Prospects for the renovation and modernization of urban development in the regions

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Abstract. The article examines the prerequisites for the organization and implementation of renovation and modernization of the urban built environment in the regions of Russia. Since the largest number of multi-apartment panel residential buildings were built in the Moscow, pilot projects for the reconstruction and renovation of residential buildings were launched here. The programs were initially aimed at the reconstruction of five-storey dilapidated panel and block residential buildings. However, over time, 9-12-16–storey panel houses appear on the queue, which expire the period of physical and moral wear and tear. The technical condition of multi-apartment panel houses in various cities of the country is characterized by a decrease in the bearing capacity and operational characteristics of building structures and in the coming decades may lead not only to a decrease in consumer characteristics of housing, but also to the emergency condition of houses. In all regions of the country, major renovation programs of apartment buildings are currently being implemented. However, carrying out only planned work on the overhaul of residential buildings cannot solve the problem of restoring load-bearing structures and internal communications completely and, moreover, eliminate the moral deterioration of buildings that has occurred. Therefore, there is a need and expediency of an integrated approach to the renewal of the built-up urban environment, renovation and further modernization of the territory, the creation of a modern architectural appearance of the city with developed infrastructure and convenient transport interchanges. Due to the transition to digital technologies in the construction industry, there is a need to modernize the built environment. In the process of carrying out measures to modernize urban development with the introduction of digital technologies, the investment attractiveness of the territory increases. And this factor is most important for the long-term development of the territory.

1 Introduction

The rapid development of industrial housing construction in the USSR, starting in 1956, led to the mass construction of urban areas with standard block and panel residential quarters. After a few decades, both physical and moral deterioration of buildings began. The causes of wear are both the natural aging of buildings and a number of shortcomings, namely, in the design, in the imperfection of the technology of production and installation of prefabricated
structures, in limited material and financial resources for the operation of houses, due to the impact of the external environment, changes in the socio-economic situation and other factors. The process of deterioration of the housing stock takes place in all regions of Russia, where entire districts have been built up with multi-apartment panel residential buildings. In some cases, the situation reaches a critical point, up to the destruction of buildings.

Most of the residential buildings are located in the capital. According to the results of the survey of load-bearing and non-load-bearing elements, engineering systems and equipment of apartment buildings of industrial housing construction and similar structural elements of apartment buildings by the State Housing Inspectorate of the City of Moscow, it was revealed that the technical condition of apartment buildings is characterized by a decrease in the load-bearing capacity and operational characteristics of building structures and in the coming decades will not just lead to a decrease in consumer characteristics of housing, and it will lead to an emergency condition. Therefore, back in the nineties of the last century, the Moscow Government decided on a comprehensive reconstruction of the five-storey building areas of the first period of industrial housing construction. As a result of this program, until 2010, all dilapidated five-story buildings were demolished and modern multi-storey residential new buildings were built in their place. However, over time, 9-12-16-storey panel houses appear on the queue, which have expired the period of physical wear and tear, and moral wear has long since come. Planned construction work on major repairs and reconstruction cannot restore buildings and internal communications completely and, moreover, cannot eliminate moral wear and tear. Therefore, an integrated approach to the renewal of the built environment, renovation and modernization of the territory, creation of a modern architectural appearance of the city has become necessary.

The second stage of the renovation of the residential development of the capital was the renovation program. This program has become necessary because it prevents the emergence of mass emergency housing. The Moscow government decided to renovate residential buildings mainly at the expense of the city budget. The State Investment and Construction Renovation Program in Moscow (GISPR) started in 2017 and was approved until 2032. It is assumed that the GISPR will become a driver of economic growth in the Moscow region [1, 2]. It is planned to allocate 100 billion rubles annually from the city budget for the implementation of the renovation program, in total, at least 1.5 trillion rubles should be spent in Moscow over the 15 years of the renovation program. Legislative acts also provide for the possibility of attracting extra-budgetary sources of financing. The term "renovation" was first fixed by the Law of August 1, 2017 N 497-PP "On the Program of renovation of housing stock in the city of Moscow". A new term "renovation" was introduced by a decree of the Moscow government. The full content of the term is as follows: "renovation of the housing stock in the city of Moscow is a set of measures aimed at updating the living environment and creating favorable living conditions for citizens, public space in order to prevent the growth of emergency housing stock in the city of Moscow, ensuring the development of residential areas and their improvement." Since it is supposed to spread the capital's renovation experience in the regions, it is still necessary to consolidate this term at the legislative level.

