Improving construction administration technologies in emergency response: targeted focus

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Abstract. The housing development strategy of the Russian Federation for the period up to 2025 sets the goal of providing the population with comfortable and affordable housing. In this regard, the construction management system requires changes in accordance with the tasks of the government of the Russian Federation. Implementation of investment and construction projects in housing construction is quite a complex and multifaceted process. Solving the housing problem requires improving the mechanisms of interaction between participants in the implementation of investment and construction projects in housing construction, especially in the event of emergencies, the number of which increases exponentially every year. In this regard, when determining the possible scenarios and relationship of participants of investment and construction activities in liquidation of consequences of emergency situations it is necessary to consolidate and focus the resources of all participants in the Investment and Construction Projects, which will allow not only to concentrate all resources on realization of the investment construction project within the given time but will also ensure the achievement of the maximum effect to the principle of synchronization of economic interests.

The socio-economic development of the Russian Federation is largely determined by indicators of housing provision. In 2019, 80 million m² were built in the Russian Federation, and the share of low-rise housing construction reached the highest indicator for the entire period of statistical observations of 73% of the total volume of housing commissioned in 2019. Such a significant increase in low-rise construction was observed in many regions of Russia. This significant growth was largely facilitated by the declared end of the terms of the country amnesty, as well as the popularization of low-rise buildings on the part of the state [1]. Despite the relatively high rates of housing commissioning, demand in the primary and secondary markets is declining, which causes each region to identify the housing problem as a strategic and priority areas of housing policy.

Within some years, investment and construction activities have been considered as an important component of the country's economic potential. Investment and construction activities, being difficult to manage, high-risk and subject to the influence of a variety of market, structural, institutional, communication, economic and other factors, to a greater extent than other types of activities, need to develop fundamental scientific research aimed at improving the management system.

The current state of the construction industry, in general, requires adjustment of management systems. Currently, there are clearly visible shortcomings of the management system of investment and construction activities associated with a comprehensive assessment of resources, costs and results of production, economic and financial activities of construction organizations at various levels of
management. The most detailed shortcomings of the management system are shown in emergency situations [2,3].

The implementation of investment and construction activities, including, in response to emergency situations, makes sense if the potential for economic efficiency is growing faster. Otherwise, there will be processes of recapitalization of real estate in which investment and construction activities will lose economic/social/environmental and other meanings [4]. Thus, investment and construction activity a priori must have certain properties that determine its effectiveness, both by type of construction, stages of the project cycle, forms of reproduction, and territorial affiliation. Based on this, investment and construction activities in all cases should focus on the creation of construction products which obviously must meet not only the strategic development goals of the country and its regions but also consider emerging emergencies. Thus, it is advisable to supplement the strategic focusing of investment and construction activities with interactivity, prevention, mobility and proportionality. Outside of the above properties, it is impossible to ensure the economic efficiency of investment and construction activities in the event of emergencies.

The problem of ensuring the safety and survivability of buildings and structures considering various natural disasters is very relevant, since buildings and structures are among the most vulnerable objects to such impacts. Significant importance is given to the safety and survivability of buildings in the tasks specified in the National project "Housing and a comfortable urban environment " (approved by decree of the President of the Russian Federation dated May 7, 2018 No. 204 on national goals and strategic objectives of the development of the Russian Federation for the period up to 2024), in particular in the Federal project "Housing" [5]. So, for example, Irkutsk oblast, like other Russian regions are region with specific climatic conditions like possible flooded areas, where are apartment buildings, long winter period and the challenges this autumn-winter and winter-spring periods. It is in the aspects of these features that the most effective way to use the methodology of targeted focusing of investment and construction activities, which involves a balanced increase in the construction, reconstruction and renovation of facilities, based on compliance with the principles of integrated development, taking into account the requirements of energy and resource conservation, environmental safety, durability, technical and social reliability [6, 7]. Based on this, the importance of ensuring the target focus of investment and construction activities is to justify the project management format in the event of emergencies and the need to ensure the target focus of investment and construction activities aimed at improving the reliability of residential buildings and improving the safety of people living in specific conditions of regions of Russia with possible flooding of territories. In the end, the result of targeted focus reduces the economic and social costs associated with dealing with the consequences of natural emergencies.

This is the situation that has developed, for example, after the large-scale floods in the summer of 2019 in the Irkutsk region, which led to the death of people, breakthroughs of protective dams and flooding of a significant number of residential buildings. Official information about flood victims is constantly updated, and the final report shows the number of victims is more than 4,000. Irkutsk region is in the difficult natural and climatic conditions. The region is characterized by a long cold winter (in the Northern regions of the region, winter temperatures are extreme), a long ice age and warm, with heavy precipitation in the summer, which leads to severe floods. Also, the territory of the Irkutsk region is one of the most seismically active areas in the Russian Federation. According to the Ministry of emergency situations, the Irkutsk region belongs to the subjects of the 1st degree of danger from the possible impact of natural and related man-made disasters. The number of emergencies in the Irkutsk region tends to increase every year [18]. Based on this, the process of providing housing to the population and creating favorable conditions in the event of emergencies (mass disasters) becomes particularly important.

