

International experience with urban infrastructure development financing*

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ABSTRACT. The paper substantiates the need for scientific studying the state of local infrastructure financing as well as efficient management of the existing infrastructure facilities. It is noted that under the influence of such factors as globalization, urbanization and information revolution the value of the city and role thereof in society are increasing. Based on analysis of the budget and demographic indices it has been proven that Kyiv, as the capital, occupies a unique place in the economic life of Ukraine, while being the country's financial and investment centre. It has been asserted that the critical level of the city's key infrastructure deterioration indicates lack of adequate municipal management in this field. The paper also asserts a high level of monopolization regarding housing and communal services, whereas also provides substantiation of the need for developing new competitive financing mechanisms to be applied. Existence of significant disparities between development of the city and construction of the essential transport infrastructure has been demonstrated with the said fact being due to in compliance of the borrowed finances with real investment needs. Given the international experience, the methods of upgrading the existing city infrastructure as well as sources of financial support for the new infrastructure projects have been suggested.

KEY WORDS. Local government, local budget, international municipal management, local infrastructure, housing and communal services, road facilities, housing policy, index of welfare, urbanization, welfare factors; public-private partnership

Introduction

Infrastructure is important for normal functioning of a city, as well as for economic development and provision of comfortable living conditions for the city residents. One of the key tasks of local authorities is development and implementation of integrated management programmes applied to infrastructure facilities and construction of new ones according to current needs. At this stage, most of the investment projects in this field are implemented on account of budgetary or borrowed funds. Maintenance of existing infrastructure facilities largely owned by the community is also financed mostly from local budgets. The unsatisfactory state of the housing and communal infrastructure, poor-quality road surface,

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unprofitable public transport, etc. require rethinking of both methods and approaches to managing complex infrastructure of the city, which proves almost impossible without carrying out a comprehensive analysis of the current state of infrastructure facilities as well as dynamics and structure of financing thereof.

The paper objective is to analyze municipal management efficiency as regards management of urban infrastructure, studying foreign practices of financing infrastructure projects and considering the possibility of their putting into practice by local authorities.

The issues of urban development and financial mechanism functioning as well as provision thereof have been studied by both Ukrainian and foreign scientists, in particular, I.V. Zapatrina², O'Sullivan³, O.S. Puzanov⁴, I. M. Saliy⁵, authors hereof⁶, and others. However, certain aspects of municipal infrastructure effective management are insufficiently highlighted in the scientific literature and need further in-depth research.

Local infrastructure and economic development

The value and role of the city in society have been growing steadily under the influence of such factors as globalization and urbanization. Currently, while studying these phenomena it becomes evident that we often deal not with a number of countries, but with a network of major cities communicating with each other more closely than each of them does with its own country (in relevant literature such cities are called World Cities)⁷. The city is becoming increasingly influential on national economy and is ever more

² Zapatrina I. V. Housing and communal infrastructure: reforms and financial provision system / I. V. Zapatrina; NAS of Ukraine; Economics and Forecasting Institute. — K., 2010. — 336 p. [In Russian].

³ O'Sullivan A. Urban Economics: Textbook / A. O'Sullivan; translated from English. — 4th edition. — M. : INFRA-M, 2002. — 705 p. [In Russian].

⁴ Lectures on municipal economy and municipal management / under editorship of A.S. Puzanov. — M. : Municipal economy institute Fund, 2004. — 340 p. [In Russian].

⁵ Saliy I.M. Urbanization in Ukraine: social and managerial aspects : monograph / I.M. Saliy. — K. : Nauk. dumka, 2005. — 304 p. [In Ukrainian].

Saliy I.M. Ukrainian cities: issues of ownership and municipal management: learning guide / I.M. Saliy. — K., 2001. — 416 p. [In Ukrainian].

⁶ Buriachenko A. Ye. Use of foreign experience in local infrastructure financing / A. Ye. Buriachenko // Scholarly notes: coll. of scient. works / Ministry of Education and Science of Ukraine; Vadym Hetman Kyiv National Economic University Public higher education institution " ; [ex. ed. A.F. Pavlenko]. — 2012. — Issue 14. — part 1. — p. 218–224 [In Ukrainian].

Buriachenko A. Ye. Urbanization factors of economic growth / A. Ye. Buriachenko // Stock Market of Ukraine. — 2013. — No. 7-8. — p. 79–91.; L.V. Geraymovych. Affordable Housing state programme: implementation progress and execution flaws / L.V. Geraymovych.// Socio-economic prospects of Ukraine in the XXI century: coll. of reports for the 80th Scientific Conference of KNEU Students; April 11–16, 2013 [In Ukrainian].

⁷ Lectures on municipal economy and municipal management / under editorship of A.S. Puzanov. — M. : Municipal economy institute Fund, 2004. — p. 20 [In Russian].

frequently acting as an independent subject of international relations. Naturally, the capital occupies an exceptional place in the economic life of a country, while being its financial and investment centre. Thus, Kyiv is inhabited by 6% of the total national population, with circa 19% of GDP produced, 18% of the country's retail sales made and 23% of all construction works performed, while keeping over 60% of the national financial sector assets⁸. Quite logically, the budget of Kyiv receives much larger amounts of both tax and non-tax revenues than the budgets of other cities. By comparing the budgets of most populous cities in Ukraine in terms of revenues and expenditures (Fig. 1), it becomes evident that the capital has quite a big lead: the income and expenditure indices of Kyiv budget practically equal to the amount of similar figures taken for seven other major cities of Ukraine⁹.

