



*Ukrainian Economy*

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**ANALYSIS OF EFFICIENCY RENOVATION  
OF HOUSING ON EXAMPLE  
OF EUROPEAN COUNTRIES**

**Abstract**

This article presents detailed calculations related to the analysis of efficiency renovation in Germany and Latvia. The calculated parameters made it possible to analyze the feasibility of a renovation, the results to which it resulted. Also in the article are used in modern building methods renovation.

**Key words:**

Investment, economic efficiency, renovation, modernization, income.

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## Introduction

**Formulation of the problem.** For the qualitative renovation of housing needed investment, but so long as the building process, the cost of new housing is high enough, these investments are very long-term for investors and they must be sure to return their investments. Accordingly, there is a need to identify accurate indicators reflecting the economic efficiency of investment in renovation.

**Analysis of recent publications.** This issue has for a long time considered in detail the relevant economic literature, both domestic and European. In particular, this issue is raised in the works of local authors as Maltsev K., Oleynyuk O., Kornilova O., Also in such foreign authors: Samuelson P., Nordhaus E., Gram-Hanssen K., Mahapatra, Kolykov S.

**Part of the problem unsolved.** Despite the variety of practical projects for renovation, still to encourage investors is an important issue. The main reason for unwillingness to invest in this sphere is the risk of non-profit investments. The article is dedicated on the practical examples of two European projects renovation cost effectiveness of these investments.

**The aim of the article.** Shown on the example of already undertaken renovation projects, how effective are investing in this area for most investors, cities, residents of the district.

## The basic material

Renovation – a demolition with the following reconstruction or overhaul, restoration, modernization, reconstruction of the building. In the article considered the renovation of housing. In his turn housing – a set of living quarters, regardless of ownership: residential and special buildings (hostel, residential homes for the elderly and disabled, orphanages, boarding schools and in boarding schools), apartments (including in the apartment buildings), manor apartment houses, office premises and other premises in buildings suitable for living. Basic definitions required to understand the definition of housing, a «residential house» and «living quarters»:

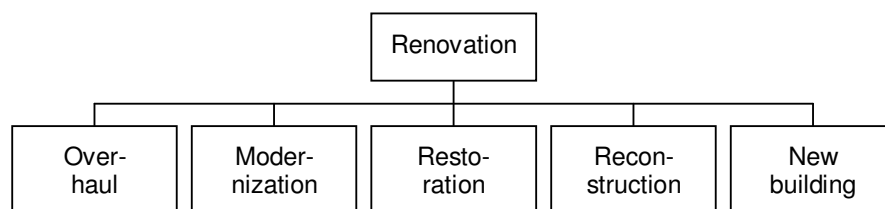
According to the Civil Code of Ukraine (Civil Code of Ukraine (amended on 06.17.2014)), a residential house – a building capital type, built in compliance with applicable law, other legal acts, and for permanent residence in it (Art. 380

Civil Code of Ukraine). In his turn living quarters – a heated room, located in the above-ground floor, designed for living and that meets sanitary and epidemiological requirements microclimate and air, natural enlightenment, permissible levels normalized parameters of noise, vibration, ultrasound and infrasound, electrical and electromagnetic fields and ionizing radiation (Annex B DBN V.2.2-15-2005 buildings. Residential homes. The main provisions (2005)).

Renovation of housing – a cyclic process that includes a general sequence of transformations housing and renovation techniques presented in the scheme below.

*Figure 1*

**Methods of renovation**



A total renovation of housing is a complex construction work to restore, replace or enhance specific parts of residential buildings or entire structures, parts and engineering equipment due to their physical depreciation (Decision of the Board of Moscow N 28 (2003)).

Modernization of housing is a complex construction, providing improved consumer and operational qualities of residential buildings without restructuring the objects themselves. Modernization can eliminate their functional wear, and are generally limited to the interior redevelopment, improvement of existing engineering systems (Decision of the Board of Moscow N 28 (2003)).

Restoration of housing – a complex building works that provide a full recovery of the lost art architectural, engineering, construction and historic appearance of residential buildings (Decision of the Board of Moscow N 28 (2003)).

Reconstruction of housing – a complex construction work related to the change of the main technical and economic performance of residential buildings – the number and area of apartments, construction volume and the total area of buildings, and destination premises (Decision of the Board of Moscow N 28 (2003)).

The need for renovation for city and society are clearly defined in many countries. For investors, it is profitable, long-term contribution. Speed of receipt and amount of profit depends on the project (if the project concerns the reconstruction only housing complex, it will be a long time to pay off the project, but if on the site is also an entertainment complex, shopping centers, the payback times increase), and he takes on the quality investment decisions. The main criterion for investment decisions acting correctly calculated value of the project and as a result, the cost per square meter of new housing.

As a result of the renovation of residential buildings housing improves quality and increases its value as an economic good, product and source of income as a result of improved consumer and economic characteristics of objects. As a result of the renovation of residential buildings housing improves quality and increases its value as an economic good, product and source of income as a result of improved consumer and economic characteristics of objects, the development of the city as a tourist destination, as well as of renovation can reduce heating costs, which positively influences the welfare of the city and its inhabitants.

Economic efficiency – it is possible to obtain maximum goods from the resources available (Samuelson P. A., Nordhaus V. D. (1997)).

