

SECTION 1. ARCHITECTURE AND CONSTRUCTION

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**1.1 Unbuilt residential buildings in Ukraine, 1980s-1990s years of construction.
Re-planning for the new realities and perspectives of its implementation**

Currently, negative trends in the housing market are a serious problem for the social, economic and political spheres of Ukraine. Which, in turn, affects the decrease in the possibility of purchasing housing for the majority of the population. This significantly affects the pace of economic development of individual regions and the entire country

The housing industry remains almost the only area that has not undergone significant changes. Thus, this issue is extremely relevant. The mentioned situation requires reform not only at the legislative level, but also regulation of relations between subjects of the residential real estate market. This regulation must be based on a fundamentally new basis, as it indicates the standard of living of the nation. The given approach should also indicate the presence of a vein in the middle class layer. And also: quantitative characteristics, economic development and legal justice in the state [1].

In the realities of external aggression and war, in which Ukraine has been for 9 years, the issue of creating a large amount of housing becomes acute. A large number of residential buildings were destroyed or temporarily occupied. According to data from the Ministry for Communities and Territories Development of Ukraine, as of June 1, three and a half million Ukrainians have damaged or destroyed homes. We are talking about 116,000 objects with a total area of 14 million square meters. Of them, multi-story residential buildings — 12.3 thousand (12 million square meters), individual estates — 104.1 thousand (1.7 million square meters). 3.8 thousand multi-apartment houses and 24.4 thousand individual houses suffered minor damage (up to 25%). 30,000 multi-apartment and 27,300 individual houses need restoration through new construction. Capital repair or reconstruction — 58,500 apartment buildings and 52,600 individual buildings [2].

Statistics of the Ministry for Communities and Territories Development of Ukraine show that 27,300 single-family residential buildings need full restoration and reconstruction. Such a number of houses will require significant financial infusions for complete restoration. In the realities of war, there is a need to find ways to optimize financial models for creating new housing.

If we set the final task: the implementation of housing in a single-family/cottage housing development with minimal financial and time costs.

Having examined the realities of residential development in Ukrainian settlements, point or even groups of unfinished residential buildings are characteristic. Such buildings are part of several waves of mass construction:

- a) the end of the 1980s - the beginning of the 1990s;
- b) the beginning of the 2000s - 2010s;
- c) the period before the start of the total war (Russian invasion of Ukraine in 2014, and especially from December 24, 2022);

1980s and early 1990s. This statement is confirmed both by the number of ads for the sale of these buildings and among blogs of foreign travelers [3].

This category of residential building has a list of problems related specifically to the architectural and engineering component. To understand this phenomenon, there is a need to study specific examples and analyze them.

During the review of the site for real estate sales, houses from 1980-1990 are singled out in a separate group. To study this issue, a search was conducted for the above-mentioned type of houses in the city of Lviv. An interesting fact is that all the found objects (except one) are located outside Lviv. At the same time, the sellers write in the ad that the houses are located in the city of Lviv. These houses are located in the suburban area, and are located near transport highways and have good connections with infrastructure facilities (see Fig. 1.). Such a location is attractive for housing for people who have an urban/urbanized lifestyle.