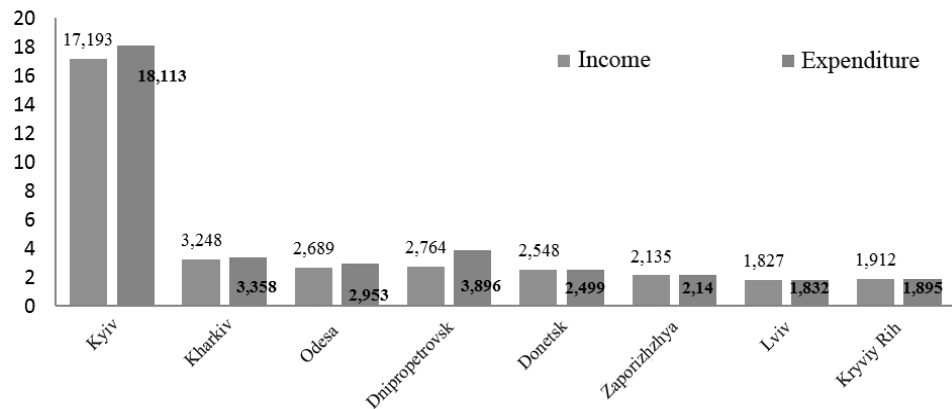


Fig. 1. Budget of the largest cities in Ukraine for 2010, USD billion¹⁰

It is no secret that on the average residents of the capital receive higher wages compared to the population of other regions. Potentially higher income, higher living standards and better employment opportunities keep encouraging ever greater numbers of people to migrate to the capital from other localities. Kyiv is the only city in Ukraine with number of residents continually increasing. Such growth is largely explained by migration from other parts of the country, since before 2007 inclusive, the population growth was negative, although by now the situation has slightly improved (Fig. 2).

⁸ Development Strategy of Kyiv till 2025. [Electronic resource]. — Available from: http://kievcity.gov.ua/content/13_strateghija-rozvytku-2025.html [In Ukrainian].

⁹ Current problems of urbanization in the context of national security of Ukraine: analytical note; President of Ukraine's National Institute of Strategic Research, 2013 [Electronic resource]. — Available from: http://www.niss.gov.ua/articles/1165/#_ftnref8 [In Ukrainian].

¹⁰ Basic socio-economic indicators of cities for 2010/ Association of Cities of Ukraine [Electronic resource]. — Available from: <http://www.auc.org.ua/> [In Ukrainian].

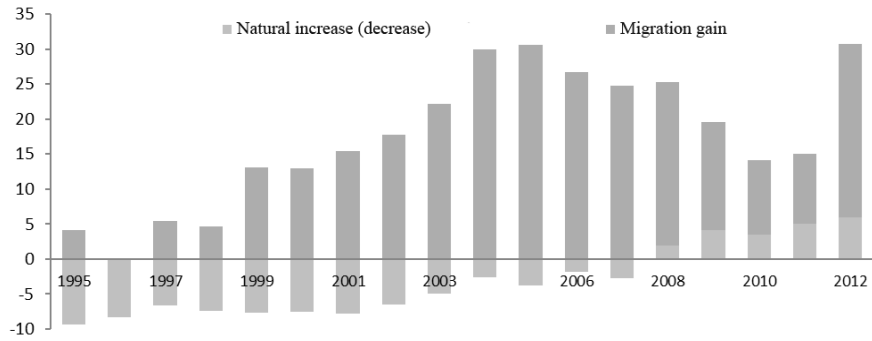


Fig. 2. Increase in Kyiv population during 1995–2012, thousand people¹¹

According to official data, 2.8 million people resided in the capital in 2012. However, according to the forecast made by the Institute of Demography and Social Studies of the National Academy of Sciences, by 2025 the population will reach 3.1 million people¹², i.e. increasing by approximately 11%. Though, steady growth in population and economic activity intensifies the load on the transport and engineering infrastructure, as well as exacerbates the need for affordable and comfortable accommodation entailing increased requirements to housing and communal services of Kyiv. All the above, in turn, increases pressure on the city budget failing to fully satisfy the demand for financing municipal infrastructure needs.

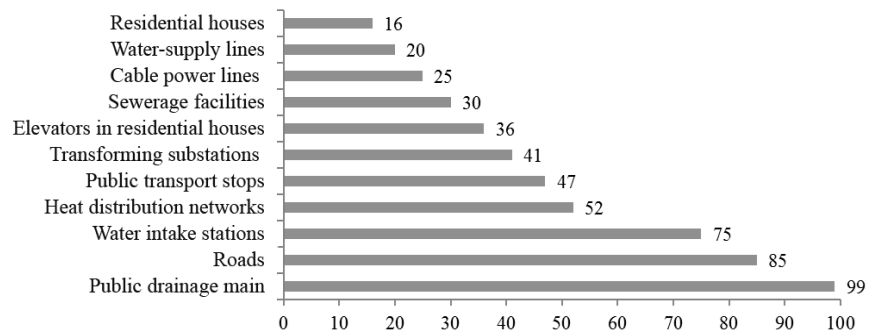


Fig. 3. Deterioration of infrastructure facilities in Kyiv, %¹³

One of the pressing problems of the capital's municipal development is quite significant deterioration of the existing

¹¹ Main Department of Statistics in Kyiv - [Electronic resource] – [Available from] – <http://gorstat.kiev.ua> [In Ukrainian].

¹² Development Strategy of Kyiv till 2025. [Electronic resource] – Available from: http://kievcity.gov.ua/content/13_strateghija-rozvytku-2025.html [In Ukrainian].

¹³ Ibid.

infrastructure facilities: for example, the degree of public drainage main deterioration makes almost 100%, that of road surface – 85 %, whereas deterioration of the heat distribution networks is circa 52%, etc. (Fig. 3). The critical level of key infrastructure deterioration of the city indicates lack of adequate municipal management in this field. One can quite confidently assume that in the future the problem will be exacerbating, since required amounts of funding for current and capital repairs will also be growing on a yearly basis, while accumulation of sufficient resources in the capital's budget to drastically improve the situation is of little probability. This, in turn, is apt to slow down the city development as well as to deteriorate Kyiv competitiveness and investment attractiveness for potential investors, whereby reducing the quality of life for the capital residents. Naturally, the outlined problems occur not only due to lack of the funding required (no city in the world is able to provide for all the infrastructure needs without external assistance), but also because of irrational structure of distributing and use of municipal resources allocated for these purposes, as well as on account of inefficient operation of the city's housing and communal services.

