The formation of residential complexes in the structure of Ukrainian largest cities

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Abstract. Previous decades saw a new type of housing format emerge in Ukraine – namely, residential complexes (RC). Following ongoing integration with European Union, Ukraine becomes included in a global stage of urbanization process, therefore accepting all positive and negative consequences of this stage. From the point of structure and planning, it means the formation of largest global world cities with their peculiar organization, and the appearance of multifunctional complexes, which constitute a specific structure of «city within a city» and subsequently form megalopolis, an urban system of highest hierarchy, from its base.

1. Introduction

Previous decades saw a new type of housing appear in the real estate sector of Ukraine – namely, residential complexes. These complexes range from multifunctional to including a limited amount of services, from low-rise to high-rise, from utilizing territory of several hectares to being comprised of a few structures. Still, all the instances of this type are relatively isolated objects realized by non-government construction companies in accordance with «city within a city» trend, meaning they are symbolically connected with urban context in a certain way and are often chaotically emergent without connection to project documentation of higher hierarchical levels – such as city master plan and detailed plan of the territory. Residential complexes can be situated in any structural elements of a city, ranging from its core to its influence zone, but they are always connected to the city’s transport infrastructure. Their emergence is usually dictated by economic expediency and availability of suitable territories for construction.

Taking aforementioned into account, it is deemed relevant by authors to identify the specifics of residential complexes’ formation, as well as their pros and cons, in the larger city’s structure as a realization of its self-organizing qualities under complex conditions of the modern stage of urbanization process.

The novelty of work is in studying urban complexes as modern structural elements of the city that form a new subsystem after being realized above certain numbers. Said subsystem is then capable of influencing the perspective formation of an entire urban system.

2. Few words about definitions

The concept of residential complex is recent in our country’s practices and does not have a normatively fixed definition at this time.
Existing sources often define residential complex (RC) as a single or, usually, several multi-apartment residential buildings united by common territory and common architectural style, thus forming a singular spatial and territorial unit.

The residential complex is viewed as a singular complex of real estate that is able to satisfy potential buyers’ needs in comfortable housing with developed household, cultural and social infrastructure, as well as car parking and landscaping of adjacent territories. The most often additions to these complexes are office and commercial functions.

The relevant sector of residential construction in Ukraine is developing rapidly in recent years. Substantial part of present residential complexes is situated in cities with population of million or above (Kyiv, Kharkiv, Odesa, Dnipro, Lviv). Most construction companies divide residential complexes into following classes: economy, comfort, business and elite. Meanwhile, according to State Building Codes (ДБН В.2.2-15:2019 «Будинки і споруди. Житлові будинки. Основні положення») the housing is divided into categories I and II.

The class of residential complex determines technology of its construction, assortment of building materials used, architectural specifics, services provided to tenants and the peculiarities of adjacent territory’s landscaping. It also influences the value of housing area per square meter, which is especially important for investors.

**Economy-class residential complex** is put into operation with minimally allowed parameters denoted in state building codes. It is comprised of small-area apartments and usually situated in residential districts of the city. Nevertheless, it has a reasonably well developed internal and external infrastructure, apartments with scenic views and a well thought-out planning. Said complex can consist of several dozen buildings, formed in accordance with a «city within a city» structural concept.

**Comfort-class residential complex** is built with use of novel materials and propose a greater level of comfort than previous class, as its name imply. Its buildings are constructed with red bricks, porcelain blocks or gas-blocks.

**Business-class residential complex** is a new level of primary real estate that proposes an individual design project, additional amenities and a greater level of security. It can be built in the central part of the city with use of modern materials, or it can be situated far from downtown surrounded by green zone.

**Elite-class residential complex** marks the highest level in primary housing. It often includes such amenities as direct elevator access to apartment, panoramic terraces and the heightened level of security. It can be situated in the city center and have an improved level of décor. Other than that, said complex can provide enclosed adjacent territory, private kindergarten and unique small architectural forms in landscaping.

The modern residential complex may include, depending on its class, the following: residential areas, an administrative area with developer company’s management, shops, cafeterias, pharmacies, educational and medical institutions, car parking (aboveground, underground, dedicated for guests), children playgrounds, recreation areas and sports areas.

