

Assessing the cost of real estate lifecycle contracts in Russia's present-day economy and the characteristics of the European experience

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Abstract. In Russia's present-day economy, lifecycle contracts are already being actively put into practice in such areas as the purchase of military machinery, the construction of roads and railway lines. The current agenda includes expansion of areas of application of this approach. Studies conducted have shown that the procedure for entering into contracts based on the use of indicators for the cost of owning real estate in its reproductive cycles in various areas of Russia's economy is at a nascent stage of its development. In this regard, what is really topical is both the analysis of the foreign, European, experience plus the classification of various methods for the analysis of costs in contract systems across the stages of the construction lifecycle and the review of the characteristics of the present-day development of these methodologies in Russia's economy. The development of cost appraisals of owning property in real estate lifecycle contracts helps to more effectively regulate the priorities of effecting energy-efficient, eco-friendly, and economic construction in residential programs.

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Introduction

Amid the economic recession, budget deficit, and the need for improving the efficiency of the production sector in the Russian Federation, it is imperative to substantially improve energy-efficiency and boost the proceeds from the use of all state and municipal funds in forming state and municipal orders. As a result of the passage of the Federal Law "On the Contract System in the Area of Procurement of Goods, Works, and Services for State and Municipal Needs" (# 44-FZ; dated 05.04.2013), which entered into force on January 1, 2014, Russia can now move to a whole new level of economic competitiveness [1]. This law puts into practice the methodology of lifecycle contracts (LCC), which is innovative in Russia. However, there also still remains open and problematic the issue of the characteristics and prospects of the development of this methodological approach in various sectors of the economy.

Minister of the Economic Development of the RF Aleksei Ulyukayev pointed out at the November 28 2013 government session that lifecycle contracts are provided for by the norm of law and the government must define the area of their application. According to Ulyukayev, as a result of work with government agencies, only a narrow list of cases relating to entering into LLCs has so far been arrived at. It is, mainly, about the construction and use of roads, sea and river ports, and the acquisition of transport conveyances [2]. It should be noted that the

Ministry of Defense of the RF is also planning on entering into its first full lifecycle contracts for the acquisition, servicing, maintenance, and utilization of arms and military equipment with enterprises in the military-industrial complex [3]. In this regard, prospects of the development of the methodological apparatus of LCCs in various areas of the RF economy are calling for further exploration of the foreign, European, experience and fine-tuning the conceptual apparatus with classification analysis and terminological elaboration.

Main part

The review analysis conducted has revealed that the procedure for entering into state and municipal contracts based on lifecycle contracts, especially in the construction sector, is at a nascent stage of its development. The catalyst for this onward movement today is the imperativeness of putting into action the Federal Law # 44-FZ starting on January 1, 2014. In this regard, a crucial objective is the development of methodologically credible fundamentals of assessing the cost of LCCs within various sectoral contract systems. When it comes to residential construction, special priority is being given to the need for working out a methodology for the economic assessment of the size of total costs for buildings throughout the period of owning the property. It is a cost indicator of this kind that should become the primary indicator at contests and auctions for designers and developers in getting state and

municipal orders within the construction sector as part of the implementation of the Federal target program “Zhilishche” (“Housing/Dwelling”).

Studies have shown that the use of LCC terminology in all areas of the Russian economy, especially in the construction sector, needs fine-tuning considering the way it is used in the European economy. What adds topicality to this issue is the interrelation between LCCs and eco-friendly “green” construction in the global economy.

The study conducted by the author sought to provide an analysis of the application of LCC models in the Russian and European economy, a theoretical review of the content of terminology used in this area, and an economic assessment of total costs of owning real estate in contract systems with the identification of the characteristics and prospects of the development of this approach in RF residential construction.

To achieve the goal set, the study has examined and resolved a number of objectives: the author has developed a rationale for why the issue of using LCCs in the Russian economy is topical, conducted a review of methodological approaches on LCCs in European countries and the US with an analysis of concepts used, analyzed the practical experience of using LCC methodologies in Great Britain and Finland, and analyzed the major aspects of the development of these systems in the RF economy.

The author’s review of foreign articles has shown the multivariantness of the LCC concept in European countries. Among the well-entrenched terms, the author has examined Design Build Finance Maintain (DBFM), Life Cycle Cost (LCC), Life Cycle Cost Analysis (LCCA), and Private Finance Initiative (PFI). A more detailed analysis of the above methodological approaches is provided in Table 1.