Kyiv housing and communal services

According to the State Statistics Department in Kyiv, the capital's housing stock keeps growing and by the beginning of 2013 amounted to 61.6 million m² of living space, with an average of 21.3 m² per capita, which is 2.4 m² less than the average index in Ukraine (with the standard value of 13.65 m² according to the Housing and Communal Department). Circa 99 % of residential buildings in Kyiv are equipped with water supply and sewerage systems, 99.4 % – with central heating, 67.8 % – with gas supply network, and 97.1% – with hot water supply mains, which indicates high level of the housing stock engineering infrastructure provision. However, certain concern is caused by the fact that according to expert calculations, deterioration degree of circa 16% of the housing stock makes 40-60 %, while that of 44 % of Kyiv houses varies in the range of 20-40%¹⁴.

Thus, one of the most important tasks for the local authorities is to develop competitive mechanisms for rendering housing and communal services, which will improve their quality and reduce costs. To date, approximately 70% of Kyiv housing stock are served by communal enterprises, which indicates a high level of

¹⁴ On approval of the Programme for reforming and development of housing and communal sector in Kyiv for 2010-2014 [Electronic resource] : Kyiv City Council decision No. 12/4824 dated September 16, 2010 — Available from: <http://kmr.ligazakon.ua/> [In Ukrainian].

monopolization in this field¹⁵. An alternative may be transfer of residential buildings management to homeowners. Thus, in their "Programme of reforming and development of housing and communal services in Kyiv for 2010-2014" Kyiv authorities have declared intention to promote creation of condominium associations, however, by now despite certain positive dynamics the goal has not been achieved (Fig. 4). On average, during 2010-2012 only circa 30% against the planned number of condominium associations were actually created, which essentially had no effect on the structure of housing services providers.

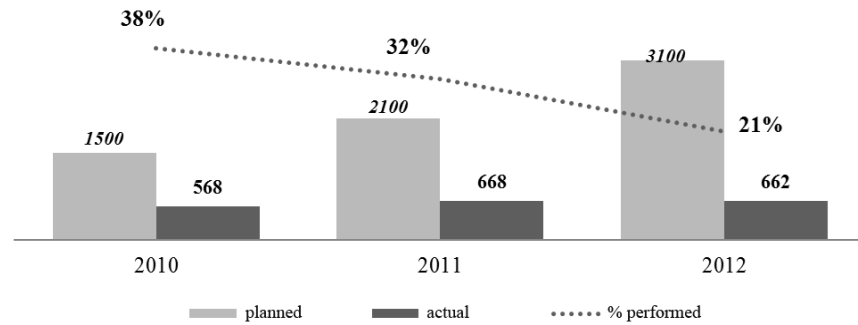


Fig. 4. Number of condominium associations created in Kyiv, 2010–2012¹⁶

Non-conformity of equipment with modern environmental and technical standards as well as use thereof for longer than the specified lifetime lead to catastrophic losses of heat energy – about 20%, and water – 30% of the total volumes fed to the system¹⁷, which, in turn, significantly affects tariffs on housing and communal services already considered by most Kyiv residents to be too high. Thus, according to the industry statistics, debts of residents for consumed housing and communal services by the beginning of 2013 amounted to UAH 2.83 billion, or 67% of the total debt, despite the fact that the overall payment level is circa 97%. Housing and communal sector enterprises of the city have no effective management models, while being unprofitable in their majority. Since early 2013 alone, they have suffered losses amounting to UAH 245.9 million, which is not surprising, as revenues accumulated by providers of the services cover operating expenses only by 68% for water supply and wastewater disposal, by 47% – for central heating

¹⁵ Passport of housing and communal sector in Kyiv, 2013 [Electronic resource]. — Available from: <http://minregion.gov.ua/zhkh/reforma-zhitlovo-komunalnogo-gospodarstva/pasport-zhitlovo-komunalnogo-gospodarstva-ukrayini-ta-oblastey/> [In Ukrainian].

¹⁶ Ibid.

¹⁷ Ibid.

services, and by 84% – for the buildings and adjacent territories maintenance services¹⁸.

The unstable funding of housing and communal sector during 2008-2012 demonstrated lack of a comprehensive and coherent policy for this sector development. In 2009, the volume of budget expenditure increased by 41% as compared to the previous year; in 2010, the sector was provided with only UAH 461.86 million, i.e. with only 17% of the target amount and circa 23% of the previous year's funding; in 2011, funding has increased almost threefold as compared to the previous year; in 2012, the housing and communal sector received UAH 5.37 billion (92.7% of the target amount), which was over four times higher than the previous year, whereas UAH 4.9 billion of the funds was used to compensate for the difference in tariffs¹⁹.

In general, one can assert discrepancy of the planned budget expenditure with the actual amounts: during 2008-2012 the sector repeatedly received about 40% less than the planned amount of funding due to systemic failure of Kyiv budget performance in general. Analysis of the expenditure structure regarding Kyiv housing and communal sector for 2008-2012 indicates a change in the structure of expenditures classified as general and special funds of Kyiv budget; in particular, there is a clear downward trend regarding the share of expenditures for the general funds and a simultaneous increase in the share of special funds expenditure. This is due to changes in the Budget Code: according to Art. 71, from now on the capital expenditures are made using the special fund and have no substantial effect on the budget financing nature.