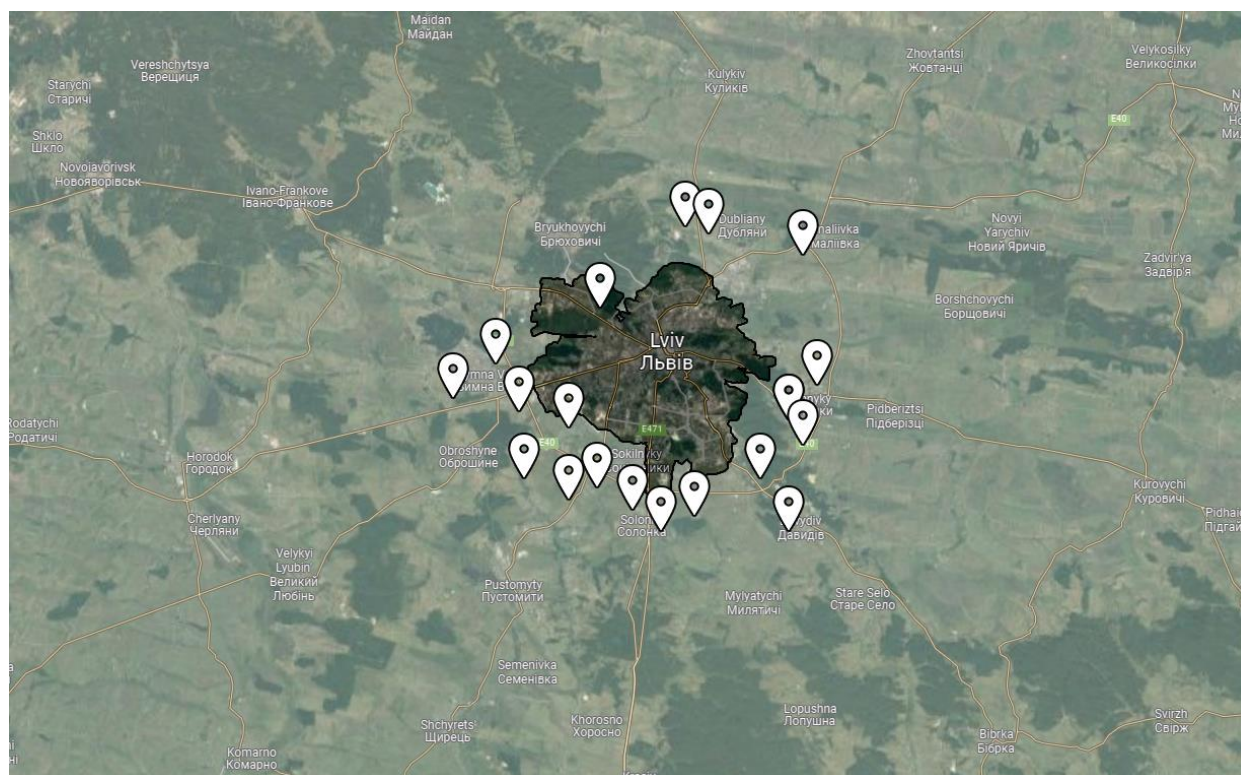


Fig.. 1. The location of unfinished residential buildings, which are sold on the OLX real estate platform and are treated as objects in Lviv.

Ukraine is not the only country with such problems. Similar problems exist in many countries. Problems with uninhabited or unfinished real estate around cities are not only a problem in countries with developed economies, but also in developing countries. Luxembourg has the same problem around the cities, there are many private abandoned or unfinished houses in the suburbs, although there is a significant need for housing in the cities. This issue is solved by legal mechanisms: the introduction of a dynamic system of taxation of unused or unfinished housing. Every year the tax amount increases and it becomes irrational for the owner to keep such an economic asset. In this way, this property is sold to a new owner or they independently complete the construction and operate this housing [4, 5, 6.].

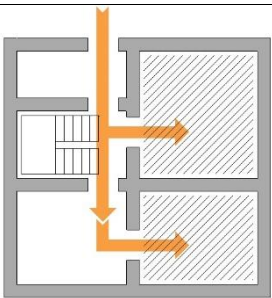
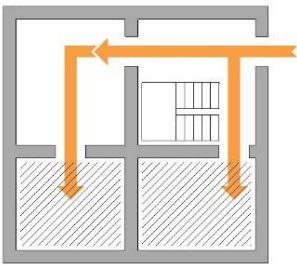
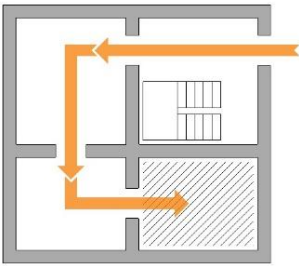
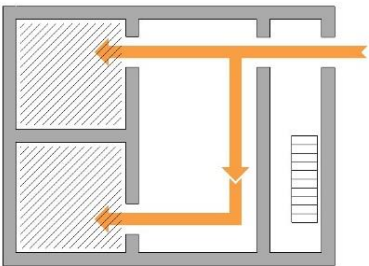
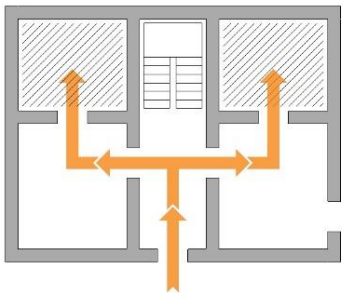
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№	Photo	№	Photo
1.		2.	
3.		4.	
5.		6.	

