

## Conceptual Scheme of Regional Investment Project Implementation by Using of the Life Cycle Contracts Model

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**Abstract:** In the study, there is described the necessity if the using of effectiveness estimation for implementation of Life Cycle Contract (LCC) projects and developed the conceptual scheme of regional life cycle contracts' implementation. The researchers give the described idea of social, economic and budget effectiveness calculation that is based on the critical review of Russian and Foreign methods of Public Private Partnerships (PPP) effectiveness calculation. Also, there is represented a feasibility of using PPP and LLC model as an easiest way to find the right one.

**Key words:** Private public partnership, life cycle contracts, budget effectiveness, feasibility of project, implementation

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### INTRODUCTION

Estimation of Public Private Partnerships (PPP) effectiveness is becoming more and more urgent due to growing interest to this kind of partnerships from government institutions. There are many conceptual schemes of PPP projects. But, the majority of them are theoretical. A lot of methods maintain the elements of classical investment analysis that is close to PPP mechanism. The Life Cycle Contracts (LCC) Model differs from traditional investment projects and from PPP projects because the life cycle model is implemented during the whole life cycle of a project and that kind of project requires detailed risk analysis and has a social budget orientation due to the project life prolongation on several periods of budgetary terms. In the study, there is provided the framework methodology of the life cycle project effectiveness that were implemented by different Russian researchers such as Prokopovich (2013), Orlov (2010), Makarov (2014) and Litovka (2013) described in Russian legislation, Postanovlenie Pravitelstva RF No. 134 ot 01.03.2008 or Prikaz Ministerstva Regional Nogo Razvitiya RF No. 117 ot 31.07.2008 and worldwide used by Anonymous (2006) and cost benefit analysis (Blum *et al.*, 1980).

### MATERIALS AND METHODS

**Review; critical analysis of project effectiveness methods:** For detailed assessment of PPP efficiency and

their adaptability to LCC Model, there have been critically analyzed Russian and Foreign methods of estimation of PPP effectiveness (Table 1).

After carrying out the critical analysis of existing Russian methodology for effectiveness estimation of investment and PPP projects, it can be concluded that the most of the Russian methods in assessing commercial (financial, economic, business) and budget effectiveness are based on regulatory legal act: method of calculation and use of the regional investment projects indicators.

The majority of methods are referred to estimation of the effectiveness of PPP projects, except for a few highly specialized (e.g., method of effectiveness estimation of Export Processing Zones (EPZ) projects by Novikova and Chukhlomin (2010). However, almost all methods (except method by Prokopovich (2013)) have no comparative analysis of the use of PPPs in the implementation of the project with the traditional mechanism of budget financing of the project that is necessary to prove that the private partner will be able to realize the project in accordance with the principle of value for money (Prokopovich, 2013). We fully agree with the Foreign researchers who assess the effectiveness in accordance with the balance of the interests of participants in the project, i.e., the private partner is interested in the economic effectiveness, the government in the budget effectiveness, the society in a social effectiveness (Anonymous, 2006).