It needs to be noted that providers of the housing and communal services are not interested in implementing sustainable and cost-effective management models, as they receive the required amounts in the form of housing and communal subsidies as well as compensation for difference in tariffs from local and state budgets. One of the most critical problems for the housing and communal sector is the lack of transparent mechanism for tariff formation, which aggravates distrust of citizens in local authorities and affects growth of their debts for the services consumed. Therefore, it is obvious that increasing tariffs only will not contribute to attracting the necessary funding, since the sector now being by a third a beneficiary one requires a systemic reform along with development

¹⁸ Passport of housing and communal sector in Kyiv, 2013 [Electronic resource]. — Available from: <http://minregion.gov.ua/zhkh/reforma-zhitlovo-komunalnogo-gospodarstva/pasport-zhitlovo-komunalnogo-gospodarstva-ukrayini-ta-oblastey/> [In Ukrainian].

¹⁹ Kyiv Budget [Electronic resource]. — Available from: <http://kievcity.gov.ua/pro-kyiv/bjudzhet/> [In Ukrainian].

of alternative financing models, attraction of private investments, systematic introduction of energy efficient technologies, etc.

No doubt that the communal infrastructure is a key element not only as regards functioning but also development of the city. Another factor in competitiveness and investment attractiveness of the city in the present situation is availability or, conversely, lack of developed platforms equipped with communal infrastructure, as well as availability of clear regulations on connection to infrastructure networks that significantly affect the final cost of housing and communal services.

Studies show that the investment potential of the communal sector enterprises which could be mobilized under the current system of tariff regulation does not allow covering the deficit of funds; therefore, other mechanisms need to be used. The challenge is to transform the current payments compensating for the sector inefficiency into the investment resources. We are confident that this can be achieved without raising tariffs for consumers but by means of ensuring improved business efficiency in the sector instead.

According to I.O. Lunina, a well-known Ukrainian researcher²⁰, in Ukraine it would be expedient to avoid mass alienation of municipal property and focus on gaining revenue from lease of municipal facilities. The list of non-tax payments should also be extended whereby allowing local authorities to set the procedure for their effecting. In particular, this applies to paid services for housing, communal, transportation and recreational needs of the citizens, as well as to improving living conditions of the population.

For the development of local infrastructure both communal enterprises and local budget can borrow funds from legal entities and individuals. Attraction of debt financing by communal enterprises has a number of advantages. Thus, by taking a loan or issuing securities, the enterprise receives necessary funds, and the tariff for consumers increases only in terms of servicing debt liabilities, otherwise the enterprise would have to significantly increase their tariff in order to provide for the necessary funding. At that, security for repayment of funds is provided by consumer payments for housing and communal services. Local budget also can either raise funds for similar projects, or act as the guarantor for loans received by the communal enterprises. Fundraising can also be effected in the forms of issuing budgetary loan bonds, receiving bank loans for the urban development projects. However, the possibility of using these mechanisms depends on the income level of

²⁰ Diversification of revenues to local budgets / [I.O. Lunina, O.P. Kyrylenko, A.V. Luchka et al.] ; under editorship of I.O. Lunina, PhD in Economics; NAS of Ukraine ; Economics and Forecasting Institute. — K., 2010. — p. 227–228 [In Ukrainian].

population, as well as on confidence of the latter in authorities, stability of the financial situation, etc.

Traffic and public road system

A balanced transportation system is one of the key requirements for proper functioning of a city. According to expert calculations, circa half of Kyiv residents use private transport. Based on current trends, it could be suggested that the number of passenger cars by 2026 will increase almost threefold in relation to 2000 level (Fig. 5). This, in turn, requires major overhaul of the existing road surface as well as construction of new roads and intersections in the near future, since the old transport infrastructure has almost completely exhausted its capacity. There are significant disparities between development of the city and construction of the necessary transport infrastructure facilities due to non-conformity of the borrowed funds with real investment needs. Among the most urgent problems the following should be identified, such as majority of traffic orientation to the city centre, traffic (including passenger transport means) congestion during rush hours, too small number of parking spaces and the lack of necessary infrastructure facilities providing alternative modes of transportation (bike paths, pedestrian zones, etc). Gas contamination of the city by transport exhausts, lack of environmentally-friendly technologies and insufficient attention of the authorities to development of bicycle and pedestrian infrastructure, which could significantly reduce the degree of using cars and burden on public transport, prove to be the key factors that dramatically worsen the environmental situation in Kyiv. Besides, by the European Green City Index, Kyiv is the most polluted capital of Europe²¹.

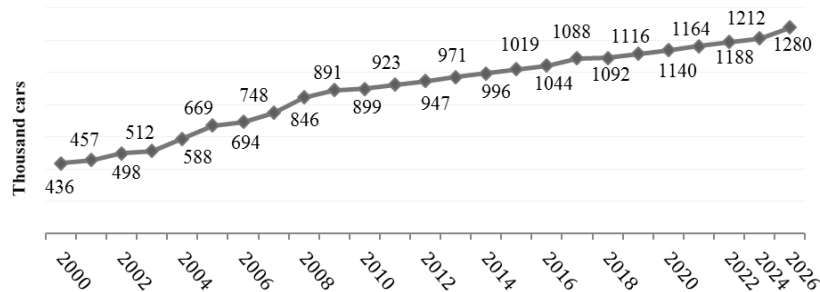


Fig. 5. Forecasted growth of motor transport means in Kyiv, 2000-2026.²²

²¹ European Green City Index [Electronic resource]. — Available from : http://www.siemens.com/entry/cc/features/greencityindex_international/all/en/pdf/report_en.pdf

²² Master Plan of the city of Kyiv, 2011 [Electronic resource]. — Available from: http://kievgenplan.grad.gov.ua/images/genplan/osnovni_pologennya_gen_planu_19_09_11.pdf

Naturally, continual growth in the number of cars enhances the burden on the transport infrastructure of the city which is in the critical state: 85% of the existing roads are in need of overhaul. H. Hlynsky, the former head of *Kyivavtodor* communal enterprise, said the main causes of poor quality of the roads include low volumes of scheduled work on current and capital repairs, poor quality of road construction materials, increased traffic intensity and non-conformity of asphalt load norms with actual traffic load²³.