The combination of different functions in residential complex leads to strict requirements to its structure and planning. An important concern is differentiating people circulation directed to the housing and to the public services, leading to the separation of corresponding vertical communications, lobbies, corridors and other communications servicing these distinct parts of the building.

New engineering communications are allotted to residential complexes therefore guaranteeing a stable functioning of sewerage, heating and plumbing systems. Modern residential complexes are often regarded as passive buildings.

Presently all residential complexes are designed with concierge post and video surveillance, some even having closed territory with barriers allowing access only to residents and their guests.

As noted, residential complexes are usually formed in the «city within a city» format.

«City within a city» means a complex of buildings that incorporates apartments and non-residential zones. In contradistinction to conventional residential buildings, this type of complex urban
development takes into account the daily needs of prospective inhabitants. Therefore, the «city within a city» complex necessarily includes the following functions:
  − catering enterprises. Cafeterias, restaurants, coffee houses;
  − sports facilities. Street gyms, fitness centers, swimming pool, tennis tables, sports grounds, sports field;
  − recreation areas. Small parks, cinemas, dance floors, galleries and other places for entertainment and leisure activities;
  − commercial enterprises. Grocery stores, department stores, beauty salons, notary offices and other commercial establishments;
  − medical facilities. Dental office, family doctor’s office, first aid post, as well as pharmacies (necessary for most development types);
  − educational institutions. Kindergartens, music, sports or general education schools, educational groups by interests.

Currently there are no specific regulatory requirements for «city within a city» development in Ukraine. As a rule, residential complex built in accordance with said concept occupies a large area and includes both residential and non-residential premises (Figure 1).

![Figure 1. Residential complex «Comfort Town» in Kyiv, the largest and most complex urban development in the capital in accordance to «city within a city» concept](image)

3. Results and Discussion

Residential complexes were probably derived from the building practice of Europe, which is rightfully considered pioneer in eco-city formation. Its new residential developments constructed in place of degraded territories since the middle of XX century were defined as the first sustainable settlements by Habitat II conference in Istanbul in 1996.

Presently, at the beginning of XXI century the trend of residential complexes adjacent territories’ landscaping develops further in the countries of Western Europe. One of the most notable examples is the residential complex «CityLife Hadid Residences» in Milan, which makes an emphasis on ecological
aspect. RC is situated in the CityLife park zone, its territory is completely free of automobile movement while cars can reach its garages and parking spaces via an underground road system. Adjacent to residential complex are water landscape objects and a golf course (Figure 2).

![Figure 2. Residential complex «CityLife Hadid Residences» in Milan, designed by Zaha Hadid](image)

Ukrainian developers are gradually adopting European trends in residential development, combining it with their own traditions in residential complex construction. They often utilize bold and non-trivial approach to adjacent territories’ landscaping. RC «Greenville Park» in Kyiv can serve as an example of said approach – a unique project that is constructed with goal of attaining a maximum level of life’s comfort within (figure 3). Special attention is granted to the design of adjacent territory and recreation zones. The key distinction of this complex from others is a colossal enclosed park with an area of 8000 square meters. According to the project, it will include walking paths, cycling lanes, sports areas, playground etc.

Another important avenue of residential complex territorial development is its situation on the outskirts of natural zones. RC «Parkove Misto» can serve as an example of said approach as it is situated in Podilsky region of Kyiv on the territory of historic park «Kristerova Girk» (figure 4).

The massive enclosed green area of 17 hectares is occupied by landscaped inner spaces of the complex, lake cascades with unique flora, playgrounds and sports grounds. At the same time, the transport access to the inner territories of residential complex is limited.

Therefore, it can be stated that the formation of residential complexes in Ukrainian cities’ structure is a peculiar form of response to external and internal challenges in society’s development.
Figure 3. Business-class residential complex «Greenville Park», Kyiv

Figure 4. Comfort-class residential complex «Parkove Misto», Kyiv, 2015
By following the path of integration with European Union, Ukraine becomes involved in the global stage of urbanization process, accepting all its positive and negative consequences. Said consequences manifest themselves in the onset of a new technological post-industrial age, the advancement of technical and scientific progress, the prioritizing of tertiary and quaternary sectors of economy. Meanwhile, in the structural and planning respect it means the formation of largest global world cities with their peculiar organization, and the appearance of multifunctional complexes, which constitute a specific structure of «city within a city» and subsequently form megalopolis, an urban system of highest hierarchy, from its base.

