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## CURRENT STATUS AND TRENDS OF GREEN ZONES USE IN KIEV

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*The current state of Kyiv city green areas was analyzed in planning, land management, legal and environmental aspects. This article provides comparison per capita green space provision between Kyiv and European cities.*

**Keywords:** *land governance, public land management, acquisition, management and disposal of state land, green space provision, green areas, city land cadastre, city-planning cadastre, state land cadaster, urban forests.*

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**The problem formulation** correlated with Willi Zimmermann's (Germany), opinion, who said that public property assets (which should include green belts, public green space, green areas) are often mismanaged, and nearly all countries underutilize these resources. The power to allocate public land is of great economic and political importance in most countries, and it is a common focus of corrupt practices. Public land is often treated as a "free good", whereas "good" land in terms of location, use and service delivery is in fact scarce and valuable. [1].

We want to pay attention on green areas in Ukrainian cities, especially in Kyiv as the Ukrainian capital and also most urbanized city in our country. Green areas value is environmentally and economically understated, and the existing legal framework does not guarantee reliable mechanisms for full environmental activities conducting in cities. Therefore, we have to find ways to ensure the green spaces pres-

ervation, improving effective mechanisms for their protection has become a priority of economic and environmental policy.

Cities and urban landscapes research has always paid much attention. Green areas researches are especially important for modern big cities. This is due to the fact that these areas are showing significant positive impact on air quality and climatic conditions of the urban environment, increase its attractiveness, promote biodiversity urban landscape, providing favorable conditions for the rest of the urban population [2]. It should be noted that an important indicator that characterizes green areas in urban green area is the per capita green space provision. This problems were discussed in this article.

### **Recent research and publications analysis.**

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V. Semchyk, N. Titova, Y. Shemshuchenko are ukrainian scientists who concentrated their researches on legislation problems of public land and land use [3].

Biotic components of the urban landscape of green areas research and its optimization devoted many works of the Eastern European researchers (Y. Khromov, 1974; V. Kucheryavyi, 1984, 1994, 1999; A. Verhunov, 1982; A. Belkin, 1987; S. Yablokov, 1994; O. Laptev AA, 1998).

**Article purpose** is the analysis of current state and trends of green areas use in the Kyiv city. Comparison per capita green space provision in Kyiv and European cities.

### ***The main material.***

Public lands in the cities are lands of public ownership (according to V. Rybakov and R. Shyshka's opinion which in their work, notes that there are two types of ownership: public (state, municipal and property of the people) and private [4, pp. 383-384].

Public property land use, as the A. Ripenko assumed conflict between the private interests of the lessee of land (who could be owner of building which located on this land) and others who has guaranteed by the Constitution of Ukraine [5] general right of land use.

Public land accounts for a large portion of public wealth of both developed and developing countries. Willi Zimmermann's (Germany), said that public property assets (which should include green belts, public green space, green areas) are often mismanaged, and nearly all countries underutilize these resources. The power to allocate public land is of great economic and political importance in most countries, and it is a common focus of corrupt practices. Public

land is often treated as a "free good", whereas "good" land in terms of location, use and service delivery is in fact scarce and valuable [1].

In accordance with Ukrainian law public lands in cities includes: squares, streets, driveways, roads, embankments, beaches, parks, squares, boulevards, cemeteries, landfill sites [6]. The list indicated in this article isn't full, so we should assume including green areas in this list.

Ukrainian law determines that public lands boundary definition it's prerogative of village, town and city councils and municipal administrations within the powers defined by law, and Kyiv and Sevastopol city municipal administrations in accordance with plans of "red lines" [7]). Thus the term «red line» is understood by a town-planning documentation regarding geodetic network points as boundaries existing and planned streets, roads, squares, which demarcates the territory neighborhoods, districts and other purposes territories [3].