Certain statistics are offered below. Thus, the structure of Kyiv budget expenditures on road maintenance is dominated by capital expenditures level of which has over the 2008-2012 period been ranging from 86% to 94 %. The sector funding is unstable and generally insignificant (circa 1% of total budget expenditures): in 2011, during preparation for Euro 2012, expenditure on public road system made UAH 304.5 million, accounting for 160% of the same index in 2008, whereas in 2012 the funding amounts decreased by 40%, or by UAH 122 million. Therefore, unstable budgetary financing of public road system as well as the lack of a comprehensive programme for road infrastructure development slows down development of the city transport system and aggravates existing problems.

As regards municipal public transport, it is constantly used by over half of Kyiv residents. In this area, the main problem is a critical degree of rolling stock depreciation that poses potential threat to passengers and other road users, whereby significantly reducing public transport reliability. Thus, 80% of metro cars and 40% of escalators are still used after of their lifetime expiration, while 33% of trolleybuses, 82% of trams, 20% of tram tracks and 19% of cables are subject to writing-off; and 85% of the road surface should be repaired, while 74% of road signs – substituted for new ones²⁴. Budgetary funding of municipal passenger transport is insufficient even for covering operating expenses for transportation of passengers, excluding the investments needed to modernize the sector. In 2009, the city budget provided for passenger transport circa UAH 687 million, i.e. funding decreased by 59% as compared to 2008, caused by decrease in budget revenue, including tax revenues. During 2010-2011, the funding amounts were increasing: in 2011, the budget provided UAH 1.6 billion, more than twice exceeding the 2009 value. In 2012, there was a slight reduction in funding: municipal transport enterprises received UAH 1.59 billion.

²³ Babanin, O. Budget Kyiv-2012: challenges and opportunities for future budget policy / O. Babanin, I. Sikora [Electronic resource]. — Available from: http://www.osf.kiev.ua/about_us/our_publications/KYIV_CITY_Budget_2012_L.pdf [In Ukrainian].

²⁴ Development strategy of Kyiv till 2025 [Electronic resource]. — Available from: http://kievcity.gov.ua/content/13_strateghija-rozvytku-2025.html [In Ukrainian].

Thus, high level of Kyiv public transport subsidizing against high-level passenger turnover characteristic of the capital causes the need for revising the system of relations established between public transport enterprises and local government regarding at least two aspects: firstly, provision of transparent cost-based calculation system of tariffs for transportation, which will allow to bring transportation to break-even point; and secondly, development of a targeted system for granting subsidies to certain categories of citizens in terms of public transportation.

Accommodation and Housing Policy

In Kyiv, circa 15% of all housing facilities built in Ukraine are put into operation on a yearly basis²⁵ (table 1).

Table 1 Total housing space commissioning in 2008-2012, thsnd. m²

Territory	2008	2009	2010	2011	2012
Kyiv	1430	948	1012	1502	1503
Ukraine	10496	6400	9339	9410	10750
Kyiv share, %	13.6	14.8	10.8	16.0	14.0

Despite the fact that during 2011-2012 the volume of commissioned housing real estate slightly exceeded that of 2008, it has not significantly changed the situation in the real estate market, with prices remaining prohibitive for most city residents. Conspicuous is the fact that in Kyiv gross regional product structure the share of construction makes about 3%, whereas, in Belarus, for example, the same indicator remains at the level of 10-14%²⁶.

During 2008-2012, the construction industry was financed from the budget at less than half of the planned rate, that is, for the period under review potential losses totalled more than UAH 5.5 billion. The structure of Kyiv budget expenditures shows the share of construction around 4%, with the exception of 2008, when the industry expenditure accounted for 16% of the total. In 2012, no type of expenditures in the field of construction has been funded, meaning that no sufficient funds have been allocated for construction and reconstruction of schools, hospitals and other social, engineering and transport infrastructure facilities extremely required by the city. Of UAH 857 million or 67% of the target index in 2012, a fair share (UAH 662 million) has been allocated

²⁵ State Statistics Service of Ukraine [Electronic resource]. — Available from: <http://www.ukrstat.gov.ua/> [In Ukrainian].

²⁶ Babanin, O. Budget Kyiv-2012: challenges and opportunities for future budget policy / O. Babanin, I. Sikora [Electronic resource]. — Available from: http://www.osf.kiev.ua/about_us/our_publications/KYIV_CITY_Budget_2012_L.pdf [In Ukrainian].

under the "Capital investment" expenditures. At that, such expenditures as "Emergency repair work, construction and reconstruction of out-of-school educational facilities", "Preservation, development, reconstruction and restoration of historical and cultural monuments", "Development of models and design solutions for mass application" have not been funded at all²⁷. State funding of the sector remains at a level preventing significant impact on the housing policy and implementation of large-scale programmes for construction of social housing, social infrastructure facilities, the urgent need of which has long been expressed by the municipal community.

Continued growth in the population significantly exacerbates one of the most painful problems of Kyiv – lack of affordable and yet comfortable accommodation. Though, wages in the capital are much higher than in the whole of Ukraine, housing prices in Kyiv are incomparable with the income level of Kyiv people. This creates a critical situation in which only a small proportion of the population can provide housing for themselves without external assistance, since according to official statistics as of January 1, 2013, as many as 144,315 families and individuals were included on housing lists in Kyiv²⁸. When considering the number of migrants informally working in Kyiv and somewhat reducing extremely high demands to citizens eligible to be included in the 'housing queue', this figure would increase by several times. Thus, a real need for affordable housing is much higher.