Table 1: Characteristics of PPP effectiveness estimation methods

The author and the content of method	Units of assessment	Weaknesses of method	Adaptability to LCC (weak, medium, strong)
<b>Methods which has been enshrined in regulatory legal acts of the Russian Federation and of territorial entities of the Russian Federation</b>			
Rules of formation and use of budgetary allocations by Russian Investment Fund the content: establishment of the order of investment PPP projects implementation for receiving the assets of the Investment Fund of the Russian Federation (Pravila formirovaniya i ispolzovaniya budgetnykh assignovaniy Investitsionnogo fonda RF, Postanovleni e Pravitelstva RF No.134 of 01.03.2008 (2008)	Financial effectiveness Economic effectiveness Budget effectiveness	There is no social effectiveness estimation in this method. The analysis of social effectiveness is necessary for implementation of PPP projects due to their social orientation. In addition, this method does not provide a risk analysis of the project which is required for consideration of possible negative consequences rising for all parties of partnerships (government, private partner or society) This can happen due to the large scale of the project, its social orientation, project duration and a good number of partners	“Weak” (due to lack of risk analysis and absence of project life consideration)
Method of social, economic and budget effectiveness calculation for investment projects the content: effectiveness estimation of the project applying for government support. (Metodika rascheta socialnoy, ekonomicheskoy i budgetnoy effektivnosti investitsionnykh proektov, Prikaz Ministerstva regionalnogo razvitiya RF No. 117 of 31.07.2008	Social effectiveness Budget effectiveness Economic effectiveness	The method describes the methodological approaches to the calculation of indicators and the application of criteria of effectiveness of regional investment. The calculation of social effectiveness in unclear.	“Weak” (due to lack of risk analysis and absence of project life consideration)
<b>Methods which has been developed by Russian researchers</b>			
Methods by Makarov (2014) the content: Effectiveness evaluation of PPP project at the stage of initiation, implementation and completion	Budget effectiveness Social-economic effectiveness Financial-investment effectiveness Risk estimation	This method is a fundamental. It is proposed to analyze the effectiveness of the project at all stages of the project to monitor its effectiveness but a large number of formulas and the need to analyze indicators at the several stages will lead to the project appreciation due to the complexity and high costs of calculation	“Strong” (this methodic can be used for LCC efficiency estimation)
Methods by Orlov (2010) the content: Estimation of prospects of project implementation	Economic effectiveness Political effectiveness Social effectiveness	The author proposes to evaluate the Return on Investment (ROI) in conjunction with the risk estimation by using the application Project Integrator. Thus, the rate of 50% ROI determines the percentage of project success probability in the amount of 85% and the rate of -70% ROI leads to 30% success probability. This approach is highly specialized and basically assesses the feasibility of participation in the project for private party, mitigating the importance of other parties of partnership-the government and the society	“Medium” (automated approach to the evaluation of the project make the analysis easier. However, just for this method the risk analysis adaptation is necessary, because during the LCC project implementation indicators of different risks can significantly affect the performance of both the economic, the political and social effectiveness. Also there is no evaluation of the budget effectiveness which is important for the government)
Methods by Novikova and Chukhlomin (2010) the content: Effectiveness estimation of Export Processing Zones (EPZ) projects	Commercial effectiveness Public effectiveness Budget effectiveness	This methodical approach does not clearly describe the public effectiveness estimation. It is determined the possibility of using of different odd tax indicators but there is no any detailed list of them. Because of that social and budgetary effectiveness duplicate the same analysis. Moreover, one of the indicators of commercial effectiveness (the ratio of cash flow) has only a meaning and is not used in the analysis	“Weak” (apart from the lack of risk analysis and absence of project life consideration, there is mixing of the estimation of public and budget estimation that can lead to double counting (duplication of calculation)
Methods by Litovka (2013) the content: Effectiveness estimation of regional PPP project	Public effectiveness Commercial (economic) effectiveness Budget effectiveness Regional, industrial effectiveness	This method determines the feasibility of using a PPP project. There is an attempt to assess the effectiveness of the regional project. There is a mixture of conceptual meanings of different types of effectiveness. For example, it is not clear if the commercial effectiveness is a synonym to economic effectiveness or they are different units of assessment with similar indicators. Besides, the researcher divides the concept of “the efficiency of participation in the project” and “the effectiveness of the whole project” The researcher puts budget and regional, industrial effectiveness into the unit “the effectiveness of participation in the project”, thereby analyzing only the effectiveness of the project participation for only one of the participants-the government	“Weak” (requires risk analysis modification and more detailed metrics to the unit of “the effectiveness of the whole project” and to the unit “the effectiveness of participation in project”)

