The model of ecologically oriented development of managerial technologies in construction sphere

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\textbf{Abstract.} The purpose of research is creation of concept model of ecologically oriented development of managerial technologies in construction sphere based on greening theory. The meaning of greening was shown as modern development of economics. In addition, principles of greening management in construction sphere were offered and discussed. Development directions of managerial technologies were reviewed through selecting of organization forms of interaction of project participants, methods of realization, regulators of building activity, instruments of ecological and economic efficiency of projects and building manufacture and also development of ecological competence of specialists. It was shown that adaptation of current system of building management to conditions of ecological oriented development is possible on base of institutionalization of social and economic responsibility of building business.

1. Introduction

The priority of modern Russia is providing of economic and social conditions of human’s potential development. The most significant factors are: satisfaction of ecological needs of society and formation of comfortable environment [1]. The ecological conditions are directly related to level of greening. According to Yale University’s research in the field of the state of ecology and natural resources management, Switzerland was recognized as the world leader in environmental efficiency in 2018. The list of 10 leaders include: France, Denmark, Malta, Sweden, the UK, Luxembourg, Austria, Ireland. Finland moved from 1\textsuperscript{st} place in 2016 to 10\textsuperscript{th} in 2018. Rating of Russia dropped from 32\textsuperscript{nd} in 2016 to 52\textsuperscript{nd} from 180 countries in 2018 [2].

Meanwhile in 90s of the xx century, Russia was actively involved in global process of solving environmental problems. From this period to present time, along with ratification of international protocols, acceptance of strategic documents for ecological improvement, significant additions have been made to federal laws, programs for environmental development have been developed and implemented just like regulatory acts and national standards which are governing to the transition to the principles of the best available technologies and also technologies of “green building” are actively developing. Since 2010 in Russia, key documents confirming the imperative of providing the energy efficiency and quality of environment during the building and exploitation processes. It is necessary to admit that increase of ecological efficiency of economic development can be provided only with greening of managerial technologies. In the context of management, greening means actualization of
ecological orientation of the whole complex of methods and instruments, which are used to regulation of building activity and development of organization forms of participants of investment and construction activities and stakeholders to approve economic interests with social and ecological priorities of development.

The concept of “greening” has firmly entered the scientific vocabulary at the end of XX century and has meant a more systematic approach to the objective world and “bigger awareness of the role of nature in human’s life” (Ramers, 1990). Works of Bobylev (2006, 2018), Matveev (2000), Ilyicheva (2006), Feraru(2007), Litovko, Pavlov, Fedorov (1998) studied the nature and content of the greening of economic development. [3-9]. The problems of development of building activity with ecological aspects are considered in works of Plotnikova (2008), Krygina (2015), Telichenko, Benz (2016) [10-12]. Greening of economics has become an important direction of development. However, at the same time, the processes of managerial greening in urban development are not systematized and the system of relations between subjects of investment and building activities is not related to modern tendencies of the development of organizational forms of interaction between stakeholders of the project with social and ecological responsibility of business.

2. Materials and research methods
The theoretical and methodological foundation of research is based on states of the theory of economic development greening [3-9], institutional theory [13-14], works of native and foreign scientists and specialists in the field of problems of investment and construction activity regulation taking into account the ecological factors, environmental and economic support to building activities. [10-12, 15-17].

The modern progress of urban development in Russia is carried out under the conditions of dominant influence of the projects aimed at increase of housing security, safety and comfort of humans’ environment. In the period from 2018 to 2024 the national project named “Housing and urban environment” is being implemented. Aims of the project are closely interconnected with ecological conditions of life. Nowadays, customers of construction production are increasingly focused on environmental conditions, presence of social and infrastructure facilities. The results of WCIOM polls evidence to this [18]. Therefore, 84% of respondents consider playgrounds to be a mandatory part of modern house’s infrastructure, 71% - parking lots, 66% - grocery stores. Potential customers of residential properties are interested not only in economic and operational characteristics, but also in socio-psychological and socio-economic conditions of territory development.

The greening of economics has become an imperative of modern society development. The necessity of development of ecologically oriented model for the development of all kinds of economic activity, including the building one is caused by following this imperative. The analysis of institutional environment has showed that a lot of attention is payed to the development and realization of activities related to the technological part of ecologically oriented evolution of construction activities. Primarily, these are technologies of “green” building and architectural and urban planning of functional and spatial structure of construction object; resource-saving, energy-efficient and ecological technologies of building process, environmentally friendly systems of engineering support, utilization technologies. The priority of technological events for greening is well founded. Really, about 35% of energetic resources consumed in Russia are spent on heating the industrial, residential and public buildings. From 60 to 85% of energetic balance is filled with costs of providing the comfortable conditions for people in room – heating and hot water. The effective development of building is impossible without adaptation the construction managing system to conditions of ecologically oriented model. Greening should not be limited to the system of events for greening the technological processes and equipment. Certainly, these funds can reduce the level of environment pollution in particular factory, but at the same time, it is necessary to green up managerial technologies in construction sphere to provide stable territory development. Greening management is a «type of management fundamentally oriented on formation and development of ecological manufacture, culture and human activity » [8. P. 32].