In order to reduce tension in society and provide citizens with affordable housing, the programme on reducing cost of real estate was introduced at both national and municipal levels. Thus, the *Affordable Housing* state programme is being implemented in two stages: the first implying reduction of housing cost by 30% of the standard cost per square meter from 2010 through state subsidies; and the second providing for reduction of mortgage loan cost from 2012 due to compensating portion of interest on loans granted for real estate purchase. As of 1 January 2013 in Kyiv there were 11,150 registered families planning to participate in this programme, that is, potential participants in the programme made 13% of residents in need of better housing conditions. In 2012, Kyiv budget allocated UAH 2.6 million for compensation of interest on mortgage loans to youth, accounting for 0.2 % of total costs under the "Construction" expenditure item, however, for affordable housing circa UAH 15

²⁷ Kyiv Budget [Electronic resource]. — Available from: <http://kievcity.gov.ua/pro-kyiv/bjudzhet/> [In Ukrainian].

²⁸ Commissioning of housing facilities in 2012 [Electronic resource] / Main Department of Statistics in Kyiv // Express issue — 2013. — Feb 15 — No. 25. — Available from: <http://gorstat.kiev.ua/p.php3?c=2625&lang=1> [In Ukrainian].

million (or 29 % of the planned funding amount for the relevant period) less was received from the budget²⁹.

Despite certain increase in budget funding of affordable housing construction programmes the available implementation mechanisms for these programmes have a number of shortcomings³⁰, that undermine the recent popularity among the population. The shortcomings comprise: a) lack of a single regulatory legal act which would stipulate the mechanism for providing citizens with affordable housing; b) lack of possibility for citizens to choose real estate in which they would invest, since the list of facilities is subject for approving by the Ministry of Regional Development Interdepartmental Committee; c) lack of government guarantees on real estate included in the programme (the developer and the Ministry of Regional Development do not enter into agreements to guarantee completion of the real estate construction and bringing the latter in state of habitability); d) lack of government guarantees to provide partial compensation in full (the programme envisages long-term assistance in partial compensation of interest on the mortgage, however, no guarantees of such assistance are governed by any legal act), and so on.

Financial requirements to families being potential participants in the *Affordable Housing* programme and high amount of the down payment required to participate, in practice just make the housing unaffordable for most people of Kyiv. Recognizing this, the government announced launch of a new programme to be held in parallel with the previous one, with the new programme implying housing rent with the option of further purchase at 3% for 15 years, to be paid for rent on a yearly basis. Naturally, the innovation will only be effective subject to compliance of the declared funding with actual amounts, the low cost of 1 m² of housing offered under the programme and institutional support of the programme.

According to calculations of Kyiv Municipal Administration in 2010, almost 24% of Kyiv families had the average per capita income less than UAH 1,000 per month, including 14% of households receiving income below subsistence level. This, of course, made it impossible for such families to participate in the programmes on mortgage cost reduction or independent housing purchase. According to the estimates submitted in the Programme for social housing development in Kyiv for 2010-2015, 1,450 families of Kyiv for whom this programme had been developed claim provision with free

²⁹ Babanin O. Budget Kyiv-2012: challenges and opportunities for future budget policy / O. Babanin, I. Sikora - [Electronic resource]. – Available from: http://www.osf.kiev.ua/about_us/our_publications/KYIV_CITY_Budget_2012_L.pdf [In Ukrainian].

³⁰ Geraymovych. L.V. Affordable Housing state programme: implementation progress and execution flaws / L.V. Geraymovych.// Socio-economic prospects of Ukraine in the XXI century: coll. of reports for the 80th Scientific Conference of KNEU Students; April 11–16, 2013 [In Ukrainian].

housing. To this end, it is necessary to build 73.95 thousand m² of social housing, which in the coming years would require investments amounting to UAH 366.15 million from both municipal and state budgets. In view of the above, Kyiv authorities should allocate UAH 183.1 million by 2016. However, given the current construction industry financing trends, it can be with a high degree of probability suggested that the budget will not succeed in accumulating the necessary funds within the specified period.

Thus, analysis of the main trends in the field of Kyiv construction sector development and housing policy of the government suggests that municipal management in this area is inefficient, failing to cope with existing problems, which will respectively grow more exacerbated as the number of residents of the capital grows, unless significant changes in this area are implemented in the coming years.

Resolving the above issues is entirely responsibility of the regional and local authorities. In order to introduce market relations, it is necessary to radically change the funding mechanisms for housing and communal services aimed at creating financial prerequisites for establishing this sector as that of real market economy.

The housing and communal services management system should be rearranged according to the following principles:

- ✓ eliminating the negative effects of monopoly both in communal fund servicing and in management thereof;
- ✓ protecting the interests of private companies that will enter the housing maintenance market;
- ✓ taking into account the peculiarities of current financial activities of the communal enterprises³¹.

In view of the above, transition to market conditions in the housing and communal sector comprises the following key prerequisites: 1) combination of different ownership forms of enterprises working in the communal sector; 2) raising the standards of housing and communal services quality; 3) reforming tariff policy in the housing and communal sector; 4) transition to the new system of payment for housing and communal services; 5) provision of effective mechanisms to attract investments in the sector.

International practice of city infrastructure sector management

The main criterion for the city efficiency and municipal management quality is the welfare of residents. The City Prosperity

³¹ *Zapatrina I.V.* Budget support as part of public-private partnership development in housing and communal sector / *I.V. Zapatrina* // *Finansy Ukrayiny*. — 2008. — No. 4. — p. 9 [In Russian].

Index³² developed by the UN-Habitat experts is based on the number of aggregates divided into five major groups (factors) having the largest impact on the welfare of cities and their residents. The determining factors for sustainable development are the city economy performance, the state of infrastructure, quality of life for residents, availability of capital and environmental sustainability of urban areas. The Index is quite illustrative and can be used as an indicator of urban development and effective management at the local level, as well as effectiveness of budgetary policy and current development strategies of municipalities. According to UN-Habitat calculations, Kyiv belongs to the cities with strong welfare factors (Table 2), but problems in municipal management, development of public institutions, inadequate legal framework and insufficient coordination of budgetary policies with the strategic goals of the city slow down development of the capital and, therefore, reduce quality of life for its residents.