Due to the development and introduction of digital technologies in the construction industry, there is a need to modernize the built environment. Information and communication technologies (IKT) have a significant impact on the development of the construction industry, they have become part of modern management systems of the construction economy. Achieving the efficiency of the digital economy is possible through the introduction of innovative technologies for processing the growing volume of data every year, which will reduce the costs of construction, operation of residential complexes and the provision of housing and communal services. In accordance with the Decree of the President of the Russian Federation, the Ministry of Construction of the Russian Federation proposes a
"roadmap" for the introduction of information modeling technologies (Building Information Modeling- BIM) at all stages of the "life cycle" of a capital construction facility. It is assumed that the use of information modeling technologies only in the design and construction process will allow to achieve savings of up to 20% of funds for the construction of the facility, as well as reduce administrative barriers and shorten construction time [3].

2 Materials and Method

Dissemination of the accumulated experience of the Moscow renovation of urban development is possible in other regions of the country. The "successors" of the housing renovation project include the city of Tyumen – a large industrial center, a city of science, culture and sports, famous for the high rates of construction of new neighborhoods, construction of highways, bridges, expansion of streets, etc." [4].

In the city of Krasnodar, there is also a need for renovation and modernization of urban development. The authors note that more than 90% of buildings are dilapidated and emergency; there are no utilities in the city center; there are rotten water pipes; unsatisfactory transport and road interchanges, complex logistical constraints. All these problems cannot be eliminated only by carrying out repairs and reconstruction [5, 6].

So, in Belgorod, the administration is investigating the organizational and technical aspects of the integrated development of the residential space of Belgorod, since the city's housing stock is worn out, not comfortable and not effective in operation [7].

The regional authorities are currently solving the tasks of finding sources of financing for construction programs for the restoration of housing stock and the development of urban infrastructure.

The issues of complex residential development of territories and the problems encountered during engineering and construction activities are studied by different authors. Each author gives his own definition of complex development: "Complex development is an interconnected system of human life, which must meet certain requirements: security, developed infrastructure, organization of social interactions, high-quality heat, sound insulation, ventilation, aesthetics of the surrounding space and convenient location of all objects." According to the authors of the article [8], complex reconstruction of territories is difficult due to the lack of a territory development plan in most Russian cities. Initially, developers find the territory and make a plan for its development, as they are engaged in preparing all communications. European experience, on the contrary, shows that municipal services carry out engineering communications. The following organizational parameters were identified: logistics, provision of the general contractor, labor protection and environmental protection, fire safety, construction management system, planning, the impact of existing facilities on construction, the condition of the construction site, transport conditions inside the complex, labor resources, waste disposal, control of the timing and quality of work. Technological parameters: geological conditions, impacts from neighboring buildings, machines and mechanisms, engineering networks, technology of building construction, construction materials, work with soil.

The Moscow Region also pays close attention to the problems of integrated territorial planning and the development of transport and engineering infrastructure. In the scientific article, the author shows the main directions of the industrial development of the region, including the geography and composition of the industrial parks being designed and under construction. Low-rise individual construction is developing. The Moscow Region has prepared a regulatory framework for the implementation of a project on the integrated development of territories, including the introduction of a master plan, the adjustment of regional norms of urban planning, etc. [9].
It is impossible not to note the difficulties that arise during the renovation of a densely built environment. It should be agreed with the author of the research that during construction work, the operational properties of nearby objects may decrease, their foundations may deform, and the ground may sink. Careful development of transport flows of construction machines and mechanisms is necessary. There is noise discomfort for citizens living in the neighborhood. Emissions of construction waste pose a threat to the environmental situation in the construction area [10].

