

Organizational and technological aspects of major repairs in the maintenance and operation of the housing fund

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Abstract. One of the tasks of a state is to create decent living conditions for the population, which includes providing people with high-quality and comfortable housing. However, over time, housing is subject to wear and tear, becomes outdated and unsuitable for use. Major repair measures are being implemented with the goal to slow down and prevent rapid deterioration of housing. Such measures are aimed at restoration, reconstruction and replacement of structural elements of residential buildings that have fallen into disrepair. Major repair of housing is a set of organizational, technological and economic measures aimed at reducing and eliminating the physical wear and tear of an apartment building. Major repairs were studied using the example of the Russian Federation, where there are two forms of deduction of contributions for major repairs of apartment buildings by the owners of premises therein: either to a special account opened by the owners of apartment owners of the building at a special bank, or deductions to the so-called “common pool”, i.e., to a general account of the regional major repair system operator. The system of major repairs of apartment buildings in the Russian Federation is based and implemented on a regional principle. Regional funds and regional major repair programs are formed within the regions. Provision of decent living conditions for the population and preservation of the housing fund of municipalities, being the most important task of modern socio-economic development of society, depends on the efficiency of the major repair system.

1 Introduction

Housing is a necessary component of the life of a population and is an important factor determining the level and quality of life of both individual households and society as a whole. The living conditions of a population directly affect the comfort of living in a particular locality, shape the readiness and ability to work, and determine the well-being of citizens as an element of material wealth [1]. The importance of housing in public life has increased after housing began to have its own direct value: being bought and sold on the market, i.e., it acquired the property of availability for a price depending on the level of

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income of citizens, conditions of the housing market, and the standard of living of society as a whole [2-4].

Housing construction in the Russian Federation has acquired a trend of stable positive growth during the last decade, which is reflected in the increase in the area of housing fund in the country [5]. Thus, the housing fund of the Russian Federation is steadily increasing and by 2020 its area has increased by 38% in comparison to 2005, reaching 4 billion sq. meters (Fig. 1) [6]. However, along with the increase in the area of the housing fund, there is also an increase in the area of dilapidated and rundown housing, which is one of the problems of the socio-economic development of the country's municipalities [7]. Therewith, even the increased rate of commissioning of new housing due to multi-apartment construction has not yet made it possible to solve this issue and the area of dilapidated housing fund unsuitable for the population continues to remain at a high level [8].

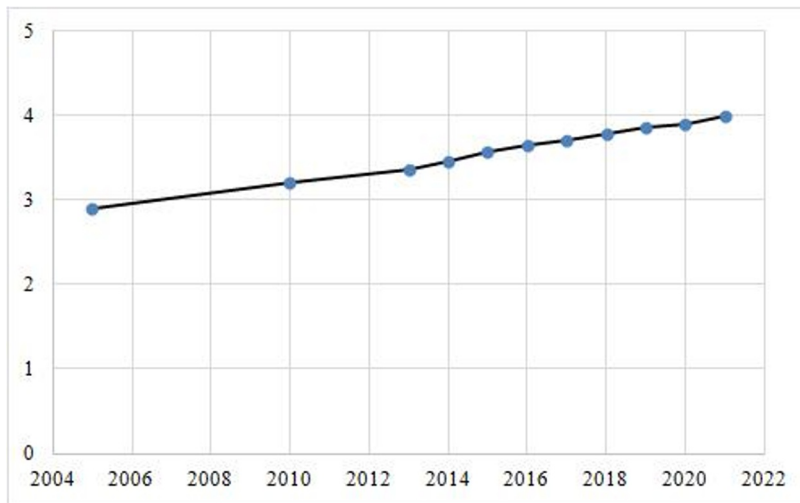


Fig. 1. Housing fund size dynamics of the Russian Federation, 2005-2021, billions sq. meters of total area of residential premises [6].

To overcome this situation, the most effective measure might be the major repair, which allows for maintaining living conditions of the population at an acceptable level and quality for living on the basis of relatively small expenses in comparison to the purchase of new housing or the cost of demolishing the obsolete fund [9, 10]. Therefore, major repairs can be considered a unique alternative to new construction and an effective way to restore the housing fund to the required quality characteristics suitable for permanent residence of the population. In this regard, major repairs are of important value in the system of key areas of development of both the state as a whole and individual regions and municipalities, as well as families.

