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KEY FEATURES OF ECO-URBANIZATION IN THE ARCHITECTURAL ENVIRONMENT

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Abstract: The article examines the key features of eco-reurbanization in the architectural environment, viewed as the integration of sustainable and ecological principles into urban redevelopment processes. The study analyzes approaches to energy-efficient construction, integration of green and blue infrastructure, social engagement, and adaptive reuse of buildings.

Keywords: Eco-reurbanization, sustainable construction, green infrastructure, biophilic design, adaptive reuse, urban environment.

Аннотация: В статье рассматриваются ключевые особенности экореурбанизации в архитектурной среде, рассматриваемой как интеграция принципов устойчивого развития и экологии в процессы городской реконструкции. В исследовании анализируются подходы к энергоэффективному строительству, интеграции «зелёной» и «синей» инфраструктуры, социальной активности и адаптивному повторному использованию зданий.

Ключевые слова: экореурбанизация, устойчивое строительство, «зелёная» инфраструктура, биофильный дизайн, адаптивное повторное использование, городская среда.

Annotatsiya: Maqolada me'moriy muhitda eko-qayta urbanizatsiyaning asosiy xususiyatlari, shaharlarni qayta qurish jarayonlariga barqaror va ekologik tamoyillarning integratsiyasi sifatida ko'rib chiqiladi. Tadqiqotda energiya tejamkor qurilish, yashil va ko'k infratuzilmani integratsiyalash, ijtimoiy ishtirok va binolarni moslashuvchan qayta ishlatishga yondashuvlar tahlil qilinadi.

Kalit so'zlar: Eko-qayta urbanizatsiya, barqaror qurilish, yashil infratuzilma, biofil dizayn, moslashuvchan qayta foydalanish, shahar muhiti.

Introduction

Eco-urbanization in the built environment is a comprehensive approach to the design and development of urban areas that seeks to integrate environmental principles and sustainable practices into all aspects of the creation and operation of buildings and infrastructure. Its primary goal is to minimize negative environmental impacts, maximize the use of natural resources, and improve the quality of life of city residents. Modern cities face numerous challenges: increasing building density, deteriorating air quality, a lack of green space, social segregation, and climate change. In this context, eco-reurbanization is an approach aimed at

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harmonizing the built and natural environments by integrating sustainable and environmental principles into urban renewal processes. This approach not only improves a city's environmental performance but also enhances the quality of life of its residents through energy efficiency, biodiversity conservation, and social inclusiveness [1][2][3].

A large number of multi-family residential buildings is an integral part of any metropolitan area. The high concentration of enterprises, representing virtually all known sectors of the economy, ensures a constant increase in the population of a large metropolitan area. This is why the vast majority of housing in any city consists of multi-family residential buildings.

Therefore, it is essential to consider development experience in other countries, with particular attention paid to practical examples, such as successful international projects in Singapore and Copenhagen. The study demonstrates that an integrated approach enables the creation of sustainable, energy-efficient, and socially inclusive urban environments, harmoniously integrated with natural ecosystems.

Key features of eco-reurbanization: Sustainable construction practices. Eco-reurbanization prioritizes energy-efficient solutions, the use of renewable energy sources, and environmentally friendly materials that reduce the carbon footprint and minimize the negative impact on the environment. Passive design strategies are used in architecture, such as orienting the building to natural light, natural ventilation, green roofs, and solar panels [1][7][9].



Fig. 1. Parkroyal Pickering Hotel, Singapore

International experience demonstrates the successful implementation of these principles. For example, in Singapore, residential complexes and office buildings widely utilize green roofs (Fig. 1) and solar panels, while in Copenhagen, new construction projects focus on net-zero energy consumption and eco-friendly façade materials (Fig. 2).

Integration of green and blue infrastructure: Green infrastructure includes parks, gardens, and vertical landscaping, while blue infrastructure includes water

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features such as fountains, ponds, and water features. Their integration into the urban environment enhances ecosystem connectivity, improves air quality, and creates natural cooling zones [3][4][1].



Fig. 2. Crowne Plaza Hotel, Copenhagen

International experience demonstrates the high effectiveness of such solutions. Singapore widely uses green roofs, vertical gardens (Fig. 3), and water channels, which positively impact the microclimate and biodiversity of urban areas.

Social and Community Engagement: Eco - reurbanization projects promote social sustainability by creating public spaces that foster interaction and inclusivity. Biophilic design, which connects people with nature, improves the mental and physical health of residents [2][3].



Fig. 3. Tree House Residential Complex, Singapore

International examples include parklands and public squares in Singapore, such as Gardens by the Bay, and new residential areas in Copenhagen, where courtyards and green corridors are designed to encourage public interaction and improve the quality of urban life.

Adaptive Reuse and Circular Economy: The principle of adaptive reuse is the repurposing of existing buildings and materials, which reduces waste and preserves cultural heritage [3].

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Fig.4. Gardens by the Bay, Singapore

Examples of international projects include the redevelopment of industrial zones in Copenhagen and Vienna, where old warehouses are being transformed into residential complexes and cultural centers while preserving their historical value.

Large-scale and integrated planning: Eco-urbanization views the city as an interconnected ecosystem, considering spatial diversity and connectivity at the local, regional, and global levels. This ensures sustainability and the rational flow of energy, materials, and ecosystem services [4].

Regulatory and practical tools: The application of design codes, autonomous energy solutions, and passive architectural strategies is key to implementing ecological principles in urban architecture [2]. Thus, eco-urbanization in the built environment represents a necessary step toward creating cities of the future—cities that are not only functional but also healthy, equitable, sustainable, and harmonious, ensuring prosperity for both people and the environment. This is not just a desirable trend, but an urgent necessity for ensuring the long-term well-being and resilience of our urban systems.

Conclusions: Eco-urbanization in the built environment is a comprehensive approach aimed at creating sustainable, energy-efficient, and socially inclusive urban areas. The practical implementation of such projects around the world demonstrates the potential for adapting international experience to local contexts. The introduction of green and blue infrastructure, energy-efficient technologies, biophilic design, and adaptive reuse fosters harmonious interactions between natural and urban systems, improves residents' quality of life, and increases urban resilience to modern challenges.

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