Particular attention should be given to green areas in the cities, including the capital – Kyiv and question their current state and prospects of development. Green spaces area of all kinds in the city on a reported basis is 56.5 thousands hectares or 67.4% of the total area of the city, including 21.6 thousands hectares located within the municipal area. According to the accepted classification of these plantations are divided by functional grounds into three main groups:

a) public green area: recreation parks, parks, squares and boulevards, special parks (botanical gardens, the zoo, Museum of Folk Architecture and Rural Life, National Complex «Expo-center of Ukraine», Golf Park);

b) green areas of limited use – residential area between houses, child cares

land use territories, schools, universities, academic and medical institutions, enterprises and organizations;

c) green areas for special purposes – sanitary protection zones of industrial enterprises, melioration and shelterbelts, greenhouse farms and arboretums, corridors utilities, green parts of streets, roads and cemeteries. [8]

We should consider including in the legislative field of Ukraine the concept of «green lines» as border between green spaces (parks, squares, boulevards, forests, water park, etc.) and urbanized territories, neighborhoods, other public areas. Implementation of this concept and precise regulation of the use, protection and valuation of these areas could completely change urban planning functions, it could be step towards improving environmental performance and become a part of implementing the principles of sustainable development in urban planning and land management.

Technically green zones boundaries should be defined in accordance with land management projects, which should be planned and approved in accordance with the Law of Ukraine «On Land Management», the Land Code of Ukraine, the Cabinet of Ministers of Ukraine decrees etc. However, green zones boundaries wasn't defined. Current situation gives to local authorities and officials the opportunity to «manual mode» manage of the green zones boundaries, but this is straight way to corrupt practices Analyzing Kyiv city we should say that the current regulatory framework and Concept of green space development in the downtown (Kyiv city council act № 806/3381) does not solve all problems with the green areas preservation and protection. Concept changes do not always a reasonable and

appropriate and often only depend on political grounds. Thus its not a hard to change for a few weeks the Concept (program) that determines for nearly 10 years development and preservation of green areas in the city.

Also particular chapter of the Concept was dedicated to coordination and planning land management projects by structural subdivisions of Kyiv City Municipal Administration. In accordance to this Concept Kyiv City Municipal Administration should to ensure the planning and coordination of land management projects for the organization and define of boundaries and usage of lands of nature reserve and other environmental purposes, forests, public green places and submit them for consideration and approval of the Kyiv city council. However, nowadays almost nothing has been done for acquisition of ownership by municipal enterprises “Administration of Green Spaces”. Kyiv city council almost has not gave permits for planning land management projects, information about green areas has not included into State Land Cadastre. There are many motifs of such inaction of local government, including corruption issues. Meanwhile, there is another equally important problem or even the threat: property owners that have registered ownership of the objects located within the green areas, quite legally file a relevant petition for permit on planning land management project and in case the city council decision (positive or negative) has not been not published within 30 days, according to «Land Code of Ukraine» property owners can use «tacit consent» right for planning land management projects and adding land parcel information into the State Land Cadastre database. The land ownership registration could be next

step even without any city council decision (in case of court order). Therefore, the role of the Concept of green space development in the downtown can be reduced to almost «0». Property (building) owners are able to acquire ownership or land lease of land parcels located within the green areas and to use this territories not for environmental activities but for their business interests.

Urban forests (green belts) complement public green spaces of Kyiv city. Urban forests of Kyiv city include territories of the forest park farms: «Concha Zaspа», «Sviatoshyn» and «Darnitsya» that form Kyiv's green belt, their total area is 34.7 thousand ha; Also included Separated subdivision of NULES of Ukraine «Boyarka Forestry Research Station» forests (222.6 ha), Institute of Zoology – 93.28 hectares and «Feofania» park – 150.0 hectares. Urban forests bring many environmental, sanitary, recreational and other benefits to cities.

Continuing subtopic about legal status of green areas, we can say that urban forests within the legal framework are under better protection, because according to the Forest Code of Ukraine planned cartographic materials of the forest management of previous years are documents that confirm land use right for State forestry enterprises even without city council decisions and state cadastral registration [9].

Cartographic materials of forest management with graphics available for most urban forests territories in Kyiv city. Thus forest park farms can be approved as legitimate urban forests holders. However, we have to say that information about Forest park farms boundaries has not added in the State land cadastre database, but only available in city land cadastre database and also in

most of Forest enterprises, so there is not hard to find half legal ways for to acquisition ownership for urban forests territories, including for target purposes, which may have adversely affect to green spaces surrounding the city of Kyiv city, which play an important role in ecology of human habitats in many ways: they filter air, water, sunlight, provide shelter to animals and recreational area for people. They moderate local climate, slowing wind and storm-water, and shading homes and businesses to conserve energy. They are critical in cooling the urban heat island effect, thus potentially reducing the number of unhealthy ozone days that plague major cities in peak summer months.

