

SECTION 2. ECONOMICS OF INDUSTRIES

DOI: 10.46299/ISG.2023.MONO.ECON.3.2.1

2.1 Modern aspects of renovation of obsolete housing fund

Introduction

Renovation of outdated housing stock is one of the urgent problems faced by many cities around the world. This process is an important mechanism for renewing the housing stock and improving the quality of life of citizens. However, it may be associated with a number of difficulties and problems, such as high renovation costs, lack of resources and mechanisms to finance projects, technical and economic difficulties.

In this regard, it is relevant to search for effective mechanisms and tools to solve the problems of renovation of outdated housing stock. In addition, it is necessary to take into account modern requirements for the housing stock related to improving energy efficiency, environmental safety and convenience for residents.

In this context, an important task is to develop a comprehensive strategy for the renovation of obsolete housing stock, which takes into account the interests of all stakeholders and provides an optimal combination of economic efficiency and social results.

Topical issues of renovation of obsolete housing stock

Housing has always been of particular importance for people, it is invariably the most important condition for their existence.

Types of residential development may vary across countries and regions depending on historical, cultural and economic factors. Here are some of the most common types of residential development:

Apartment buildings: This is a type of development in which several separate residential units (apartments) are located in the same building. Apartment buildings can have different heights and provide housing for a large number of families and residents.

Private houses: These are individual residential buildings that are owned by individual families or private owners. Private houses can be one-story, multi-story or have several floors. They usually have separate plots of land and provide more privacy and space for family living.

Cottage communities: This is a form of development typical of suburban or suburban areas. Cottage communities are small communities of individual private houses, usually located on their own plots of land. They offer a more relaxed and social atmosphere with the opportunity to enjoy nature and amenities such as parks, lakes or sports fields.

Apartments and Condominiums: This is a form of apartment building where each individual unit is owned and operated by a different owner. Apartments are usually rented, while condominiums are sold as individual units with common ownership of infrastructure and public spaces.

Dormitories: This is a form of residential development where individual rooms or small apartments with shared facilities such as a bathroom and kitchen are provided for rent or residence by students, employees or other social groups.

However, now a significant part of the housing stock is in an unsatisfactory technical condition, which is associated with its moral and physical aging, and requires its renovation. One of the ways to update the outdated housing stock is its renovation, in particular renovation with the selective demolition of old houses in a continuous ordinary building.

The conceptual apparatus of the concept of "renovation" includes the following definitions:

Renovation is the process of updating and modernizing an outdated housing stock, aimed at improving the quality of life of residents and increasing the energy efficiency of buildings.

Renovation is a set of measures aimed at modernizing and improving the housing stock, including major repairs of buildings, replacement of outdated communications, installation of new heating and ventilation systems, as well as bringing houses to modern standards of safety and comfort.

Renovation is a process that includes not only the technical renovation of buildings and communications, but also the social adaptation of residents, including their participation in the decision-making process and renovation planning.

In general, the concept of renovation is associated with the process of updating and improving the housing stock, aimed at improving the quality of life of residents and the compliance of housing facilities with modern standards. It includes technical and social aspects, and may also include financial and organizational measures to ensure the effective implementation of the renovation process.

The problem of renovation of outdated housing stock is especially acute in big cities. In most megacities, the housing stock is characterized by a significant number of buildings of different time periods of development that require diverse renovation. The renovation of such housing stock can be approached from two positions. Firstly, the historical center is undergoing renovation with the preservation and renewal of the old supporting housing stock, valuable in terms of preserving the town-planning and architectural characteristics of a certain time. Secondly, the housing development of the period of mass industrial housing construction is undergoing renovation.

Renovation of obsolete housing is a complex of architectural and construction measures for the renovation of the housing stock in connection with the moral or physical deterioration of buildings [19, p.133].

In general, measures to renovate obsolete housing should be comprehensive and cover all aspects of the housing stock, from technical and energy efficient to social and economic. Each renovation project must be tailored to the specific conditions and needs of the occupants, and must be carried out with economic efficiency and financial sustainability in mind.

Exploring the topic of renovation of an outdated housing stock, the following modern aspects were identified: architectural and stylistic, compositional and historical, structural and planning, filling, environmental, energy efficient and visually comfortable. Each of these aspects has its characteristic features and implementation techniques.