Table 1. A terminological and structural analysis of methodological approaches related to the use of lifecycle contracts based on the experience of foreign countries

	Methodology	Content
1.	DBFM (designing, building, financing, maintaining)	A contractor agreement. The contractor is responsible both for project design plus construction and project financing and general maintenance. This is an integrated contract. It provides the contractor with maximum room for applying his knowledge and creativity. The contractor is paid periodically after the end of construction works, based on services rendered. If contractual obligations have not been met, punitive damages are levied on the contractor. The goal of the consortium is making profit. Private donors must guarantee that possible fines will be minimal. The company or the consortium takes responsibility for the entire project. Responsibility may depend on the type of contract: designing, building, and financing for 20 or 30 years or responsibility for maintenance. [4]
2	LCCA (life-cycle cost analysis)	A methodology for the economic assessment and analysis of costs in the lifecycles of goods and services. It is an instrument for determining the most economically effective of various competing alternatives. It helps analyze comparable projects based on the total size of all costs both at the pre-investment plus investment and the operation stages of owning. For instance, when it comes to highways, apart from the initial cost of construction, LCCA is inclusive of all the expenses of the users, a decline in potential in all work zones, as well as the agency’s expenses associated with a future activity, including periodical maintenance and restoration to be carried out in the future. All expenses are normally subject to discount and constitute a final value as of the current date – these expenses are known as the net present value. This example can be extended and used on any type of material, product, or production-economic system [5].
3	LCC (life-cycle costs)	A methodology for calculating the amount of all recurrent and one-time costs throughout the lifecycle (or a certain period) of service provision, the establishment, or the production-economic system. It includes the purchase price, the cost of installation, operating costs, maintenance and modernization, and what is left of residual and liquidation value at the end of useful life. [6]
4	PFI (private financial initiative)	A methodology for forming a public-private partnership through financing projects public infrastructure projects with private capital. It was first developed by the governments of Australia and Great Britain. The PFI and its variants have already been adopted in many countries as a part of a broader neoliberal program for privatization and financialization associated with an increased need in the accountability and effectiveness of state expenditure. [7]

The examination of the above terminology and methodological approaches based on the use of lifecycle contracts gives one a more accurate and diversified idea on their content characteristics.

Despite that lifecycle contracts can be considered an economic interaction organization scheme that is new to us, it should be noted that its effectiveness has already been proved by the world's practice. Over the period of 20 years, over 1400 lifecycle contracts to the total tune of 260 billion euros have been entered into in Europe. The study conducted by the author examined Great Britain and Finland, which are among Europe's leaders in concluding LCCs.

Lifecycle contracts were first concluded in Great Britain in 1992. In Great Britain, such contracts are known as the PFI. Great Britain's most significant project related to concluding these contracts is the creation of a high-speed link between London and the tunnel under the English Channel. According to the terms and conditions of this project agreement, the private partner was taking care of designing, building, financing, operating, repairing and maintaining the railway main. The Ministry of Transport of Great Britain, in turn, assumed the obligation to finance the project through providing monetary grants and the necessary rights in respect of the land parcels. Besides, after the commencement of the project, a substantial amount of funding was secured by the government's guarantee.

Finland is also one of Europe's leaders in concluding LCCs. An example of a successful contract is the E18 Turku-Helsinki motorway. The contract covers the 50 km long Muurla-Lohja tract. The cost of the project based on the LCC scheme is 303 million euros, while its cost is 354 million euros based on one-time contract scheme. Thus, the government customer's savings are at least 15% [8].

Among other successful LCC projects are high-speed railroads (Poceirão-Caia, Perpignan-Figueres, Tours-Bordeaux, Rennes-Le Mans, and HSL-Zuid), subways (the Canada Line and the London Underground), and airports (Blackpool Airport and Exeter Airport).

An overview of foreign successful LCC projects reveals that such LCC methodologies are applied mostly in respect of linearly stretched facilities. However, when it comes to the Russian economy, residential construction and providing citizens with affordable housing is what a priority area remains. LCCs can serve as an instrument for the forward-looking and innovation development of this sector.

Let us further examine the characteristics of the development of the LCC methodology in the RF, energy conservation and energy-efficiency being the

primary priority. The starting point for such activity is the Decree of the President of the Russian Federation, dated June 4, 2008 (# 889), "On Specific Measures for Improving the Energy and Ecology Efficiency of the Russian Economy". An additional instrument for such work is the Federal Law of the Russian Federation "On Energy Conservation and Improving the Energy Efficiency of the Russian Federation". [1]

The study has shown that in the global economy the concept of LCCs is closely linked to the concept of "green" construction, as well as the energy-efficiency of residential houses. There are a number of advantages of certifying buildings and facilities in accordance with the accepted "green" standards.

The "Green" standards serve as an element of ensuring the sustainable development of a territory, since they are aimed at creating a benign living environment for people and environmental protection. This serves as the keynote and the driving factor in their development and implementation. Construction facilities that are in line with the "green" construction standards provide advantages to every target group, which can be expressed in the following indicators: major competitiveness in promoting a "green" facility, a construction project, or a solution as eco-friendly and comporting with the principles of the sustainable development of a territory; a guarantee that in building the facility there was used technology comporting with the primary principles of sustainable development; the activation of the search for innovation solutions that can minimize the impact on the environment; a decrease in maintenance costs and an increase in the quality of the working and living environment [9].

Currently, there are a number of international standards for "green" construction, such as BREAM, LEED, and DGNB. These standards take into account the entire term of the operation of the residential facility, from concluding the agreement to pulling the facility down. "Green" construction and the standards related to it can currently serve as the starting point for understanding how to apply LCCs in the Russian Federation.