Also according to Comprehensive (general) plan and detailed plans of territories, green areas are visualized in the city-planning cadastre as functional areas, which are divided into territorial planning elements (zones). There is situation at current time that information about same objects – the area covered with greenery visualized in two separate resources: city-planning cadastre and city land cadastre that are not synchronized with each other not to mention appropriate integration into a single database for handling objective and only real time information in public use, which also must to interrelates with State land cadastre database.

There is another important question: “Is the Kyiv really one of the greenest cities in Europe or not?”

The actual green space provision in Kyiv city with urban forests is 215.2 m<sup>2</sup>/ person., and within urban areas – 82.3 m<sup>2</sup>/ person.

Noted squares are not accurate and should be measured by instrumental conducted surveys, but we could use Concept data and information.

Table 1. The actual existing public green area availability (with special parks) [8].

Administrative district	Public green area, ha	Per capita green space provision. m <sup>2</sup> /person.
Golosiivskyi district	1118,78	54,46
Darnytskyi district	344,15	11,96
Dniprovskyi district	1158,98	34,14
Desnianskyi district	531,97	16,11
Obolonskyi district	676,63	22,08
Pecherskyi district	383,74	29,53
Podilskyi district	218,55	12,09
Svyatoshynskyi district	320,66	10,12
Solomyanskyi district	264,18	8,99
Shevchenkivskyi district	487,07	20,83
Total:	5504,71	20,91

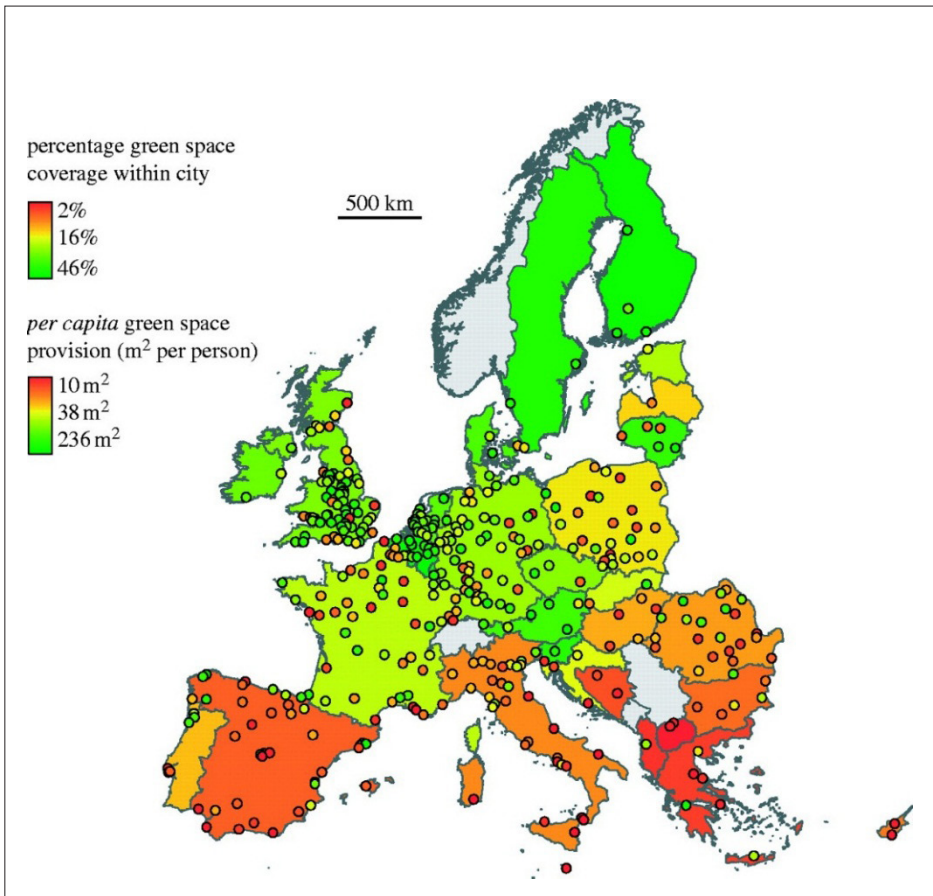


Fig. 1. Green coverage within city and per capita green space provision [10].

