

PLANNING INNOVATIVE DEVELOPMENT OF CONSTRUCTION SECTOR IN KYIV GENERAL PLAN

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During the 20th – early 21st centuries the construction sector remained an important component of economy in Kyiv and other large Ukrainian cities [1]. The history of construction booms proves the driving force of construction in overcoming economic and financial crises. Kyiv’s construction sector employs 7-8 % of economically active population (fig. 1).

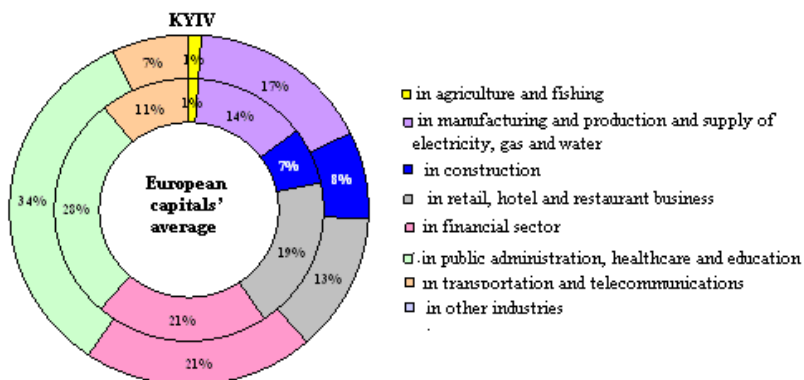


Fig. 1. Comparative structure of employment by industries in Kyiv and European capitals’ average

Despite difficult social and economic conditions, 1.5 million sq.m of residential space was commissioned in 2013, including almost 1.4 million sq.m in high-rise apartment buildings. Housing was built at the rate of almost 0.55 sq.m per permanent resident of Ukraine’s capital. Kyiv’s construction sector remains the leader, launching almost 10% vs Ukraine’s aggregate construction turnover (fig. 2, 3), [2,3].

Analysis of steady trends in residential and civil construction shows that for Kyiv, typical amount of residential space commissioned in stable economic conditions is up to 1.5 million sq.m, while 200-300 thousand sq.m of housing stock is being retired annually due to reconstruction and transformation of ground-floor residential space into nonresidential stock.

However, despite the growing residential construction and commissioning turnover the Kievites still experience shortage of housing, the wear of housing stock continues to rise and duration of construction remains unreasonably long.

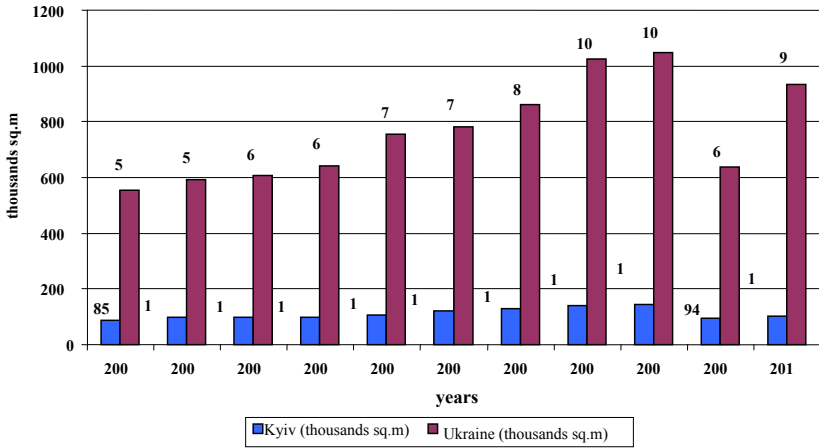


Fig. 2. Comparison chart of residential space commissioned in Kyiv and Ukraine in 2000-2010

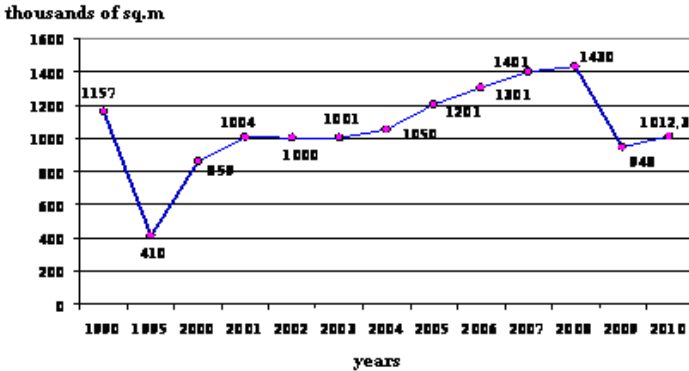


Fig. 3. Dynamics of commissioning residential space by Kyiv's construction organizations

Analysis of Kyiv's housing stock in terms of degree of wear shows that the condition of stock fails to meet, first of all, the energy saving requirements. The share of morally obsolete housing (worn by 40-60 %) gradually increases: presently, 9.4 million sq.m, or 14.5 % of the total housing stock does or shortly will require reconstruction. The problem of redeveloping urban neighborhoods with worn-out housing becomes more and more acute. This trend will continue to grow and does necessitate the switch of priorities in development of large cities from the planning of new large neighborhoods in undeveloped areas of the city's vicinities to reconstruction of developed areas and development of small land plots (fig. 4).

