterprises in the structure of RISES is that their predominant majority specializes in the provision of intelligent services whose definition of substance has been thoroughly investigated in the classical publication of F. Machlup [2]. Summarizing some of the features that determine modern intellectual services, we note that their list includes:

- original nature;
- high degree of individualization;
- knowledge-intensive nature of production and consumption;
- uncertainty of the costs of the production process, minimization of the capital intensity, a significant proportion of value added in total value;
- ability to adapt to the requirements of an individual client;
- propensity for the loss of an established form, virtualization, manifestation of manifestation (specific intellectual work / goods in the case of market identification) / paid work in the case of instant commercialization);
- comprehensive character as an economic resource; diversity of social forms of production and consumption;
- presence of signs of co-production and co-service, simultaneous participation in the process of providing the consumer (information about the desired character) and the producer (creative for the provision of qualified service), obtaining under this condition the intellectual rent (monopoly, differential I and II type, absolute) both sides of cooperation;
- focusing on meeting the information needs of stakeholders of the ICES;
- availability of information systems as a prerequisite for provision;
- possibility of remote access;
- presence of network contacts.

The production of intelligent services involves the formation, at the level of the innovative organization of intellectual capital – an integrated conglomerate of human and structural elements. Its constituent elements for the innovative structure that is part of the R(T)ISES are taken as:

- human capital:
  - aggregate labor force;
  - knowledge and skills of specialists, including those whose possession is foreseen by default;
- organizational capital:
  - results of intellectual activity;
  - information resources and technologies;
  - electronics networks;
  - organizational structure and system of service management process;
- client capital (social capital, capital of relations):
  - commercial ideas and business connections;
  - commercial distribution network;
  - participation in commercial holdings, financial and industrial groups;
  - means of individualization of organization / institution (main product / business services);
  - business reputation of the organization/institution (brand).

Innovative infrastructure of RISES is a combination of facilities to provide the innovative network (IN) with the necessary resources and services – scientific, technical, natural, communicative, social, for the reproduction of human capital network participants, environmental.

R(T)ISES's commercialization subsystem provides the promotion and implementation of innovations and intellectual products, thus defining the effectiveness of the IN as a whole.

The financing subsystem, using free money for the development of the IN, is responsible not only for the financial provision of the development of the social sphere, but also for the settlement and distribution of cash flows and funds within the framework of R(T)ISES.

In general, the innovative network transformation of the process of providing social services in the post-industrial era should be updated on the following principle principles:

- use of mechanisms for ensuring the general and strategic voluntary participation of stakeholders in the IN on the basis of partnership and contract based on the results of a self-conducted comprehensive analysis of the internal and external conditions of participation;
- the legal, economic and target strategic unity of the general goals, development strategies and structure of the IN, which ensures a clear definition of the legal form of the future organization, maximizing the potential for each participant to minimize the use of general and individual resources of a single organizational system as a result of the implementation of a set of standard managerial actions, proposed in the research, which allows the IN to function as a single system that moves to a certain goal under the clear mission statement;
- definition of the scope of activity of network participants, their positioning as one of the four types of subjects of innovation activity – enterprises/institutions that carry out activities for the direct development and production of innovations (intellectual products); objects of innovative infrastructure to provide IN scientific, technical, natural and service resources/services; objects of commercialization, promotion and realization of innovations and intellectual

products; objects of the subsystem of financing of innovative activity, which use the financial resources and management of the activities of IN in the external financial markets;

- legal independence in foreign markets, economic independence by the level of liquidity ratios, business activity and financial dependence, administrative independence according to the level of mobility of autonomous functioning of the independence of the participants of the IN;
- determination of interconnections between the members of the network with the priority of partnership equal rights in the defined framework;
- a clear division of rights and responsibilities between members of the network based on the principles of autonomy, voluntary participation and partnership;
- purposeful concentration of ownership in the process of identifying rights to innovations and intellectual products;
- ensuring the optimal balance between human knowledge and skills as a core capital, as well as creative teams as the main functional part of the process of creating structures and mechanisms for managing the IN;
- creation of a stable legislative framework for the development of IN of different levels;
- coordination, through state regulation of the most important processes of IN, the activity of their separate entities, establishment of price parity, regulation of their level for objects of innovation activity in order to create conditions for expanded reproduction;
- orientation on updating of professional knowledge, training/retraining of personnel, mastering of new methods, methods, means of carrying out activities through improvement of professional skills and level of education of all participants of IN;
- objective management accounting of all types of tangible and intangible resources, assets, intellectual property objects, and other elements of the resource base of the IN;
- compliance with the requirements of social justice during the functioning of the MI through the formation of high material status of members, their life support, elimination of excessive income differentiation, provision of high-level social benefits, balancing the interests of the community, the collective, the individual;
- the responsibility of each IM member for providing a qualitative final product of innovation activity [3].