Table 2 Cities by the city prosperity index³³

Groups (by welfare factors)	Group characteristics	Representative cities
1	2	3
Cities with the strongest welfare factors (0.900 and above)	<ul style="list-style-type: none"> - Stable integration of all five welfare factors; - High volumes of public goods and services production, high economy performance; - Strong support of urbanization processes (high-quality management, planning, legal framework) enhancing security and environmental safety improvement. 	Vienna, Warsaw, Milan, Zurich, Oslo, London, Toronto, New York, Auckland, Melbourne
Cities with strong welfare factors – category 1 (0.800–0.899)	<ul style="list-style-type: none"> - Welfare factors are interconnected, leading to the synergistic effect; - High accessibility of public goods; - Relatively strong public institutions and stable legislation 	Istanbul, Mexico City, Bucharest, Shanghai, Moscow, Seoul, Prague, Athens, Lisbon, Budapest
Cities with strong welfare factors – category 2 (0.700–0.799)	<ul style="list-style-type: none"> - Showing less coordinated and sustainable development; - Institutions, legal and regulatory framework; municipal management are in consolidation phase 	Cairo, Manila, Johannesburg, Jakarta, Kyiv, Cape Town, Beijing, Yerevan, Bangkok, Amman

³² UN-Habitat (2013). State of the World's Cities Report 2012/13: Prosperity of Cities. — New York. — P. 13–15.

³³ Ibid. — P. 13–14.

1	2	3
Cities with moderate welfare factors (0.600–0.699)	<ul style="list-style-type: none"> - Greater differences between various prosperity factors; - Less balanced development; - Institutional and structural deficiencies; - Significant differences in the incomes of the richest and poorest population groups 	New Delhi, Yaounde, Guatemala, Ulaanbaatar, Phnom Penh, Nairobi, Mumbai, Kishinev, Tegucigalpa
Cities with underdeveloped welfare factors (0.500–0.599)	<ul style="list-style-type: none"> - Production of goods and services remains low; - Lack of capital investment in the production of public goods; - Historical structural problems, inequality of opportunities, poverty is very common; - Lack of social programmes for the poor. 	Lusaka, Dar es Salaam, Harare, Dakar, Addis Ababa, La Paz, Accra, Lagos, Kampala, Dhaka, Kathmandu, Abidjan
Cities with the weakest welfare factors (0.500 and below)	<ul style="list-style-type: none"> - Dysfunctional systems, significant institutional shortcomings; - Slight economic growth, widespread poverty; - Countries in which there are conflicts or which have recently experienced the latter. 	Monrovia, Conakry, Antananarivo, Bamako, Niamey

It should be noted that Kyiv was found in the same group with cities of Africa and Asia, i.e. with cities of the developing countries. It is known that the problems faced by these countries (ultrafast urbanization rates, lack of infrastructure and affordable housing, stark contrasts in the income levels of the rich and the poor) are not quite similar to those faced by the Ukrainians, in particular, by residents of the capital. Due to the fact that the urbanization process in Ukraine is not too fast and taking a long time, the most important problem here lies not in the lack of infrastructure, housing, or a transport network as such, but in the low level of municipal development management, which leads to Ukrainian cities although having quite a base keep developing at a rather slow pace and cannot compete with the leading cities of Europe and South America.

However, the problem of the urbanization process underfunding is relevant not only for Ukraine due to being associated with huge amounts of investment needed for municipal development. The problem emerges both in developed countries and in those developing. According to McKinsey Global Institute³⁴, in order to maintain the current global GDP growth rate, by 2030 USD 57 trillion should be invested in the infrastructure, which exceeds the value of the entire infrastructure set up to date.

According to estimates, for implementation of the most important infrastructure projects Kyiv should raise about EUR 4 billion: circa

³⁴ Infrastructure productivity: How to save \$1 trillion a year / McKinsey Global Institute. — 2013. — January. — P. 1.

3 billion should be invested in the transport infrastructure, while the rest – in development of housing and communal services and the city's housing stock (Table 3). It is quite clear that financing modernization of the existing infrastructure facilities and construction of the new ones at only budget expense is impossible. Therefore, it is necessary to introduce alternative models of attracting the necessary resources: applying external funding mechanisms, attracting private investment capital through introduction of public-private partnerships, funding by international organizations, etc.

*Table 3 Volumes of required investments in Kyiv infrastructure*³⁵

Type of infrastructure	Required volume of investments, EUR million
Housing stock and elevators	224
Heating and power supply facilities	1720
Water and sewage facilities	810
Transport infrastructure (key projects)	1152
Transport infrastructure (the rest of preferred projects)	2101
Total	6007

International practice shows use of classification mechanisms for financing municipal development by dividing the latter into *institutional* for implementation of which local authorities should establish additional institutions, and *non-institutional* ones being by far more common. The latter include: a) resources of local budgets (taxes and fees, sales and rental of municipal property, municipal target programmes); b) resources of higher level budgets (regional agreements on social and economic development, budgetary investment projects); c) investment resources (local trust funds, special economic areas, public-private partnerships, creation of public corporations); d) credit resources (municipal bonds, bank loans, soft loans from international financial institutions); d) grant resources (international technical assistance, endowments, corporate social responsibility projects)³⁶.

Recently, experts in municipal development and representatives of public authorities have been showing a significant interest in the models of cooperation between business and government that allow to raise additional funds for large infrastructure projects important for a certain region both economically and socially. Such

³⁵ Development Strategy of Kyiv till 2025 [Electronic resource]. — Available from: http://kievcity.gov.ua/content/13_strateghija-rozvytku-2025.html [In Ukrainian].