We can compare green space provision in Kyiv with the main European cities. “The scaling of green space coverage in European cities” is the article which was published 11 May 2009 by Richard A. Fuller, Kevin J. Gaston, in accordance to this research the 386 European cities accounted for 170.6 million inhabitants in 2001 (34% of Europe’s population). Green space coverage varied markedly, averaging 18.6 per cent and ranging from 1.9 (Reggio di Calabria, Italy) to 46 (Ferrol, Spain) per cent. This coverage showed a clear central tendency, and its frequency distribution among cities was not distinguishable from a normal distribution (Kolmogorov Smirnov  $Z=1.107$ ,  $p=0.172$ ). Some 45.2 million people inhabited cities in the lowest quartile (2–13%) of green space coverage, indicating limited green space availability for a significant proportion of Europe’s population. Proportional green space coverage in the cities increased with latitude ( $r=0.434$ ,  $n=386$ ,  $p<0.001$ ; figure 1). Per capita green space provision varied by two orders of magnitude, from 3 to 4m<sup>2</sup> per person in Cádiz, Fuenlabrada and Almería (Spain) and Reggio di Calabria (Italy) to more than 300m<sup>2</sup> in Liège (Belgium), Oulu (Finland) and Valenciennes (France). This variation formed a clear spatial pattern at country level, with lowest provision in the south and east of Europe, increasing to the north and northwest (figure 1)

So if we compare per capita green space provision in Kyiv city (including forests), result is 215.2 m<sup>2</sup>/person, only within urban areas the situation is different - 82.3 m<sup>2</sup>/person, but if we compare the actual green space provision by public green areas (with special parks) average result is 20.91 m<sup>2</sup>/person. In this case we can see that per capita green space provision in Kyiv city is totally different from the average in Europe at the same time leading and

most important network of green areas of the city belongs to public green areas which, directly affect the state of the urban environment and also they are zones of a mass recreation [8].

### **Conclusions.**

We briefly analyzed the current state of Kyiv city green areas in planning, land management, legal and environmental aspects and we found out obvious problems in their use and protection. It is important to create a unified information system for the whole city, for real time visualization of all decisions of the local government, promising programs and trends, changes in the Concept of green space development in the downtown. Publicity and openness of data is an integral part of the future city and it can be implemented harmoniously within the framework of “Kyiv Smart City” project.

It should be noted that regulatory index of per capita green space provision in a residential area and within walking distance to them should vary depending on the proportion of buildings number of storeys, and considering the unsystematic development of Kyiv city over the last two decades, indicators of per capita green space provision should be revised. Cartographic materials, including the comprehensive (general) plan of a city, land cadastre and city-planning cadastre and other data could be the basis for finding out the most critical area neighborhoods, for which new green spaces creation is extremely important and the next step may be to initiate appropriate changes to the Concept of green space development in the downtown. As the result should be the green space provision increasing provision and forming of the fundamental elements of the Kyiv city ecological network.



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### **Деркульський Р.Ю. СУЧАСНИЙ СТАН ТА ТЕНДЕНЦІЇ ВИКОРИСТАННЯ ЗЕЛЕНИХ ЗОН У М. КИЄВІ**

*Проведено аналіз чинних нормативно-правових актів, що регулюють використання земель загального користування та зокрема зелених зон у м. Києві. Проведено порівняння рівня забезпеченості озелененими територіями у м. Києві із показником забезпеченості у країнах Європи.*

**Ключові слова:** *землі загального користування, зелена зона, озеленені території, забезпеченість зеленими насадженнями, міський земельний кадастр, містобудівний кадастр, державний земельний кадастр.*

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### **Деркульський Р.Ю. СОВРЕМЕННОЕ СОСТОЯНИЕ И ТЕНДЕНЦИИ ИСПОЛЬЗОВАНИЯ ЗЕЛЕННЫХ ЗОН В Г. КИЕВЕ**

*Проведен анализ действующих нормативно-правовых актов, регулирующих использование земель общего пользования и в частности зеленых зон в г. Киеве. Проведено сравнение уровня обеспеченности озелененными территориями в г. Киеве с показателем обеспеченности в странах Европы.*

**Ключевые слова:** *земли общего пользования, зеленая зона, озелененные территории, обеспеченность зелеными насаждениями, городской земельный кадастр, градостроительный кадастр, государственный земельный кадастр.*