Table 1: Continue

The author and the content of method	Units of assessment	Weaknesses of method	Adaptability to LCC (weak, medium, strong)
Methods by Prokopovich (2013) the content: Effectiveness estimation of PPP projects at different stages of project implementation	Public effectiveness Effectiveness in balance of convenience Risk analysis of PPP projects	The author offers a comprehensive methodology for evaluating the PPP project. The main criteria for analysis are the qualitative characteristics of the project, converted into quantitative by using expert method	“Strong” (all levels of efficiency are estimated, we suggest to specify types of risks)
Methods by Laktyushina (2011) the content: Effectiveness evaluation of PPPs management in the service sector	Estimation of PPP projects significance (public significance) Budget effectiveness Business effectiveness	This method is a subjective for a social effectiveness estimation. Moreover, there are no clear assessment of the global scale and large scale of the project. Business effectiveness does not take into account the payback period of the project which is vital for an investor	“Weak” (due to lack of risk analysis, absence of project life consideration, lack of clearly defined scale of public significance estimation)
<b>Foreign methods of PPP effectiveness estimation</b>			
Value For Money by H.M. Treasury, the content: Project efficiency estimation by using “the value for money” principle (Value for money Assessment guidance, 2006)	Social effectiveness Budget effectiveness Commercial effectiveness Risk estimation	There is a complexity of the quantitative calculation of risk component. Many formulas should be modified according to Russian specifics (for example, those related to tax rates to the cost of activities of the company implementing the project under the PPP, etc.)  The method involves the need for calculations in all phases of the project life cycle: initiation, designing and construction, financing, operation, transfer) that can cause additional costs of the project due to the necessity to pay experts who analyze the data	“Strong” (the biggest disadvantage of the method is a necessity to use it at all stages of a project that can lead to project appreciation)
Cost benefit analysis, the content: Project efficiency estimation by using cost benefit analysis (Blum <i>et al.</i> , 1980)	Social effectiveness Economic (budget) effectiveness	There is a lack of an objective opportunity to assess social effects and benefits in monetary terms. Due to the complexity of finding the information, the evaluation is not representative and can be unreliable	“Weak: (due to the fact that this method can be used only as a part of social and budget efficiency estimation but not as a self-maintained method of LLC efficiency estimation)
Cost effectiveness analysis, the content: Project efficiency estimation by using cost effectiveness analysis	Social effectiveness Economic effectiveness	There are several problems in the method: a problem of comparability of results, a problem of accounting the costs and effects allocated in time. Social performance is evaluated in physical indicators. The method is not well understood in the area of the collection of indicators and therefore difficult to use	“Weak” (due to the fact that this method can be used only as a part of social and budget efficiency estimation but not as a self-maintained method of LLC efficiency estimation)

The closest methods to the evaluation of LCC project is the Russian methods developed by Makarov (2014) and Prokopovich (2013) and Foreign methodology value for money developed by the UK Treasury.

Among other things, many researchers describe the necessity to carry out analyze at each stage of PPP project. But, this approach is bearing the risk of increasing the cost of the project because of the need of payment for mathematical calculations (Makarov, 2014). In our point of view, effectiveness estimation of a project should be carried out at the initiation phase of the project. Also, the private partner could make an additional calculation to prove the complete fulfillment of the project obligations and receive bonus for efficiency.

Moreover, the lack of risk analysis in many methods of effectiveness estimation of LLC projects is a significant methodological weakness of methods (Hood *et al.*, 2006). PPP projects in comparison with traditional investment projects carry out more risks due to their scale, long-term and social orientation. This analysis is especially important for implementation of LLC projects because of the long duration of the project, the lack of legal regulation and the lack of experience of its use in Russia.

Thus, effectiveness evaluation of LCC project should be carried out on all sides of the project government, business and society as each party has certain rights and responsibilities for the implementation of this type of partnership and guided by its own goals.

So, we have identified three of the most important types of effectiveness (social, budget and commercial) which are essential when choosing LCC project.

## RESULTS AND DISCUSSION

Methods of effectiveness evaluation of LCC projects should be different from the traditional methods of investment projects evaluating. Firstly, it should be clear that not only the commercial and budgetary effectiveness should be taken into account but also the social aspect should be considered in LLC projects, i.e., the project should be implemented in the sectors where the government is traditionally responsible for. Secondly, the investment project should be evaluated in terms of the use of government support and without it. Many methods of investment projects evaluating do not include the explanation of the necessity of the budget support (Public

Sector Comparator model (PSC Model) and yet, it is crucial to use PSC model to evaluate the most appropriate model for the implementation of socially important projects. Thirdly, analysis of the project, implemented by LCC Model should include an analysis of the entire life cycle of an infrastructure object and an analysis of the possible project risks.

It is imperative that there will be no the huge gap between different types of effectiveness. Otherwise the private partner will be not interested in the project (low commercial effectiveness) or society will have negligible results of the project (low social effectiveness) or the government will miss an opportunity to implement other more efficient project (low budget effectiveness).

After analyzing the methodology of effectiveness estimation of investment PPP projects developed by Russian and Foreign researchers, we concluded that the effectiveness evaluation stages of LLC project should be as follows:

- Assessing of project feasibility
- Risk identification, analysis, estimation and the policy formulation of risk management
- Project calculation according to “Value for Money” approach:
  - Estimation of social effectiveness the viability of a project from a social point of view

- Estimation of commercial effectiveness-the viability of a project from an economic point of view
- Estimation of budget effectiveness-the viability of a project in terms of saving a budget (federal, regional and/or municipal) and comparison of the project with an alternative option of a traditional budget financing (Public Sector Comparator)
- Integral estimation of project effectiveness adjusted with identified risks

Hence, the scheme of LLC effectiveness estimation is given in Fig. 1.