As a result of the conducted research on the implementation of the federal project "Formation of a comfortable urban environment", Samara scientists concluded that there was insufficient awareness of residents about the project, about the activities carried out within the framework of the project: only half of the respondents were informed [11]. Scientists conclude that local governments do not interact enough with the population and they need to actively conduct educational and propaganda work. These can be various booklets, project seminars and meetings; focus groups, design games with the participation of adults and children; organization of surveys as a systematic collection of primary information. speeches of public people in the media, videos, Internet sites of the City Administration, online channels (groups in social networks Vkontakte, Instagram, Odnoklassniki, Telegram). The purpose of the appeal to citizens will be "To take part in the subbotniks& Take part in public discussions ... Take part in project seminars and lectures ... Gather an initiative group of citizens to prepare ... etc." Such events will contribute to the development of an active civic position. The work of the authorities to involve citizens in the implementation of the program and its effectiveness will directly depend on the degree of public confidence in the territorial administration bodies, which causes an urgent need to develop and establish formats of interaction with residents on decision-making on projects related to the development of the urban area.

When carrying out the modernization of the territory, it is necessary to take into account the environmental consequences. Therefore, it is necessary to develop such an urban planning strategy in order to preserve the natural landscape of the city. Thus, Volgograd scientists conducted research and predicted four scenarios for the development of Volgograd: "The purpose of the study is to predict the further development of the situation and create scenario concepts that allow not only to preserve the "Green Ring" of Volgograd, but also to solve the problems of urban development, create prerequisites and vectors for sustainable urban development in the ecological aspect. ...Scenarios are conventionally designated as "regressive", "recreational", "innovative" and "promising"" [12].

Questions about the need for integrated development of the existing territory with an emergency housing stock are raised by various scientists. According to Kiriyenko Yu.P. "The most important tool in solving the tasks is the law on integrated development of territories. When using it, it is necessary to identify new approaches for working out the basic principles of the formation of mechanisms for the integrated development of territories, starting with master plans of individual quarters or other elements of the planning structure to the issues of strategic planning of agglomerations and non-agglomeration territories in the context of integrated development ..." [13].

But the lack of a general strategy for the development of the territory can lead to a lag in the socio-economic development of the city. Moreover, the modernization of the built-up environment should be carried out with the active participation of citizens. Penza scientists in their scientific work expressed concern about the implementation of planned indicators of socio-economic development of the city and nearby settlements due to the lack of a common development strategy and material, raw materials and financial resources. The strategy of socio-economic development of the Penza region includes indicators for ensuring the accessibility and comfort of housing and the formation of a high-quality living environment; updating the potential of capacities and material and technical infrastructure of the
construction complex. It is planned to put housing into operation by 2035 – 1.2 million square meters per year; housing per 1 inhabitant by the end of the year by 2035 – 0.85 square meters. m per year/person. It is necessary to solve environmental and transport problems in a complex, as well as issues with noise absorption [14-16].

The successful experience of the implementation of construction programs by the regions due to the flexible policy pursued by the regional government with business structures is very important. One can give an example of the Khanty-Mansi Autonomous Okrug – Yugra. The region has been actively developing over the past decades due to targeted investments. "High indicators of investment attractiveness are due to the dynamic socio-economic development in the region, high natural resource potential, as well as innovative and investment priority of the development of the national economy" [17]. Simplified procedures for the implementation of business projects have been adopted in the Autonomous Okrug. Local entrepreneurs are given tax preferences:

- a reduced corporate income tax rate to be credited to the budget of the Autonomous Okrug of Yugra, as well as a zero tax rate in the part credited to the federal budget;
- deferred payment of property tax for a period of three to five years from the date of commissioning of the facility.
- the minimum amount of the preferential loan provided by the Yugra Development Fund for investment projects involving the purchase of industrial equipment has been reduced from 20.0 million rubles to 10.0 million rubles;
- reduced the time for obtaining construction permits from 65 to 48 days, connection to the power grid – from 51 to 42 days, registration of ownership of real estate – from 10 to 8 days;
- simplified procedure for the provision of land plots for rent without bidding;
- Concession agreements on the basis of municipal-private partnership have come into practice. Such mechanisms contribute to the development of the social sphere, transport infrastructure, and integrated development of territories.

To eliminate the housing shortage in the region, municipalities are provided with subsidies to co-finance their obligations under contracts for the integrated development of territories for the construction of standard housing.