Similar emergencies also occur in such regions of the country as the Primorsky krai, Krasnodar krai, the Russian far East, and others [9]. According to the Ministry of Emergency Situations, natural disasters affected about 500 thousand km² floods with catastrophic consequences - 150 thousand sq km, where are located some 300 cities and tens of thousands of settlements, a large number of economic objects,
more than 7 million hectares of farmland. Analyzing the causes and nature of the prerequisites and occurrence of emergencies over a long period of time, it is easy to see that any emergency that occurs once has a cyclical nature of repetition [10]. In this regard, the relevance of modifying the management system of the investment and construction sector increases.

In such circumstances, investment and construction activities should be focused on solving the housing problem for the population affected by an emergency. Moreover, it is important not only to focus investment and construction activities on the construction of new facilities, but also to direct resources to the development of recommendations for ensuring the safety of living in residential buildings that are in the zone of emergency situations and have been flooded by flood waters [11]. An important issue is the development of recommendations of a compensating nature to ensure the operability of residential buildings for the subsequent period of operation considering natural and climatic conditions and the consequences of flooding. In this regard, for reducing damage and ensuring the most rapid and high-quality restoration work, the problem of improving the management systems of investment and construction activities in the aftermath of emergencies comes to the fore.

Based on the above-mentioned problems, one of the strategic goals of investment and construction management should be the development of methodological foundations and methodological recommendations for improving the management system of investment and construction activities in emergency situations, as necessary conditions and processes aimed at providing affordable housing to the population. Based on a specific goal, the following tasks are defined:

1. Systematizing the challenges and problems of national economic development at the present stage, as the basis for restructuring the target space for the development of investment and construction activities in emergency response.
2. Forming a concept of target focus of investment and construction activity management at various stages of the emergency response process.
3. Determining the main directions of development of the target focus of the investment and construction complex, as the basis for spatial and temporal focus and synthesis of resources to provide housing for the population in emergency situations.
4. Developing methods of targeted focus of investment and construction projects in the context of managing the process of providing housing for the population in emergency situations.
5. Developing a paradigm for the target focus of the management system of investment and construction activities in emergency response
6. Analyzing the submitted technical documentation based on the results of the survey of the technical condition of residential buildings that have fallen into the flood zone, their classification according to the degree of danger to the life and health of residents, taking into account the natural and climatic conditions and the likelihood of progressive deformations and damage.
7. Developing recommendations of a compensating nature in order to ensure the operability of residential buildings for the subsequent period of operation, taking into account natural and climatic conditions and the consequences of flooding.
8. Justifying the effectiveness of using large-panel housing construction technology to solve the housing problem, including in the aftermath of emergencies in the Irkutsk region.
9. Developing an organizational and functional process for implementing projects using large-panel housing construction technology, including in response to emergency situations [12].
10. Developing a model for a comprehensive assessment of the economic efficiency of the target focus of management implemented in the main projections of investment and construction activities in response to emergency situations.

The proposed goal and objectives are theoretical and based on a complex of scientific methods of knowledge that allow a comprehensive analysis of methodological tools to select appropriate subject area of research General scientific methods (deduction, induction, inversion, analysis, synthesis, etc.), special economic methods (comparison, functional statistical, graphical, analytical groupings, SWOT analysis, PEST analysis, TAIIDA method) methods of economic and mathematical modeling.
(simulation, game theory, optimization, etc.), methods of selective observation, methods of expert assessments [13].

The underlying tasks of implementing the target focus of investment and construction activities have scientific novelty, as they consist in the development of methodological foundations and methodological recommendations for the target focus of investment and construction management in emergency response, which provides an afterburner-front, balanced in the industry and spatio-temporal sections, the type of development implemented in the project format to achieve equifinal efficiency when using large-panel housing construction technology.

The result of completing the research tasks will be reflected in some forms:
- The author's model of interpretation of the process of management of investment and construction activities in emergency response
- Developing recommendations and technical solutions to ensure the safety of living in residential buildings exposed to flood waters and showing signs of reduced load-bearing capacity and stability of structural elements, including ground conditions.

The practical significance of the research is expressed in a wide range of possible use of methodological developments on:
- Environmental and economic assessment of the effectiveness of the management process in emergency response.
- Modeling the organizational and economic mechanism of interaction between construction participants in the process of emergency response [14].
- Development and justification of the effectiveness of construction technologies in emergency response.
- Use of environmental and economic methods of construction management to transform the management concept and bring it in line with priority tasks in emergency response [15].

Emergencies caused by natural phenomena cause huge damage to the entire industry structure of the economy, including the construction industry. Implementation of investment and construction projects in housing construction in response to emergency situations is quite a complex and multi-faceted process that requires, in addition to the implementation of effective economic activities of a single economic entity, also effective joint work of all participants in the project to achieve the final goal [16]. Therefore, it is necessary to focus resources on achieving the final goal. From the point of view of focusing the resources of economic activity, it is necessary to analyze and take into account the influence of extensive and intensive factors of a technogenic nature on the final result of activity. Targeted focus will allow you to concentrate all resources on the implementation of an investment and construction project within the specified time frame. This fully applies to the activities of each participant individually as an independent business entity, and to their Association for the purpose of implementing an investment and construction project (ICP) as a whole.

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