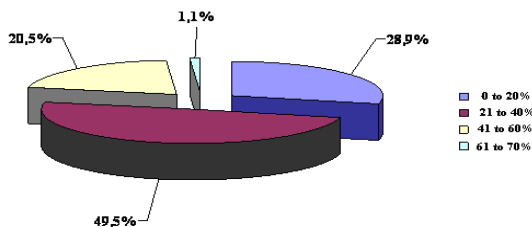


Fig. 4. Characteristics of housing stock in Kyiv by degree of wear as of the beginning of 2011

Assessment of contemporary European trends reveals that in the 21st century, priority is given to compact development of large cities necessitated by objective factors: high costs of land and energy resources, privatization of suburban land of agricultural purpose, existence within city limits of substantial areas with obsolete residential property and decaying industrial zones that require redevelopment.

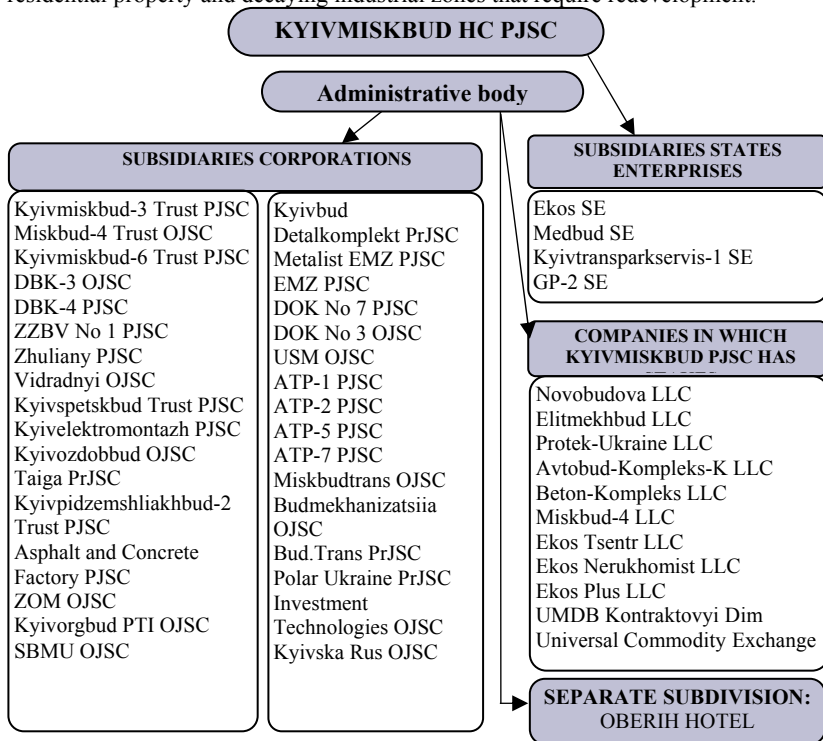


Fig. 5. Kyivmiskbud HC PJSC organization

Analysis of the use of land in Kyiv, provided in the new general plan of Ukraine's capital, also proves the change of priorities in construction planning.

However, the organization of construction sector which took shape during mass industrial construction period does not fully answer contemporary construction conditions. In particular, according to contact information, the present organization of Kyiv's leading construction corporation's holding company features almost 100 companies (fig. 5).

In terms of the area of business, the holding company's organization [4] features three groups of construction companies:

- general construction, general contracting, panel and frame-monolith building construction, commercial manufacture of concrete and construction mixes;
- specialized companies (road, aerodrome, pipeline construction, etc.);
- concomitant services: trucking, real property lease, construction machinery lease, construction debris utilization. Bulky organization of construction sector cannot facilitate efficient implementation of innovative technologies, construction of unique properties, reduction of construction and operating costs, shortening of construction period [5].

Organization of construction sector requires reformation via efficient implementation of innovative technologies. Foreign experience shows that to build unique properties, it seems expedient to establish specialized construction companies interested in developing and implementing innovative technologies. For example, the unique ventilated façade technology COOBER allowing to construct ventilated facades faced with brick, façade blocks, glass, etc. was invented and patented for construction of high-rise buildings in Malaysia's capital Kuala Lumpur. Aluminum formwork was specifically invented and patented to build frames, helping erect one 3400 sq.m floor of the 38-storey building in just 4 days. Upon completion of construction cycle, the reusable aluminum block is remelted for subsequent use. It also provides high wind and seismic resistance.

Conclusions

Conservative organization of construction sector currently existing in Ukraine does not encourage innovative development. Therefore, innovative development of construction sector must be provided for in the general plan. For that purpose, we have to determine investment-attractive territories, efficient areas of investment in construction industry and development of innovative construction parks.

At the same time, organization of construction sector and construction technologies must meet the following criteria:

- possibility of implementing urban planning programs in short time;
- diversity of construction technologies suitable for organization of construction site within the property boundaries, application of multiple-use formwork, waste-free production;
- high quality and diversity of colors and finishing;
- environmental friendliness and resource saving, longevity and durability of structures, technological effectiveness and speed of construction.

Bibliography:

1. Y.P. Bocharov, G.I. Filvarov. Production and Spatial Organization of Cities, Moscow: Stroizdat, 1997.
2. Council of Europe databases (EUROSTAT).
3. Kyiv's 2013 statistical yearbook. Under the editorship of R.G. Vilenchuk, Chief Department of Statistics for Kyiv, Kyiv: August Trade LLC, 2012.
4. Website <http://www.kyivmiskbud.ua/>.
5. UDK 514.18 L.V. Shevel, N.V. Matiushchenko. Analysis of Modern Organization Schemes of Construction Companies, Kyiv: National Aviation University.