The structural and planning aspect of the renovation of obsolete housing includes the following methods: superstructure, arrangement of attic floors, reconstruction with redevelopment of floors and premises, and addition of additional volumes. At the same time, one of the most common renovation methods is the arrangement of the attic floor in the attic space, which is confirmed by foreign experience, in particular Germany.

The practice of arranging attic floors has shown its effectiveness, since it provides additional living space with a simultaneous reduction in construction costs (compared to a new building), as well as improved energy efficiency and the appearance of the building. Re-planning of floors, arrangement of attic floors, decorative-visual and thermal modernization of facades make it possible to update housing within the same building site, without increasing its area [20].

The increase in the size of the premises on the floor is carried out with the help of an extension to the house of additional volumes (glazed balconies, loggias, bay windows, projections), resulting in an increase in the area of living rooms, kitchens, baths, corridors, bedrooms, etc.

The extension of additional volumes at the ends of buildings on free plots, as well as the building up of gaps between densely built houses after the demolition of obsolete houses, are used to compact urban development and accommodate additional housing, service elements, etc.

One of the most important aspects of renovation in modern conditions is environmental, which is implemented by such methods as vertical gardening, roof gardening, etc. They are used to increase the area of green spaces in cities with dense buildings, where the problem of lack of free territories is very acute. Vertical landscaping of facades allows you to regulate the thermal regime of the interior of the building and create microclimatic conditions that are comfortable for the residents of the house, as well as increase humidity, reduce wind load and noise level, which is quite important for large cities [23, p. 62].

The energy-efficient aspect of renovation provides for insulation (thermal insulation) of external building envelopes, architectural and construction measures to increase the wear resistance of walls and the entire building as a whole, the

establishment of renewable energy sources, and the modernization of the building's appearance. This is implemented by architectural means and is based on the use of certain technological methods, high-quality, perfect, energy-efficient and environmentally friendly materials.

Modernization of facades is the content of the visually comfortable aspect. For its implementation, finishing materials of various textures and colors are used, lattice railings for balconies and loggias, windows modern in shape and color, entrance groups of different volume-spatial solutions, as well as attic and roof superstructures in shape.

In general, renovation should be aimed at improving the living conditions of people, improving the microclimate of the building, and improving the appearance of buildings. And in view of the fact that the main part of the development of settlements belongs to the housing stock, its renewal can radically improve the whole look of the city as a whole, increase its comfort.

Factors affecting the renovation of obsolete housing stock

Identification of renovation opportunities for obsolete housing stock is carried out after determining the factors influencing the formation of residential development.

Factors that determine possible ways for further renovation are usually divided into two groups - external and internal.

External factors include: regulatory, natural and climatic, landscape, urban planning, scientific and technical, socio-economic factors.

Natural and climatic factors are based on the peculiarities of the climate of the region, they include: soil, temperature, humidity, insolation, noise, wind and aeration regimes, etc. Natural and climatic factors have a significant impact on the architecture of housing, in particular, on the choice of materials and structures. A comfortable environment for human life is formed when both regional (climate characteristic of vast territories) and local (climate characteristic of a particular area) microclimate are taken into account.

Landscape factors relate to the nature of the natural environment (landscape features, the presence of water surfaces, vegetation, etc.).

Urban planning factors (location, site size, etc.) are based on such concepts as the frame and fabric of the urban system. The frame is the main axes and nodes of the transport infrastructure with territories gravitating towards them, occupied by important infrastructure facilities of the city. The frame fixes the geometry of the plan and leads the trends in the territorial development of the city; it is formed by absorbing fabric. The fabric of urban development is the territory of the city occupied by residential, public and industrial buildings.

Urban planning factors have a significant impact on the formation of residential development and the choice of renovation methods. After all, the location in the city, the configuration of the site, etc., will determine some of the features and characteristics of residential development. For example, in historical centers, they usually focus on maintaining and repeating the geometric configurations and sizes characteristic of the environment.

The scientific and technical factor - the development of science and technology contributes to the improvement of the construction business and the further development of construction and architecture. In the field of architecture and construction science, the development of the latest technologies, structural systems, and materials is of significant importance, since it leads to an improvement in the structural systems of buildings, reduces construction time, increases durability, etc.