Internal challenges are largely caused by the situation that has developed in Ukraine following the collapse of the Soviet Union. Nowadays Ukraine is facing a problem of restructuring Soviet cities whose functional peculiarities are stemming from decades-long industrial development priorities of economic complex. Other factors contributing to the problem are the mass typical residential development of the cities, the lag in cultural and social infrastructure development that is especially apparent in sub-centers of planning formations, as well as ecological challenges.

On the other hand, the development of local government, the utilization of technical and scientific advancements in the construction and engineering spheres, as well as the availability of global and European experience on overcoming post-industrial crisis, contribute to the optimistic outlook on the future development of Ukrainian cities. In this outlook, the formation of multifunctional complexes becomes an important avenue for renewal under current conditions.

In its turn, the formation of residential complexes is based upon a number of objective factors, which have developed in Ukraine to the present day.

Thus, sociopolitical factors are caused by situation when state delegates the provision of housing for its population to private and commercial construction companies.

Socioeconomic factors are based on the development of market relations, economic expediency of construction and the social stratification that continually deepens.

Legislative and regulatory factors indicate the constant lag and disassociation of regulatory framework from consumer needs, wherein the division of housing into categories I and II is maintained while in practice life dictates different requirements.

Structural and planning factors show the presence of free undeveloped territories on settlements’ peripheries as well as in elements of planning districts’ sub-centers that remain from disproportion in the development of Soviet period. They also indicate degrading territories in historic city centers and areas directly adjacent to it.

Architectural (spatial) factors denote the influence of global architecture’s aesthetics realized in Ukraine with consideration of local conditions – namely, development of regulatory framework, construction and engineering systems as well as availability of investments.

Engineering and ecological factors mirror the development of scientific and technological progress that allows the use of modern technologies with the goal of realizing the sustainable development concept in design and construction. It is achieved by creation of closed cycle engineering systems, leading to passive buildings with zero impact on environment.

Thus it can be stated that the emergence and formation of residential complexes in the structure of Ukrainian largest cities is an objective process that corresponds to the global experience of post-industrial cities’ structural transformation in a certain way.

Systematic approach to the formation of cities and their individual structural elements is legislated in Ukraine by General Settlement Scheme (Генеральна схема розселення) as an official state policy in urban planning. It allows the consideration of residential complexes as elements of city’s self-organization process that emerge spontaneously in the bifurcation period and demonstrate the local, individual, pointed influence on its environment (the structure of an urban element). With its numbers increasing, said elements form the new urban subsystem that interposes itself on city’s existing functional planning organization. It is characterized by both positive qualities and the manifestation of certain risk factors.
Among positive aspects is their exclusive architecture, comfortability, social security, environmental safety, connection to transport infrastructure and the presence of so-called «smart city» cells.

The risk factors of residential complexes include a somewhat chaotic character of their situation in city structure, the competition with existing architectural dominants in case of high-rise residential complexes and the social isolation that deepens the stratification of society.

4. Conclusions
Taking the aforementioned into account, it can be stated that the residential complexes’ formation in largest cities’ structure is an objective historical process that is observed under conditions of settlements reaching new level of post-industrial relations.

Despite the residential complexes’ architectural, typological, engineering differences, they are characterized by several common traits: chaotic situation in city structure, social isolation and territorial insularity.

At the same time, it can be stated with confidence that residential complexes are manifestations of a causal way of post-industrial city’s self-organizing process that is spontaneous in nature, wherein new organized urban structure emerges spontaneously as an effect of internal elements’ cooperation.

Under such conditions, the need to transform the causal way of self-organization to an objective, purpose full one becomes paramount. It means transforming the new urban subsystem of residential complexes into a stable ordered structure of attractors under the influence of targeted external actions and factors.

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