The methodological principles of forming the model of ecologically oriented development of managerial technologies in construction sphere are as follows:
1. Ecosystem approach. Making management decisions in the sphere of construction business must meet the requirements of biosphere compatibility, be based on a qualitative and quantitative assessment of relationship of construction activities, conditions of human living and environment generally. The practical implementation of this principle means rating of possible realization effects of planned construction projects on environmental and social conditions. Consequences manifest in a change in the state of environment, the natural resource base of the territory, socio-economic socio-psychological and cultural-historical environment.

2. Organization of ecological support for construction activity taking into account the ecological life cycle of building production. The boundaries of responsibility of project participants for the ecological consequences of the building activity must cover «all points of contact» with the environment arising in the process and connection with the creation and exploitation of construction facilities. Therefore, the objects of ecologically oriented management should be business processes from mining and processing of natural resources for production the building materials, products and structures, construction and installation works, to the disposal of the building materials and structures during reconstruction and demolition of facilities. The management system on every stage will have their own features associated with uncertainty of duration of the ecological life cycle. This duration is the uncertainty in time in space and can be multivariate. In some cases, it may coincide with traditional life cycle of building products (when there is no residual damage after liquidation of construction facility), and in other cases may go far beyond it (if there are no measures were taken for disposal and elimination of ecological consequences in form of residual damage with the liquidation of construction site).

3. Concordance of institutional environment of regulation of the building activity to the needs of ecologically oriented development of economics. The institutional environment integrates institutions and originsations, methods, tools, organization forms of interaction between participants of the building activity. Institutional transformations are necessary for implementation of the ecological priorities in management. In substance, we are talking about formation the mechanism of the ecological and economic regulation.

4. The imperative of socio-ecological responsibility in construction business is an initiative activity of building companies aimed at adoption of additional requirements to ongoing projects, sites and construction works as well as compliance with mandatory ecological standards [19]. Building organizations go beyond the regulatory framework and initiate acceptance of increased social and ecological requirements, which must be met by the production activity of enterprises and its results.

5. Coordination of interests of authorities, business and society in the process of justification and adoption of investment decisions. The main aim of the coordination is an overcoming contradiction between environmental as well as social requirements and commercial interests of customers and investors. At the present time, various methods of citizen participation in decision-making on implementation of investment projects are actively developing. The technologies of organization of the participation may be different, but all of them mean availability of information that reflects the influence of building facility on environment and society.

6. Greening of needs is the primary factor, which determines the development dynamics of managerial technologies and also means demand of ecological building products by the market. Customers must be ready to pay for engineering decisions that provide comfort, environmental friendliness and resource saving just like for comfortable arrangement of external architectural and urban living environment. Only in this case, the initiatives will be supported not only with image, but with financial results of activity too. Society opinion polls (WCIOM) revealed that 53% of Russians identified the ecological state of the region as determining factor in deciding on the purchase of housing. The results of research [20] have showed that 62% of respondents are ready to choose more expensive ecological housing.

3. Results and discussion
The architecture of the development model of managerial technologies in urban planning reflects interconnection between ways and forms of its manifestation according to the principles of greening.
management (Figure 1). Success in solving of strategic objectives is largely determined by choosing the effective form of organization of project stakeholders’ interconnection. The integration of stakeholders’ actions in urban planning will allow minimizing risks of investors and customers, that are caused by discrepancy of the result with expectations of society. The forms of integration are different: platforms, associations, movements. Technologies of involving residents, public organizations, authorities and local communities in the decision-making process for urban development as a part of national projects are becoming increasingly popular in Russia nowadays. These processes provide collaborative planning, which technologies got huge development abroad. [21]. The collaborative planning may be the real constructive technology of management decision-making process, based on building the communication between stakeholders. Moreover, the communication building supposed to be on early stages of pre-planning researches, and the decision-making process is accompanied by distribution of responsibility and resources in general interests. The defining condition of implementing the managerial technology transformation is consolidation of socio-ecological responsibility as a paradigm of modern development of urban business that will require the transformation of the institutional environment of urban regulation activity.

4. Conclusion
Among the most important factors determining trends in the development of urban planning in Russia, it should be attributed: social priorities of the territory development; changing conditions and orientation on the efficiency criteria of resource consumption, greening the technical and technological development of construction processes and systems; greening the needs of society and relevance of ecological conditions to improve life quality; improvement of integration processes (intersectoral, intercountry, interdisciplinary). Changes in the system of building management at different levels of economics are necessary to solve the problems of ecologically oriented development of urban planning. Institutionalization of socio-ecological responsibility of construction business is a driver, which provides adaptation of management system to conditions of environmentally oriented model. In context of this research, institutionalization regarded as a formalization process of interconnection between urban planning subjects. There are socially and ecologically oriented actions become ordered into a system of sustainable structures and relations. Moreover, recognition of social and ecological priorities in the process of development and implementation of projects of construction buildings, facilities, development of the territories as an absolute imperative.
Figure 1. Model of ecologically oriented development of managerial technologies in construction sphere.
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