Socio-economic factors are based on such concepts as density, age group and investment ability of the population, they are one of the main factors among those given, since they have a significant impact on the development of housing construction in general and on the renovation of outdated housing stock in particular.

Among the given economic factors, it turns out to be the most important, since it determines the possibility or impossibility of renovation, which depends primarily on the investment ability of the population.

Internal factors include: socio-demographic, geometric, architectural and planning, space-planning factors [22].

The socio-demographic factor takes into account a number of features: the structure and composition of families, age distribution, population size and growth

rates. These indicators have a significant impact in determining the volume and pace of construction or reconstruction of housing.

When designing, building or reconstructing typical residential buildings, the demographic factor affects not only the number of rooms in an apartment, but also takes into account that a person changes in many ways throughout his life, which causes a change in his needs and requirements for housing.

The social factor takes into account the characteristics of human life, which are formed depending on the profession, place of work, moral values, upbringing, education, living comfort, etc. [21, p.170].

The geometric factor takes into account a number of features: shape, size, relative position of housing elements (rooms, apartments, houses). This factor has a significant impact not only on the appearance of the building, but also on the formation of the urban environment throughout the quarter. Therefore, it is very important to take into account these indicators in order to create the most comfortable environment for human life.

The architectural and planning factor (re-planning within the existing volume) takes into account the peculiarities of human life, changes in housing requirements and human needs in a particular housing.

The space-planning factor (an extension, a superstructure, an attic, a parking lot) takes into account the density of the surrounding buildings, the population, the composition of families, the ability to make certain investments, the average number of cars in families, etc. During renovation, this factor affects the compaction or flattening of the building, the appearance and condition of the building, and leads to an increase or decrease in the number of residential and non-residential premises.

So, the renovation is clearly positive, because the ongoing changes are aimed at improving the aesthetic appearance of the building, increasing the comfort indicators of apartments, increasing energy saving and environmental friendliness.

Analyzing the above, we can propose the following architectural approaches to the renovation of obsolete residential buildings:

- systemic (taking into account all aspects of renovation in their systemic unity with the expected achievement of the desired synergistic effect from the standpoint of the integrated quality of housing);
- historical (concerns style, facade solutions, number of storeys, materials and aims to reproduce in the new building the historical features of its predecessor without antagonism (harmonic combination) with the preserved part of the historical building);
- humanistic (human-centrism - purposeful education based on the synthesis of the arts);
- town-planning (competent fit into the frame of the city);
- compositional (compositional integrity and manipulation of volumes and forms);
- environmental (organic integration into the environment, proportionality and lack of dominance);
- innovative-parametric (parametric architecture corresponds to the spirit of the times);
- modern (creative design based on modernity and history).

All these approaches have a complex manifestation and three levels of implementation: passive, compromise, active.

Conclusions

Renovation of outdated housing stock is an important task to ensure comfortable living conditions for the population and improve the urban environment. Modern aspects of renovation of obsolete housing stock include the following:

- **Energy Efficiency:** Renovation of the housing stock should be aimed at improving the energy efficiency of buildings, which reduces the cost of heating and air conditioning, as well as reduce the negative impact on the environment.

- Improving the quality of housing: renovation should be aimed at improving the quality of housing and creating comfortable living conditions, including the renovation of finishing and repair of engineering systems.

- Social component: when renovating, it is necessary to take into account the interests of residents, including the preservation of social infrastructure, the improvement of public spaces and the creation of favorable conditions for social adaptation.

- Consideration of historical and cultural value: when renovating, it is necessary to take into account the historical and cultural value of buildings and to preserve architectural elements that are important for the urban environment and cultural heritage.

- Engaging the private sector: Involving private investors and stakeholders is important for large-scale renovation projects to create effective financing models and speed up the implementation process.

- Use of new technologies: modern technologies such as remote control and monitoring can be used in renovations to ensure the efficiency and quality of work.

In general, modern aspects of the renovation of obsolete housing stock include not only improving the quality of housing and the urban environment, but also social, environmental and economic aspects that should be taken into account when developing and implementing projects.