One of the key goals of the socio-economic development of Russia is to improve the living conditions of the population, including by means of reducing the share of dilapidated and rundown housing [11]. The solution to this problem is possible only on the basis of creating a stable system of major repairs of housing, which makes it possible to stop the obsolescence and degradation of the housing fund in the future, to bring the housing fund of municipalities into proper form, which would satisfy the everyday needs of the population, to implement the renovation of buildings as one of the forms of improving the comfort of accommodation conditions [12]. Significant progress in this regard has already been made since the mid-2010s based on the introduction of a monthly contribution for major repairs by the owners (tenants) of residential premises.

However, the rise in cost of building materials and the obsolescence of the housing fund due to the time of construction has not allowed to completely solve the issue of eliminating hazardous and dilapidated housing in the country, even despite the intensification of housing construction and the growth of the primary housing market, including through more affordable mortgage programs (primarily for young families, large families and other socially vulnerable groups). In this regard, the relevance of the issue of housing quality remains and requires a solution.

2 Research materials and methods

Housing is a fundamental vital weal of society; it creates conditions for the reproduction and development of vital human forces and the psychological climate in the family and society [13]. Therefore, the quality of living conditions of a population is an integral element and an important indicator of the quality of life of society. Housing also shapes the investment attractiveness of a territory, since the improvement of living conditions of a society is carried out through new construction, which requires investment. In addition, housing construction has a significant multiplier effect on other sectors of the economy - it activates the production of building materials, wood panels and lumber, cement, metal structures, glass, polymers, construction accessories, metalware, affecting many related allied industries.

Currently the housing problem in Russia has become one of the most pressing and at the same time quite successfully resolved issues. This is manifested not only in the growth in the volume of housing built annually (Fig. 2), but also in the improvement of the housing supply of the population (Fig. 3). However, along with the growth of housing construction, housing prices have also increased [14]. High prices per square meter in apartment buildings under construction, on the one hand, and limited family budgets due to the low level of income of the majority of residents of the Russian Federation, on the other hand, are the two main reasons that have not yet allowed for a significant improvement in the living conditions of the population. The low availability of new housing for mass purchase by the population, combined with the high degree of deterioration of residential buildings, leads to the fact that the problem of the condition and quality of the housing fund remains incompletely resolved.

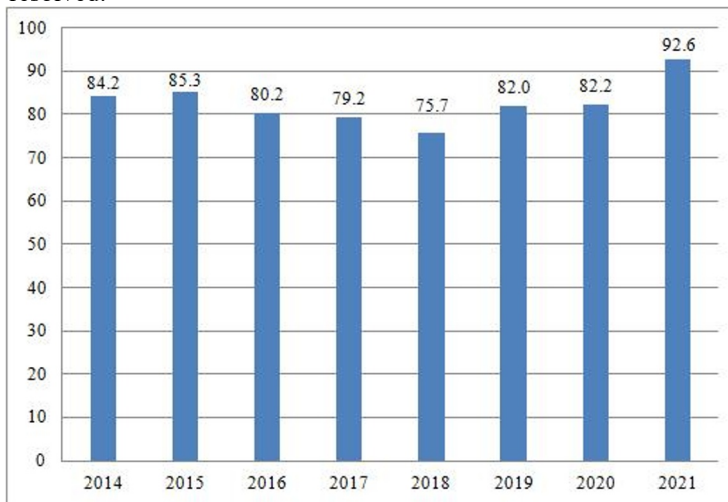


Fig. 2. Volume of housing commissioned annually in the Russian Federation, 2014-2021, million sq. meters of total area of residential premises [6].