According to the Foreign and Russian publications, the feasibility estimation of the project is a confirmation of the fact that the project is crucial for regional economic development, demographic situation improvement, infrastructure quality development (Delmon, 2009). It means that the feasibility of LLC project is a justification for matching LLC Model to ensure effective implementation of the objectives and tasks of the project.

The project should have a strategic “pattern”, i.e., the concept of the project implementation and its necessity should be emphasized in regional legal documents (such as the concept of social-economic development of the

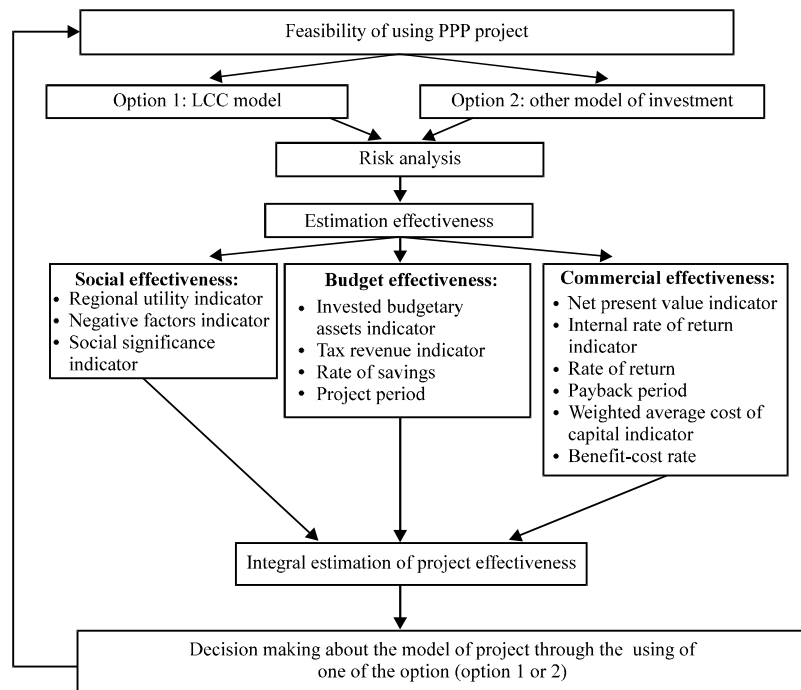


Fig. 1: The scheme of LLC project effectiveness estimation

Table 2: The feasibility of using PPP and LLC Model

Description of the investment question	Positive decision	Negative decision
Is the project necessary for the society?	Yes	No (project will be declined)
Has the project strategic importance for the region?	Yes	No (project will not be considered as PPP)
Whether the project will be carried out in the infrastructure sector, where the government is responsible?	Yes	No (project will not be considered as PPP)
Do they plan to make a long term contract for the project?	Yes (LCC Model is preferred)	No (partners should choose other models of investment)
Do they plan to make a contract for the whole life cycle of the infrastructure object?	Yes	No (partners should consider other models of PPP)
Is PPP project the best option of financing in comparison with the traditional budget financing?	Yes	No (partners should choose traditional budget financing model)
Is a partner satisfied with a risk allocation?	Yes	No (partners should make amendments in the responsibilities and obligations for the parties or they should decline the idea of using LLC model)
Can the project be implemented in the current institutional and regulatory-legal conditions of a particular region?	Yes	No (partners should decline the idea of using LLC model and should consider other models of investments)
Will the partnership provide the expected effect of value for money?	Yes	No (partners should decline the idea of using PPP)

region, the strategy of social-economic development, etc.). The feasibility of using PPP and LLC Model is represented in Table 2. By asking different questions, the part that is interested in LLC or PPP implementation could realize whether it needs PPP, LLC or other type of investing. Answers to these questions will help to solve an issue whether to use an LCC Model or not.

Thus, the effectiveness estimation of LLC projects includes social, budget and commercial effectiveness calculated one by one which help to identify possible strengths and weaknesses in the implementation of the project to the society, the government and the private partner.

### CONCLUSION

Effectiveness of LCC project is a summary benefit from the project implementation for society (social effectiveness), government (budget effectiveness) and private partner (commercial effectiveness) adjusted for possible project risks and strategic feasibility of the project to the regional economy. Taking into account the answers whether PPP or LLC Model is appropriate could help investor to save money, maximize profit and implement the effectiveness approach that is crucial for all parts of partnership.

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