3 Results

Thus, summarizing the Moscow renovation experience and the existing experience of capital repairs and complex reconstruction in the regions, we can propose the following algorithm for the implementation of enovation and modernization programs in built-up areas. Presented in Fig.1.
Assessment of the technical condition of residential buildings, drawing up a list of houses in need of priority measures

Assessment of the landscaping of the house territory, the availability of Parking lots, drawing up a plan for the placement of personal and guest parking lots

Analysis of the technical condition of infrastructure, communications and the possibility of their repair or replacement

Analysis of transport interchanges of urban development and opportunities for street expansion

Attracting residents to participate in public discussions to develop a civic position on the prospective development of the territory

Drawing up a detailed plan for the development of the territory, taking into account the existing urban development

Development of urban development programs: renovation programs and modernization programs

Close interaction of entrepreneurs and executive authorities of the region to develop a flexible economic policy aimed at simplified implementation of investment projects for renovation and modernization (introduction of digitalization)

**Fig. 1.** Algorithm of organization of renovation and modernization of urban development. Author's development.

For the successful implementation of investment programs for renovation and modernization, it is important to take into account organizational, technological and economic factors. Figure 2 presents organizational issues, technological parameters and economic resources, which together should be considered and worked out by the executive authorities of the regions together with entrepreneurs and, necessarily, based on the opinion of residents.
Table 1. Consideration of organizational, technological and economic factors during the modernization of urban development. Source: [8, 17, author's development].

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<td>general contracting</td>
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<td>construction</td>
<td>shortening the time for obtaining construction permits, connecting to utility networks and registering rights to real estate</td>
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<td>environmental</td>
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<td>simplifying the procedure for leasing land plots without bidding concession agreements</td>
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<td>protection</td>
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All these conditions create a favorable climate for participants in the investment process and the creation of new industries in the subject.

4 Discussion

The main difficulties in the development of Russian regions are the absence or underdevelopment of a systematic approach to the modernization of the territory. Innovative approaches for the socio-economic development of regions are not applied. The subjects of innovation activity are separated. There are barriers to the functional distribution of influence in the territory between federal and regional executive authorities, as well as local self-
government bodies. Digitalization is being implemented at a slow pace. Therefore, it is necessary to develop information support for the promotion of renovation and modernization of the built environment. It is also difficult to work in cramped conditions of a built-up residential environment. The exchange of experience of developed regions at practical conferences, training seminars, advanced training courses in various formats would contribute to the practical implementation of projects for the renovation and modernization of the existing territory. The transition to digitalization makes it easier to communicate and gain new knowledge. Remote communication in video conferencing formats, online and offline training, electronic document management reduces time resources and allows you to adjust to a flexible work and study schedule.

When developing a modernization project, the city authorities should aim to eliminate the main problems associated with the transport system, road interchanges, housing and communal complex, the sphere of household services, with the improvement and landscaping of spaces, as well as with security and the creation of a barrier-free living environment using information technology.

Taking into account all the factors, it can be considered that the modernization of built-up areas is a complex of urban planning measures using digital technologies to increase the investment attractiveness of the territory, including the renovation of housing stock, reconstruction and overhaul of various facilities, new construction of road interchanges and parking lots, landscaping and landscaping of the territory.

5 Conclusion

Summing up, it should be noted that already at the legislative level, modernization and expansion of infrastructure are recognized as priority areas. Federal Law of May 1, 2022 No. 124-FZ "On Amendments to the Town-Planning Code of the Russian Federation and Certain Legislative Acts of the Russian Federation" amended Article 2 of the Town-Planning Code, namely that "priority projects for modernization and expansion of infrastructure are understood as projects for the construction, reconstruction of capital construction facilities in accordance with the priorities, goals and objectives defined by the strategy of socio-economic development of the Russian Federation and the strategy of spatial development of the Russian Federation (hereinafter - infrastructure facilities), as well as other capital construction facilities of federal, regional or local significance necessary to ensure the construction, reconstruction, operation of infrastructure facilities." The terms modernization and expansion of infrastructure are also added to Article 11 of the Urban Planning Code. So far, the term "renovation" has been fixed by a decree of the Moscow Government, but in the future, with the dissemination of the capital's experience in the regions, it would be advisable to consolidate this term in urban planning legislation at the federal level.

In order to renovate and modernize the built-up environment in the regions, it is important to create a favorable investment climate and enlist the support of residents through the joint efforts of the authorities and entrepreneurs. It is necessary to take into account the existing positive experience of the regions: the combination of budgetary and extra-budgetary investments in the implementation of projects; the implementation of a flexible tax policy, the use of various forms of public (municipal)-private partnership, the introduction of digitalization in order to effectively manage and ensure security; active interaction with residents based on mutual respect and trust.
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