Efficiency renovation can be viewed from different perspectives, for example in terms of efficiency renovation of investors can be described as the ratio of the total funds received from the sale and the amount of rent (in the article chosen the best option term of 30 years, the calculations are presented in Table 1) to the sum of invested in the project investment.

For residents efficiency renovation appears primarily in getting high-quality, comfortable accommodation, as well as saving money each month to pay for heating gas.

From the benefit to the city and district point of view, effectiveness of the project renovation manifested in ordering residents receiving income from taxes, improving infrastructure area. One of the most successful projects is the renovation of Hafen-City (Germany) (Official site of the project Hafen-City) and to approximate the results to the Ukraine, for calculations taken Jelgava (Latvia).

1. The amount of income by purchasing 40% of non-residential premises billion. € (10) = ((area for industrial and public sector (1) + Office space, m<sup>2</sup> (3) + area for educational and cultural purposes, m<sup>2</sup> (4)) x 0.4) x average cost € / m<sup>2</sup> commercial premises (9).

2. The amount of income when renting commercial property 60% (based on 30 years lease) billion. € (11) = (((area for industrial and public sector (1) + Office space, m<sup>2</sup> (3) + area for education cultured purpose m<sup>2</sup> (4)) x 0.6) x Rental price € / m<sup>2</sup> (14) x 12) x 30.

Table 1

**Efficiency investment in renovation of European countries**

| No | Parameters  | Germany                      | Latvia    |
|----|---|------------------------------|-----------|
| 1  | Area for industrial and public sector, m <sup>2</sup>   | 210000                       | –         |
| 2  | Living quarters area, m <sup>2</sup>  | 695000                       | 45000     |
| 3  | Office space, m <sup>2</sup>  | 1130000                      | –         |
| 4  | Area for educational and cultural purposes, m <sup>2</sup>                                    | 311000                       | –         |
| 5  | The average size of the apartments, m <sup>2</sup>  | 70                           |           |
| 6  | Investments billion. €  | 2,4 – budget.<br>8 – privat. | 0,068     |
| 7  | Average cost, €   | 210000,00                    | 133000,00 |
| 8  | Average cost € / m <sup>2</sup> premises  | 3000,00                      | 1900,00   |
| 9  | Average cost € / m <sup>2</sup> commercial premises   | 4000,00                      | –         |
| 10 | The amount of income by purchasing 40% of non-residential premises billion. €                 | 2,64                         | –         |
| 11 | The amount of income when renting commercial property 60% (based on 30 years lease) billion € | 6,42                         | –         |
| 12 | The amount of revenue the purchase of non-residential premises billion. €                     | 6,60                         | –         |
| 13 | The amount of revenue the purchase of apartments billion. €                                   | 2,09                         | 0,09      |
| 14 | Rent cost € / m <sup>2</sup>  | 18,00                        | 11,00     |
| 15 | Efficiency investments, %   | 107,2                        | 125,9     |

3. The amount of revenue the purchase of non-residential premises billion. € (12) = (area for industrial and public sector (1) + Office space, m<sup>2</sup> (3) + area for educational and cultural purposes, m<sup>2</sup> (4)) x average cost € / m<sup>2</sup> commercial premises (9).

4. The amount of revenue the purchase of apartments billion. € (13) = living quarters area, m<sup>2</sup> (2) x average cost € / m<sup>2</sup> premises (8).

5. Efficiency investments, % (15) in Germany = ((yield at 40% of the purchase of non-residential premises billion. € (10) + yield for lease 60% of non-residential destination premises (based on 30 years lease) billion. € (11)) / Investments billion. € (6)) x 100%.

6. Efficiency investments, % (15) in Latvia = yield at purchase of apartments billion. € (13) / Investments billion. € (6) x 100%.

Because of the high cost of apartments in Germany they bought very slowly, only where this project was quite successful – providing public housing. The remaining apartments are too expensive, which is why investment is slowly paying off, as their effectiveness and impact rather high cost of rent is not living quarters.

Return renovation for project in Latvia is much higher. These happened because of partial renovation for insulation of the building and its repair and not complete demolition and reconstruction, as it was in Germany.

### **Conclusions**

Carrying out renovation for housing is important in numerous countries, including Ukraine. It is important in such projects is competent to attract investment. For capacity building in this regard it is important to pay attention to renovation for projects are implemented. The article was the example of two countries – Germany and Latvia. Based on the calculated data presented in the paper is especially important during the renovation for pay attention to the cost of housing created because the asset is of low income and gain on investment can be quite difficult. It is equally important aspect is to select the right kind of renovation for, depending on the initial state renovation object. Nor should we underestimate in this respect the role of the state, as we can see housing, which were reduced municipal prices realized much faster and bring income to investors as well as the state.

In the end, I would like to point out how effective was for renovation of the city. If you take the first item – Hafen-City it becomes apparent success of this project, the city became a successful tourist destination, was opened Port University, restored port, and thus was created thousands of jobs, provides decent housing, created the modern cultural object – the Opera House on the Elbe.

If you pay attention to the second object in question – Jelgava – we can also see many positive trends. Despite the fact that only held reconstruction, even it strongly influenced the welfare of the city and its inhabitants. Residential homes were significantly warmed, the apartment is renovated, and with it in no time, heating costs has dropped significantly.

We can therefore conclude that renovation for of an effective and for the city and its inhabitants, and for investors.

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