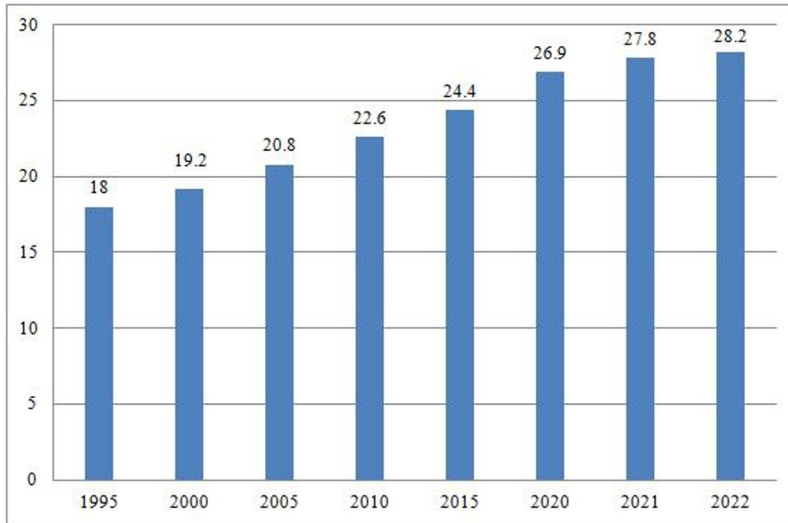


Fig. 3. The total area of residential premises in average per resident of the Russian Federation, sq. meters [6].

The reason for this is the insufficient pace of housing commissioning in a number of regions of the country and the insufficient attention of regional and municipal government authorities to the need for development of housing construction in their territories, which does not contribute to the increase in the size of the housing fund against the backdrop of its increasing obsolescence.

Fundamental changes in this regard occurred only in the 2010s, when the growth rate of housing construction increased and at the same time the implementation of a set of measures for the major repair of multi-apartment residential buildings in Russia was accelerated. Thus, compared to 2012, the volume of housing commissioned annually in the Russian Federation increased by 40% and exceeded 92 million sq. meters in 2021. However, we shall note that this is not sufficient, because the standard established as the need for active renovation of the housing fund in the country is 1 sq. meter per person, and with such a volume of housing construction this figure is only 0.64 sq. meters.

The still insufficient pace of renovation of the housing fund in the country is also evidenced by the share of the total area of residential buildings introduced in relation to the total area of the housing fund of the Russian Federation. Although this indicator has been increasing in recent years (Table 1), it is still low – just over 2% per year. This means that the housing fund in the country is being renewed by only 2.29% due to new construction, which is clearly not enough.

Table 1. Share of the total area of residential buildings introduced in relation to the total area of the housing fund of the Russian Federation, 2018-2021, %.

Year	2018	2019	2020	2021
Share	2	2.10	2.10	2.29

At the same time, we shall note an important positive trend: in Russia as a whole, the volume of housing commissioned annually per 1000 people is increasing. Despite the fact that the dynamics of this indicator is not direct, its growth is clear and noticeable. Thus, compared to 2000, the amount of housing commissioned annually per 1000 residents in 2021 increased by more than 3 times, and compared to 2010 - by more than 1.5 times.

Currently, the housing fund of the Russian Federation exceeds 4 billion sq. meters, whereas its composition is dominated by apartment buildings. According to the Ministry of

Construction, Housing and Utility Services of Russia, over 45% of the total number of apartment buildings in the country required major repairs in 2020. In this regard, the issue of major repairs of housing for the purposes of maintaining it in proper quality condition is relevant.

3 Results and Discussion

The system of major repairs of residential apartment buildings in the Russian Federation began its formation in the 2010s, making its way quite successfully into the consciousness of citizens as a necessary condition for the formation of their civilized living conditions. Major repairs are those carried out to improve the condition of a building as a whole and those that include eliminating deficiencies, replacing worn-out elements, and improving the performance characteristics of the common property of apartment buildings.

The domestic system of major repairs of apartment buildings includes the following organizational and technological measures [15, 16]:

- Improving the condition of all communications in the building (resource consumption networks - energy, water, gas, heat supply) and sewage.
- Adjustment of elevator shafts, maintenance of elevators, as a result of which individual parts may need to be replaced or adjusted, and in some cases, further use of the elevator as a whole is considered impractical.
- Restoration of damage to the roofing, preventive repairs.
- Maintenance and repair of basements.
- Restoration of the facade of apartment buildings.
- Repair of the foundations of apartment buildings.

Major repairs of apartment buildings constitute a large-scale and expensive event, requiring significant financial investments. Methods for accumulating financial resources for carrying out major repairs of apartment buildings are various and differentiated. The Russian system of major repair is based on monthly contributions from homeowners to a regional fund. This provision was enshrined in law at the end of 2012 through the introduction of amendments to the Housing Code of the Russian Federation.

Two systems for accumulating contributions for major repairs of apartment residential buildings in the Russian Federation were established in that same year. The first system involves the apartment building management company or a homeowners association opening a special account, which they themselves can use for major repairs of only their building (Fig. 4).