The updating of the scientific approach to the solution of the problem of state regulation of the development of the SSNE of the postindustrial period appears possible on the basis of a creative combination of the provisions of the theory of the public sector of the economy, public services and the development of innovative sectoral /regional ecosystems in the context of the emergence of the digital economy.

**Purpose of the study.** The purpose of the publication is to determine the prospects of innovatively oriented development of the social sphere of scientific and production clusters of regional ecosystems with the preferential use of public-private partnership tools.

**Results.** Further development of the practice of PPP in the SSNE is based on the improvement of its organizational and economic mechanism. The content of this improvement consists in the implementation of the traditional elements of the mechanism – the goals and objectives of use, features of the functions in the process of performing the role of the control system and the special area of infrastructure management of the sectors providing individual consumer services in the social sphere of the national economy efficiency, tools and levers, specific forms and models – modernized requirements, formation of which takes place under the influence of the characteristics of adaptation by institutional actors of the national economy of the realities of participation in the sequence of formation of global value chains in the post-industrial economy, as the material basis of the social sector “glocal” regional (territorial) innovative sociovitall ecosystem.

The maximum suitable for practical use in view of specificity of domestic legislation in the area of public-private partnerships and new trends in the globalization of their funding models we believe innovative mixed model contract life cycle, that unlike a traditional contract life cycle – “modification of PFI, that is an analog of the DBFO (Design-Build-Finance-Operate) PPP provides for its use in combination with “mixed structural and investment funds”, which prevails in the European Union during the programme period 2014-2020.

According to our considerations in the process of developing models of mixed contract life cycle, it can be defined as a contract form public-private partnerships, in which the State concludes, on a competitive basis, partner with private partner agreement for the design, construction and operation of the facility throughout the life cycle, to pay for the project equal parts only after its commissioning, subject to maintenance of the private partner object in accordance with specific functional requirements. Attracting investment funds to one of the five options are governed by analogy with blendingu structural and investment funds with public-private partnership projects, developed by the European Centre of expertise [4].

The advantages for the Executive Authority of Public Administration (EAPA) in the implementation of a mixed life cycle contract model in the social sphere of a regional (territorial) innovative social and social ecosystem are:

- delegation of the process of charging socially significant functions to private capital;
- minimizing the risks of poor-quality design;
- avoidance of the risk of a rupture of the responsibility of a private partner for the design and construction of the infrastructure facility;
- elimination of the financial risks of improper operation and unpredictable future costs of maintaining the infrastructure.

The benefits of a private partner are the ability to obtain a large contract for the life cycle of an infrastructure facility, to be free in the process of choosing design and technical solutions; financial guarantees from the state in the process of raising funds by a private partner; avoiding the risk of demand [5-8].

From an organizational point of view, it is necessary expansion of the list of stages of implementation of PPP projects, which should include: identifying the interests of the parties to cooperation in order to select a specific mechanism; analysis of options to meet the needs of the project; preliminary examination of the suitability of the object for implementation, provides for mandatory calculations of cash flows: operating and investment activities, indicators of public project performance; operational, investment and financial activities at the stage of determining commercial performance indicators in a similar list of indicators; operating and investment activities in the case of evaluating the budgetary efficiency of the project with calculations of the total budgetary effect, discounted value, taking into account the distribution coefficient, the budget guarantee yield index, the internal budget efficiency rate [9]; technical, legal, financial, environmental analysis of the project; research its risks, profitability, availability and value for consumers; research into the value of cooperation for the market; holding a mandatory tender; calculation of public funding for non-profitable projects; providing the possibility of monitoring by the customer.

"Road maps" on the way to eliminating possible threats to the implementation of PPP projects in terms of locations during the implementation of regulatory actions by the executive authorities of the government administration must necessarily include a list of feasibility studies, legal expertise, audit of transactional pricing, formation of a system of non-financial criteria for evaluations of private partners, time management, engineering expertise, crisis management, competences' management, operation management, management of emergency situations, the use of new financial instruments, in-depth technical analysis, management of framework agreements, providing the unpredictable impact of external risks and force majeure, constant change management. The complex nature of such an approach guarantees the realization of all the possibilities and advantages of using innovative models of PPP in the social sphere of a regional (territorial) innovative social and natural ecosystem, and in addition, it avoids the potential problems associated with those noted in Table 1 imperfections.