Russia's existing accounting system takes construction costs into account only indirectly and is primarily oriented towards implementing state programs that deal with acquiring ready-made housing on the market. In accordance with the concept of an energy-efficient house, it is crucial to change the way the construction of residential homes specifically is dealt with and implement the majority of housing and public utilities programs on resettling people from unfit buildings through the construction of residential buildings with a preset level of energy-efficiency.

Analysis has shown that similar methodologies were applied in the Soviet and post-

Soviet economic space. Thus, for instance, in the Soviet time they used the present cost methodology in the technical-economic substantiation of capital investment. It reduced planned investment and the cost of production at the operation stage into a single integral reduced cost.

A classic modern economic instrument for choosing effective solutions are indicators for the efficacy of investment project decisions based on the payoff period, profitability indexes, net present value, and other modified indicators.

But despite the existence of quite a solid economic methodological base for the assessment of the efficacy of investment decisions, we are facing today the need for developing it. This is attested to by the fact that today in Russia and the post-Soviet space they are actively building a normative base for the construction and operation of buildings and facilities inclusive of the standards for the lifecycles of buildings and facilities. Thus, for instance, the "Design and Construction of Buildings Inclusive of the Cost of the Lifecycle" sub-committee was created within the framework of the National Association of Builders as part of the Scientific-Technical Council in accordance with the Order of the Federal Agency on Technical Regulating and Metrology and the Federal Agency for Construction and Housing and Utilities within the framework of the Technical Committee "General Technical Design and Construction Issues". A similar sub-committee exists within the framework of ISO/TC 59/WG2 and ISO/TC 59/SC14. The sub-committee's primary activity is aimed at developing national and harmonizing foreign standards in relation to the Eurasian Economic Community and the Customs Union's Technical Regulations Project "On the Safety of Buildings and Facilities, Construction Materials and Articles". One of the first documents to be prepared by the sub-committee is the Interstate Standard Project (ISO 15686-1:2011) "Buildings and Immovable Property. Planning the Service Life Period. Major Principles". Also, jointly with the Association of Engineers for Heating, Ventilation, Air-Conditioning, Heat Supply and Construction Thermal Physics, the sub-committee is also looking to fine-tune the "Green Construction. Residential and Public Buildings. A Rating System for Assessing the Sustainability of the Living Environment" standard inclusive of the lifecycle cost. The topicalness of creating the sub-committee and effecting the above activities is associated with that on January 1, 2014 the government brought into force the State Duma approved Federal Law "On the Contract System in the Area of Procurement of Goods, Works, and Services for State and Municipal Needs" (# 44-FZ), which prescribes using as the primary criterion the cost of the lifecycle of a commodity or a facility created as a

result of executing work, which includes expenses for the purchase of the commodity or execution of work, the subsequent servicing, operation for the period of their service, repairing, and utilizing the supplied commodity or facility. The sub-committee's line-up includes leading cost standardization and assessment specialists from the Russian Federation, the Republic of Kazakhstan, the Republic of Belarus, and the Republic of Ukraine.

It should be noted that Russia now has its first national methodology for calculating the lifecycle of a building inclusive of the size of total costs. It was developed under the guidance of V.S. Kazeikin as part of the activity of the National Association of Designers and Developers.

Our study has shown that in Russia's present-day economic conditions LCCs are a promising instrument for public-private partnership (PPP), which makes us take a new look at the implementation of construction projects traditionally funded by the state. LCCs have the following advantages for the state: public usefulness; minimized risks of low-quality design; there is no breaking off from the responsibility for design and construction on the part of the private partner; one gets paid on the contract only if the facility has been maintained in line with the functional parameters; payment is made in installments; there are no unpredictable future costs related to maintaining infrastructure.

The private partner can enjoy the following LCC advantages: the possibility of getting a large contract for design-construction-operation from the state; freedom in the choice of design and engineering solutions; the possibility of attracting funding on advantageous terms; there is no risk for demand; the possibility of reducing costs associated with construction and operation thanks to quality designing and the use of advanced technology [10].

At present, the RF State Duma is already considering a set of amendments aimed at adapting the Law on Concessional Agreements to LCCs. The other trajectory deals with the passage of the Federal Law "On Public-Private Partnership and Making Amendments to Specific Legislative Acts of the Russian Federation", whose draft is currently being actively discussed by the expert community. This draft law if passed will become a backbone act in terms of LCCs. One of the merits of this draft law is the substantial expansion of agreement forms of public-private partnership to be used in Russia. Considering that the list of forms is expected to be made open, concluding LCCs will also be possible, even if the form is not directly set out by the draft law. [11]

Conclusions and recommendations

Thus, our study has demonstrated the high significance of applying and developing the global LCC experience in the RF economy. A review of the development of prospects of using lifecycle contract systems within the construction sector reveals that this dimension of regulation is currently the most effective innovation instrument for public-private partnership and regulating energy-efficiency, eco-friendliness, and energy conservation. A terminological analysis of the use of the LCC methodology in foreign economies has revealed diverse approaches in this area and a great potential for applying them in the Russian Federation, especially in construction, with innovation being actively adopted along the way.

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