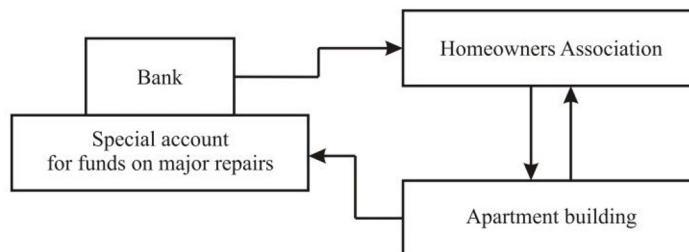


Fig. 4. Schematic diagram of the major repair system using a special account for an apartment building.

The second form of accumulation of contributions for major repairs operating in the regions of the Russian Federation can be called the “common pool system”. It lies in the fact that a special management structure, the Operator of the Regional Major Repair Fund, is created in the region. It creates a common account for all apartment buildings, into which

all contributions for major repairs from these buildings are collected. At the same time, payment for major repairs of any of the buildings participating in this system is taken from that common account - as if from a single pool (Fig. 5).

Each of the current major repair systems in Russia is far from ideal and has both its advantages and disadvantages. The owner of premises in an apartment building must bear the burden of maintaining their property, and not the property of their neighbor on the street, city and region. According to experts in this field, the cost of an apartment in a thoroughly renovated apartment building will rise in price by approximately one-third. As a result of this, when paying contributions to a regional major repairs fund, the owner advances their funds for the capitalization of someone else's living space.

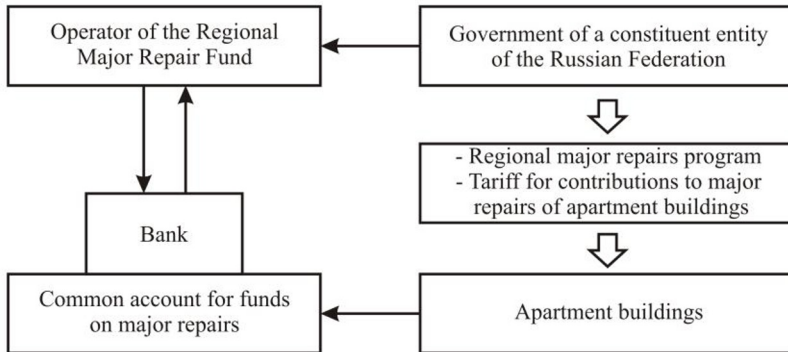


Fig. 5. Schematic diagram of the payment of contributions for major repairs as per the “Common pool system”.

The “common pool” system may resemble a financial pyramid to a certain extent. This is due to the fact that new buildings recently included in the regional major repairs program may simply not have enough funds that were spent on renovating other buildings at a higher cost estimate due to rising costs of materials and labor. Funds set aside for building renovations can be “eaten up” by inflation over an accumulation period of 15-20-30 years; the bank in which the regional operator holds a savings account may experience financial difficulties or even undergo bankruptcy proceedings.

On the one hand, the process of accumulating financial resources on the account of a regional operator has more advantages, since it eliminates any responsibility for the safety of their intended expenditure from the owners. The only task for the owners will be the need to make timely contributions to the major repair fund. This is largely preferable for residents who live in apartment buildings that have long been in need of repairs due to the high degree of wear and tear and poor condition of their housing. Owners of apartment buildings that are at a low level of wear and tear, for example, those commissioned relatively recently, i.e., those that do not need urgent repairs, will be forced with this approach to pay for major repairs as if in advance, until their house reaches a high level of wear and tear and is recognized as in need of major repairs. With an individualized format for collecting funds for major repairs, responsibility for the collection and safety of the collected funds becomes fully the responsibility of the apartment owners. In this case, their advantage is the ability to choose the use of collected funds and direct targeted control over their expenditure in selected areas and purposes.

The legislation defines a set of works and services for which financial assignments are allocated from a major repair fund, the maintenance of which is the responsibility of the regional operator. It is the regional operator who not only forms a fund for major repairs, but also sets the minimum amount of contribution for major repairs in the region together

with the regional executive authority, which is fixed by the relevant regulatory act of the constituent entity of the Russian Federation. At the same time, the scope of work that should be included in major repairs, based on the value collected according to regional minimum standards, can be supplemented with other types of services and (or) work that can be introduced by the regional operator in agreement with regional government authorities. Provided that the general assembly of owners of apartment buildings has decided to introduce a higher amount of contributions for major repairs in their building, then the amount of funds generated as a result of such an increase in cost can be applied to the corresponding repair measures.