Taking into account the fact that the mechanism for regulating PPP operating in Ukraine is influenced by the risk factors typical for all countries and the parties failing to achieve partnerships due to prior agreements of economic interests, and the process of using the organizational and economic partnership mechanism is aimed at meeting vital needs not only so many sides of a PPP that are in commercial relations, but to the general public of stakeholders, it seems advisable to pay increased attention to this aspect of the regulation of the development of the regional (territorial) innovative social and natural ecosystem.

Table 1. Advantages and disadvantages of applying innovative PPP models in the R(T)ISS social sphere

Model PPP		Benefits	Disadvantages
Model of financing of local non-material assets development projects		Long-term focus Maximizing public sector resources Engaging private sector experience Comprehensive investment promotion Continuous monitoring of partnership development High procurement efficiency	The complexity of maintaining parity in the field of control High cost of administration and management costs Low risk transfer capability Complex accounting organization complexities
		Additional options to address the investment challenges of local EAPA: – if the level and specificity of risk, payback period, level of profitability do not meet market requirements, the viability of the project can be ensured by alternative methods; – insufficient level of financing in the public sector can be ensured by the receipt of alternative cash flows – non-availability for grant funding can be overcome by non-profit investing	
Model PFI	traditional	Ability to increase the value over the asset's lifetime High level of predictability of cost level and duration of partnership Focusing on the "value for money" problem during asset's lifetime Strong incentives for implementation Ability to be off-balance sheet	High contract value Inflexibility Excessive duration of formal procurement procedures
	with enhanced risk avoidance unit		
Integrator model		Role / responsibility allocation transparency (lower level of conflict of interest) Increasing the level of competitive pressure Attraction of a wide range of partners, including small and medium-sized businesses Lower procurement costs for the project High level of flexibility in program implementation	If the appointment of a strategic partner takes place prior to the formal procurement procedures, there is a risk of a lack of competence and service delivery skills. Lack of integrated supply chain
Model of local PPP in education / local financial trusts		An opportunity for the public sector to retain influence over the strategic direction of investment High potential for continuous improvement during the next successful phases of project implementation	Conflict of interest for a strategic partner Too high a value for money benchmarking process Strong obstacles to the ability to attract alternative providers
Model of competitive partnership		Early receipt of commercial funds from a private partner The level of competitive pressure does not decrease over time Effective benchmarking of project implementation costs	
Model extended partnership		Low procurement costs High level of flexibility to meet the adjusting requirements Relationships are formed gradually, without long-term contact Constantly maintaining a high level of competition	The model is more demanding for public sector involvement Transferring major risks to the public sector Transferring ongoing responsibility to the public sector in the negotiation and management of the PPP project
Alliance Model		Ability to continue implementing the project under uncertainty Increasing the level of cooperation and reducing the level of disputes between partners	

The life cycle of a governmental-private partnership project in the social sphere; a regional (territorial) innovative social and vital ecosystem includes the traditional stages of forming and detailing the concept of partnership, designing an innovative research component, sharing knowledge, training, collecting and analyzing data, interpreting results, developing communication channels sharing knowledge and data; identifying new information or research goals. It is



also necessary to take into account the fact that the role/contribution of stakeholders differs significantly at different stages of project implementation, and the list of methods for attracting stakeholders, the skills necessary for this, coordination of methods with individual levels of involvement allows developing a detailed interaction map (Table 2).

Table 2. Map of stakeholders interaction at the stages of the PPP project on the LC' model in the SS of R(T)ISES

The role of stakeholders, scope and level of influence			Level of interest			
methods of attracting stakeholders			1	2	3	4
Stages of the project life cycle	Preparation	development of the project implementation strategy				
		development of a list of measures for the implementation of the project				
		development of a list of measures for the implementation of the project				
	Preparation / implementation	organization of the network of project stakeholders				
		development of recommendations				
		development of methodological guidelines				
		revision of the project				
	Realization	prediction / simulation				
		monitoring				
		resource provision (equipment, data, financial assets, contracts)				
	Realization/ completion	education				
		project implementation				
		identifying data users / social service recipients / beneficiaries				
	After completion	Feedback				
		communication and dissemination of project results between stakeholders				
		identification of topics for future partnership projects				

Note: level of interest: 1 – informing; 2 – counseling; 3 – attraction; 4 – collaboration

The most suitable for use in order to organize cooperation between stakeholders at different stages of the project life cycle of PPP technicians are:

- the stage of the beginning of a dialogue between the parties of cooperation - "brainstorming" (brainstorming – a method of formulating for a short time new and creative ideas that cannot be obtained by another method) meta-plan, as well as a similar method of laying out a Venn diagram – members groups followed by their association on the basis of similarity by the facilitator; technique "carousel";
- a stage of critical analysis of previous experience in the implementation of public-private partnership projects – a technique of categorizing, rigidly sorting ideas based on predetermined criteria / similarities; mini-mapping (conceptual reflection, spray diagrams, spider diagrams) for the purpose of quick fixing and combining ideas with interested parties; analysis of the "decision tree" with the fixation of cause-effect relationships; SWOT-analysis with a detailed study of the strengths and weaknesses, opportunities and threats arising in the course of solving problems of partnership; the methodology for compiling a time period with comments from the participants in the discussion to resolve questions about the planned or expected state of the project in coordination with the interested parties of cooperation;
- the stage of making decisions on limiting the list of methods for implementing the partnership – voting; ranking – ordering ideas by degree of importance to the project; prioritization; multi-criteria evaluation of competing priorities;
- stage of integration of new results – creative techniques.



The initiators of PPP projects in the social sphere of a regional (territorial) innovative socio-vital ecosystem can adopt a significant number of other methods for attracting stakeholders, which include methods: direct promotion/proactive interactions; recording and evaluating the participation of stakeholders in the process of implementing a PPP project; tools to disseminate information about the implementation of the project and use the results of its implementation; fixation of products/services generated in the process of project implementation.

An important point in the organization of cooperation between stakeholders of PPP projects in the social sphere of a regional (territorial) innovative social and ecological ecosystem is the effective use of tools to prevent potential parties' conflicts. A clear typification of their varieties, knowledge of the level of loyalty of individual stakeholders to the goals of the project makes it possible to create a matrix of categories of project parties in terms of potential participation in direct, hidden, latent, clearly defined and blurred, cognitive, objective (interests), normative, relationships, subjective, beyond design, structural conflicts. Different attitudes to the use of project results (similar or different), degree of commitment to the project goals (high/low), critical/non-critical influence on the success of its implementation, stakeholders require the implementation of individual approaches in situations of emerging conflicts of interest.

Thus, the effective modernization of the development of governmental -private partnership projects in Ukraine is associated with the improvement of the organizational and economic mechanism of governmental -private partnership in the social sphere, taking into account the best practices of its reform in foreign countries, based on the following principles:

- clarification of the essential characteristics of partnership projects taking into account all the features of the functioning of the national economy;
- rationalization of national models of PPP development;
- updating the list of objectives for implementing the policy of PPP;
- expanding the list of the code of the type of economic activity (CTEA) covered by the practice of cooperation agreements;
- expansion of the list of types of legal registration of transactions;
- revision of approaches to the expansion of the list of business entities that may initiate the conclusion of partnership agreements;
- expansion and clarification of the content of individual stages of the implementation of PPP;
- improvement of the current legislation on the regulation of PPP;
- empowerment of parties to participation in transactions;
- improvement of risk management tools and techniques for the implementation of PPP;
- development of an effective mechanism to guarantee the return of the invested funds of the parties to cooperation agreements between EAPA and private business;
- organization of continuous monitoring of PPP projects;
- development of a mechanism for the implementation of "unclaimed projects" of cooperation in the social sphere.

**Conclusions and prospects for further research.** The innovative oriented development of the practice of PPP in the social sector of regional ecosystems is based on the implementation of the traditional elements of its mechanism of modernized requirements, the formation of which is influenced by the realities of the participation of institutional actors in the formation of global chains in the conditions of post-industrial economy. At the same time, localization of the vast majority of individualized socially significant services within the functioning of the socio-vital local innovative ecosystems takes place.

Qualitative innovation shifts in the development of a post-industrial knowledge economy, the driver of which is a steady growth in the volume of partnerships between EAPA and innovation ecosystem stakeholders, based on a substantial activation of objective and subjective factors increasing the volume of the internal fund for social sector financing.

The involvement of PPP stakeholders is based on the implementation of a set of techniques for the strategic and operational regulation of the process of cooperation between project stakeholders. The most suitable for use in the organization of cooperation between stakeholders at different stages of the project life cycle in the social sphere R(T)ISES technicians are: brainstorming; conclusions metaplan, Venn diagrams; technique "carousel"; categorization technique; mini-mapping; decision tree analysis; SWOT analysis; method of drawing up a time period; voting; ranging; prioritization; multi-criteria evaluation of competing priorities; creative techniques.

It is concluded that the modern method of managing the development of the social sphere is the state innovation regulation of public management of public-private partnership with the use of e-Government facilities; management of virtual networks; fundraising; outsourcing; creation of social technology platforms; crowdfunding; meeting the needs of stakeholders in obtaining high-tech social services; the formation of educational production clusters, "nodes" of stabilization and development, technical, intellectual, information, social "centers of excellence"; top-priority designing on the periphery of forward-looking, innovative and technology-intensive technologies.

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