Fig.. 2. Examples of unfinished houses sold on the OLX platform and treated as objects in the city of Lviv.

After looking at typical examples of the exterior and general three-dimensional solution of houses from advertisements (see Fig. 2.) - an understanding of the uniformity and simplicity of constructive solutions emerges. Own architectural and life experience of interaction with this type of houses allowed us to single out characteristic layout schemes. Duplication of the planning solution for the first and second floors is characteristic. This feature is justified by placing not only load-bearing walls one above the other, but also partitions.

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№	Planning scheme	
1.		2.a 
2.b		3. 
4.		



- Isolated room, through which there is no transit.

Fig.. 3. Schemes of the organization of floors, a separate category of unfinished residential buildings of the 1980s - 1990s.

After looking at typical examples of the exterior and general volumetric solution of houses from real estate ads, an understanding of the uniformity and simplicity of structural schemes. Both architectural and engineering and planning features of such buildings are highlighted.

Planning features:

- a large number of walk-through rooms;
- the majority of rooms have hyperbolized/non-optimal areas;
- high floor height, which is often excessive;

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- non-compliance of the number of bathrooms/bathrooms with modern requirements;

- separate large and full-sized living rooms and kitchens;

- ill-conceived ergonomic staircases and frequent lack of organization;

Architectural and engineering features:

- lack of the required number of ventilation channels;

- low-quality materials and geometry of both load-bearing and non-load-bearing walls;

- many "cold bridges" that require the development of insulation units;

On the basis of the received data, the tasks for replanning should be formulated:

- implementation of modern approaches in the planning structure (isolation of passage rooms, unification of the kitchen and living room into a single space, arrangement of the correct number of sanitary facilities, provision of dressing rooms, arrangement of ergonomic staircases);

- organization of the required number of ventilation ducts and sewage systems;

- minimize changes in the configurations of external window fillings, if necessary, arrange the necessary openings.

The above-mentioned facts and materials can become the initial data for the project of the implementation of a mass redevelopment of unfinished residential buildings of the 1980s - 1990s. The identified category of unfinished buildings is a resource for the rapid creation of housing in an already formed and inhabited environment with existing infrastructure.

Buildings that meet the specified parameters have a commercial price and are widespread not only in a specific case (Lviv agglomeration), but are characteristic of all large and small cities and settlements of Ukraine. Therefore, the process of renovation and conversion of these buildings can be massive and cover the entire country.

For clarity, consider a real example of a building of a similar time of construction. This house is located in the same conditions of the suburb of Lviv - Vynnyky. The residential building has remained unfinished since the early 1990s.

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The object is located on one of the main highways of this settlement - Ivan Fanka Street. The house is made of three-dimensional materials and planning solutions. A similar type of house has a land plot of at least 5-6 square meters, and most often about 10 hundred square meters. - this makes it possible to create a comfortable layout of the site, without being squeezed into narrow dimensions.

Among the shortcomings, non-normative distances between neighboring residential buildings and our building should be noted, but this is argued by older planning recommendations and norms.



Fig.. 4. Schemes of the location of the research object in the suburbs of Lviv – Vynnyky

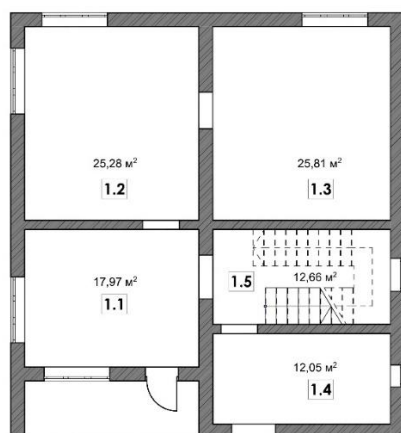
Photo capture shows both visual and conceptual similarities between the selected subject and the pre-exposed ones. The residential building is built of red brick and monolithic reinforced concrete floors. Visually, the building can be characterized as an object in a generally satisfactory condition, which is subject to possible reconstruction.