Regional authorities, when determining the amount of public contributions for major repairs, rely on a number of criteria reflecting the state of the apartment buildings fund in the region, namely, the age of residential buildings, the level of its wear and tear are taken into account, and also revenues of the regional budget and its redistribution to municipalities are taken into account for the purposes of supporting the housing policy. Therewith, some difficulties arise due to the fact that the most dilapidated and worn-out fund of apartment buildings is located in constituent entities of the Russian Federation with a depressed state of the economy and the standard of living of the population. As a result, the incomes of residents of such regions are not so high as to sufficiently ensure the replenishment of the regional major repair fund for the complete implementation of repair activities. This negative situation significantly slows down the possibility of its prompt renovation and carrying out the necessary organizational and technological measures for repair and construction production, and, on the contrary, aggravates the current situation with the quality of the housing fund in the municipalities of the region. As a result, a system for adjusting the system of payment of contributions for major repairs may be considered objectively necessary in this situation, suggesting the introduction of a kind of state minimum for the payments made in the form of a constant and equal amount of money for all regions and covered by government funding. Such an innovation would, to a certain extent, make it possible to reduce the spatial differentiation of fees for major repairs in individual regions of Russia, which is significantly evident when analyzing regional statistics and causes disagreement among the population as an element of territorial injustice.

4 Conclusion

Since its introduction, the implementation of the major repair system has been constantly associated with numerous difficulties of organizational, institutional and financial nature. These include the weak legislative basis of this system of collecting contributions for major repairs, failures in the interaction of municipal authorities with enterprises carrying out repair work under a contract and owners of housing falling under the major repair program, low financial discipline in collecting contributions for major repairs, which creates shortage of funds for major repairs, lack of understanding on the part of the population of the need to pay for major repairs of their current buildings in the deferred future. In addition, this system covered only apartment buildings, whereas private low-rise households predominate in small towns and rural settlements, which are also deteriorating, disrupting both the general appearance of the municipality and creating problems for local administrations in terms of the need to bring the level of development of the settlement to acceptable standards and conditions.

Considering the already accumulated experience in implementing a system of major repairs of multi-apartment housing in various regions and municipalities of the Russian Federation, we can state the need to strengthen the function of federal and regional authorities in the system of measures to implement the organizational and technological

aspects of repair and construction production in the existing housing fund. The only effective tool in this regard is recognized to be the transfer of a portion of the financial costs for the implementation of major repairs to the residents - apartment owners themselves, as well as the use of borrowed funds from banks in the form of targeted loans for housing repairs and the involvement of extra-budgetary resources of municipalities and regions. Another important task is the constant maintenance of a high level of collection of contributions for major repairs, which are paid by the population on a monthly basis. It is the timely collection of such payments that contributes to the timely implementation of technical work on major repairs. Thus, it is the consolidation of resources of the public and private housing sectors that is the main factor contributing to the improvement of the quality characteristics of multi-apartment housing fund and the increase in the comfort of living therein for the population in modern conditions.

Therefore, when examining the modern system of major repairs of housing in Russia, we can note that the major repair fund and its regional operators arose with the goal of streamlining the work on major repairs in apartment buildings and stopping the avalanche-like flow of buildings deemed hazardous. The fund exists with money from the budget, and spends contributions only on major repairs of buildings. The mission of the major repair fund is to be a professional customer of services and to control the quality of execution and progress of major repair work. At the same time, the system of major repairs that has developed in the Russian Federation is not static, it changes in accordance with the needs of society, including on the basis of the discovery of new problems (for example, major repairs of residential buildings classified as objects of historical and cultural heritage) or criticism on the part of specialists (for example, additional benefits were introduced for the payment of contributions for major repairs of apartment buildings for some socially vulnerable categories of the population, in particular, disabled people of various groups). We believe that the interests of municipalities should be more actively taken into account in the major repair system, including through the involvement of municipal authorities directly in the process of developing plans and accepting major repairs of buildings on their territory.

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