³⁶ Methods and mechanisms for financing local economic development [Electronic resource] : report 2012 — Available from: http://www.mled.org.ua/media/docs/Financial_Methods_and_Mechanisms_Report_Kyiv_2012.pdf [In Ukrainian].

mechanisms are called public-private partnerships (PPP)³⁷. In essence, this implies a form of cooperation between public and private parties, a joint business³⁸.

Different forms of PPP can now be found in almost all sectors of the local infrastructure. The PPP range covers all value creation chain segments in various sections of the infrastructure (supply systems, transportation projects, reconstruction and urban development projects, communication means development, qualification improvement, etc). For example, in Great Britain 70% of infrastructure services in jurisdictions are implemented through public-private partnerships. Experts expect a rapid increase in such projects around the world, especially in countries with strong trends of urbanization and lack of social capital (Latin America and Africa), as well as in post-socialist countries of Eastern Europe, where decentralization at the national level leads to setting of new objectives at both regional and local levels without corresponding provision of capital³⁹.

United Nations experts in public-private partnership development in Ukraine distinguish the following forms thereof⁴⁰: a) contracts for services (government contracts) – signing contracts between the state and a private partner indicating the rights and obligations of the parties; b) management contracts (O&M, OM&M) regulating transfer of responsibility for operation and management of infrastructure facilities to the private sector; c) lease agreements (BLT, BLTM, LROT), providing for gaining profit from the project within the specified time by the private partner against a certain fee to the state; d) mixed types of contracts (BOT, DBOT, ROT, BOOT, DBFO, DCMF, DBFOM, BOO) – the form of contract is selected on the basis of risk-sharing between the government and the business, as stated therein.

With respect to this, I.V. Zapatrina says that PPP mechanisms are becoming more common in Latin America, where involvement of business in modernization and creation of new infrastructure is a part of the relevant sectoral reforms; the second place is taken by East Asia countries, while the third – by those in Europe and Central Asia⁴¹. For post-Soviet countries, including Russia and Ukraine, the PPP offers a new and a very promising tool to attract

³⁷ Public-private partnerships (PPP).

³⁸ *Bennet E.* Public-Private-Partnership for the Urban Environment: Options and Issues / E. Bennet et al. — New York, 1999. — Vol. 1.

³⁹ Economic strategies of active cities. — Spb. : Nauka, 2002. — p. 100.

⁴⁰ Public-private partnership in Ukraine: Strategies for financing public/municipal projects [Electronic resource]. — Available from: <http://www.eef.org.ua> [In Ukrainian].

⁴¹ *Zapatrina I. V.* Housing and communal infrastructure: reforms and financial provision system / I. V. Zapatrina; NAS of Ukraine; Economics and Forecasting Institute. — K., 2010. — p. 286–287 [In Russian].

the necessary resources for funding infrastructure needs subject to implementation of international experience with regard to economic, political, legal and social characteristics of each state. Complexity of the PPP models implementation in terms of infrastructure projects is primarily due to a large number of risks (Table 4) taken by both government and business, as well as due to the need of developing appropriate mechanisms for the risk compensation by virtue of distributing the expected yields from completed projects between the partners.

Table 4 Typical risks of ppp infrastructure projects and hypothetical distribution thereof⁴²

Risk category	Example	Better partner for risk management
Force Majeure	Losses from natural disasters	Public partner
Political Risks	New timing of project approval, land acquisition, changes in the law affecting the income	Public partner
Risk of return (demand)	Inadequate revenue due to the low volume of movement or lower prices due to the elasticity of demand	Basically, the public partner, sometimes – the private partner
Design (technical) risks	Engineering or design errors	Private partner
Construction risks	Increased costs due to faulty equipment causing work prolongation	Private partner
Operational risks	Expenditure operations and life cycle support	Private partner
Environmental risks	Indemnification, compensational expense (fulfilment of financial commitments) through damage to the environment	Private partner
Financial risks	Costs arising from inadequate income hedging and debt management	Basically, the private partner, sometimes – the public partner
Risk of default	Project bankruptcy through any factor or because of all stated above	Distributed between the public and private partners

⁴² Virtuosity Consulting (2005). Successful Examples of Public-Private Partnerships and Private Sector Involvement in Transport Infrastructure Development. Final report for OECD/ECMT Transport Research Centre [Electronic resource]. — Available from : <http://www.internationaltransportforum.org/jtrc/infrastructure/Investment/PPPsuccessStories.pdf>

Summarizing the above, it should be noted that based on the described problems, in our opinion, it would be useful to study foreign experience in local infrastructure financing, since the advanced market economies have accumulated extensive experience in municipal management within both the public (municipal) and the private sectors. A detailed study thereof will offer the opportunity of adopting the advanced techniques and implementing them in the national practice of reforming and effective management of local infrastructure.

Conclusions

Population growth and increasing economic activity in Kyiv cause the need for modernization of the existing and construction of new infrastructure facilities. Comprehensive reforms primarily needed in the housing and communal sectors as well as in the capital's public road system. In order to optimize costs and allot additional financial resources for resolving the said problems, we consider the following as appropriate:

- working out long-term programmes for development of the housing and communal sector, public road system, whereby identifying key investment projects to be implemented in each field;
- optimizing the structure of projects aimed at preventing investments in those lacking clear substantiation of socio-economic effects and benefits. The responsible officers should use precise selection criteria in order to ensure that potential projects contribute to achievement of specific goals. To this end, developing of methods for determination of costs and benefits may prove contributing;
- implementing innovative energy-saving technologies aimed at improving the environmental situation and achieving budgetary savings for construction and maintenance of infrastructure facilities;
- municipal management in Ukraine implementing a number of innovative mechanisms for infrastructure projects financing using both institutional and non-institutional models;
- ensuring the budget process is more transparent and understandable to the public, which will contribute to more efficient consideration of the real needs of population and avoiding wastage of financial resources (justification of tariffs for housing and communal services, public transport, public disclosure of government procurement information, discussing appropriateness of certain infrastructure projects with the public, etc.).

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