The proposed redevelopment model is a compromise. Compromise is determined by the financial side. Significant engineering interventions (namely, the installation of several groups of ventilation channels and sewer pipes) significantly increase the redevelopment. It becomes justified to use only one vertical channel for ventilation and sanitary infrastructure for the kitchen area, the bathroom of the 1st floor and the bathroom of the 2nd floor.



Fig.. 5. Photograph of the research object in the suburbs of Lviv – Vynnyky

Plan - 1st floor



Explanation of the plan - 1st floor

1.1 Room 17,97 m.sq.
1.2 Room 25,28 m.sq.
1.3 Room 25,81 m.sq.
1.4 Room 12,05 m.sq.
1.5 Room 12,66 m.sq.

Plan - 2nd floor



Explanation of the plan - 2nd floor

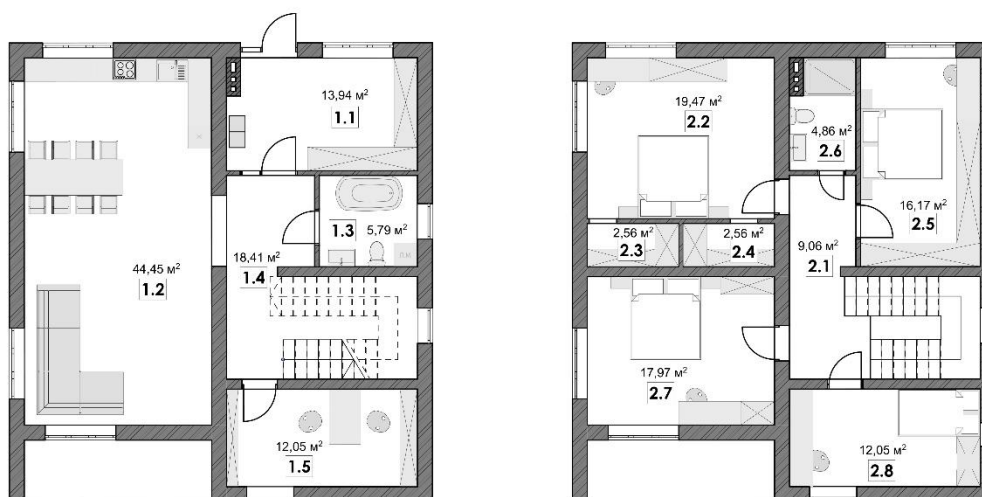
2.1 Room 17,97 m.sq.
2.2 Room 25,28 m.sq..
2.3 Room 25,81 m.sq.
2.4 Room 12,05 m.sq.
2.5 Room 12,66 m.sq.

Fig.. 6. Planning scheme of the research object in the suburbs of Lviv - Vynnyki

Plan - 1st floor

Plan - 2nd floor

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Explanation of the plan - 1st floor

1.1 Hallway 13,94 m.sq.
1.2 Kitchen-living room 44,45 m.sq.
1.3 WC 5,79 m.sq.
1.4 Hall 17,41 m.sq.
1.5 Office 12,05 m.sq.

Explanation of the plan - 2nd floor

2.1 Hall 9,06 m.sq.
2.2 Bedroom 19,47 m.sq.
2.3 Wardrobe 2,56 m.sq.
2.4 Wardrobe 2,56 m.sq.
2.5 Bedroom 16,17 m.sq.
2.6 Bedroom 4,86 m.sq.
2.7 Bedroom 17,97 m.sq.
2.8 Bedroom 12,05 m.sq.

Fig.. 7. Scheme of replanning of the research object in the suburbs of the city of Lviv
- the city of Vinnyki

The planning structure after the reconstruction has undergone significant improvement:

- availability of transit rooms is excluded;
- two bathrooms are arranged;
- monospace kitchen-living room is organized;
- rationally planned bedrooms, with provision for a wardrobe;
- arrangement of the entrance vestibule and outerwear storage area.

The engineering component underwent the following changes after the reconstruction:

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- a vertical channel is arranged to provide a ventilation system and a sewage system

Unfinished residential buildings of the 1980s and 1990s are a reserve for the rapid realization of housing for a large percentage of Ukrainian citizens in need of housing after the end of Russia's military aggression against Ukraine. The successful location of such objects near the existing infrastructure and residential buildings will allow for the rapid integration of new residents into the new environment.