

PROBLEMS, CONSEQUENCES AND SOLUTIONS IN GREENING LARGE CITIES

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Abstract: *This thesis analyzes the main obstacles faced in creating green spaces in large cities, their socio-ecological consequences, and scientifically based proposals for their elimination.*

Keywords: *urban greening, urban heat island, ecosystem services, green infrastructure.*

Globally, only 50% to 70% of the urban population lives in cities; this figure is expected to reach almost 70% by 2050. In this regard, preserving and expanding green spaces in cities serves not only environmental but also social sustainability.

The main challenges faced by the greening of large cities are:

- *Land scarcity and densification;*

Although the compact city model has been effective in combating urban sprawl, the lack of green space in dense areas poses a significant problem.

- *Lack of financial and management resources;*

Many developing cities – for example, São Paulo, Mexico City – are unable to implement ecological planning due to lack of financial resources.

- *Social inequality and ecophobia;*

Many large cities, especially in the Global South, have little green infrastructure in low-income neighborhoods, which leads to the exclusion of residents from hygiene, health and climate protection.

- *Global warming and the heat island effect;*

Urban areas are 1–6°C warmer than surrounding rural areas. This leads to negative health consequences, increased energy consumption and an increase in heat-related illnesses (especially in cities such as Mumbai, Delhi, Bengaluru).

- *Lack of biodiversity and allergen risks;*

Large urban trees are sometimes at risk of disease and pests because they are based on several species. For example, in Portland, 25% of the trees are maples, which require significant costs to protect them from pests.

- *Technical and communication barriers;*

There is a lack of coordination in the exchange of information between different organizations involved in urban greening, which reduces the effectiveness of the project.

The socio-ecological benefits of greening include improving air quality, regulating climate and reducing noise levels, regulating water flow, and increasing carbon sequestration. Green spaces improve mood, reduce anxiety, stress, and depression; and strengthen social connections. They provide ecological sustainability by restoring undeveloped land, increasing biodiversity, and providing ecosystem services.

By simplifying ecological design and architecture to create problem-solving strategies, naturalistic landscape approaches and ecosystem gardens encourage biodiversity and provide greater visual/olfactory/functional benefits. In the transition to sustainable

sources and native plants, the promotion of water-efficient native varieties in drought-prone areas, such as in Lubbock, is effective. With the help of optimized algorithms such as integrated planning methodologies, the location of green infrastructure can be planned accurately and efficiently. Through civic participation and private sector involvement, private-public partnerships, green finance, and community participation can achieve sustainability in greening. Sustainable infrastructure: roof gardens, vertical greening, the installation of green plants on roofs and walls creates new ecological reserve areas in urban areas, mitigates indoor heat, and allows for climate adaptation. Improved monitoring and legislation will strengthen the protection of ecosystems by automatically detecting logging incidents and strengthening financial and criminal liability.

International experience shows that Singapore has been running a “Garden City” campaign since 1963. In 1974, 158,000 roots were planted; to date, 1.4 million trees have been planted. The Greening of Detroit, a non-governmental initiative founded in 1989, has planted more than 146,000 trees by 2023. Paris plans to have 170,000 trees by 2026, and more than half of the city will be covered with biological greenery by 2030.

In conclusion, the greenery of large cities is essential for environmental sustainability, social health and climate adaptation. An integrated approach - ecological design, community participation, legal protection and financial investment - offers a systemic solution to the problems. Strategies adapted to the local context (e.g., local varieties, valley climate conditions) can help build a green future even in large cities.

REFERENCES

1. Adilov Z.H. O'zbekiston shaharlari landshaft muhiti dizaynini kompleks tashkil etish. Monografiya. "Print World" nashriyoti Toshkent - 2021.
2. Adilov Z.H. "Landshaft dizayni". O'quv qo'llanma. UDK 712.00:712.4.01. Toshkent - 2021.
3. Turdimurodov S. H. Shaharsozlik va ko'kalamzorlashtirish asoslari. Toshkent - 2018.
4. Yo'ldoshev A. A., Karimova M. X. Urbanizatsiya va ekologik muammolar. Toshkent - 2018.
7. <https://iclei.org/en/urban-green-infrastructure.html>
8. <https://www.unep.org/resources/report/urban-forestry-and-green-infrastructure>
9. <https://www.worldbank.org/en/topic/urbandevelopment/brief/urban-green-spaces>