

“Green structures” as a tool for reducing the environmental risks of urban ecosystems

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Modern urbocenosis is an unstable artificial ecosystem. Under the influence of natural and man-made factors, urbocenoses are subject of environmental, economic and social risks.

Optimal using and restoration of natural areas is one of the ways to reduce the risks of urbocenoses, a way to increase their stability and sustainable development.

Our analysis of the state of the green areas of the city of Kiev (Ukraine) showed insufficient planting of common areas (below the accepted standard of 20 m² per person), as well as the unsatisfactory condition of the territories of limited and special using. The problem is aggravated by the inability to expand green zones of the urban system due to the compacted buildings and large zones of asphalted areas. One of the ways to solve this problem and minimize risks is “green building”, based on environmental friendliness, energy efficiency, and care for future generations. “Green building” involves the using of “green technologies”, which include “green structures” - “green slopes”, eco-parking, “green roofs”, vertical and front gardening. According to ISO - 14040-14043, modern construction is considered as a chain of complex stages: raw materials extraction (1) → materials production (2) → design (3) → construction site preparation (4) → building (5) → operation of the finished object (6) → reuse (7) → recycling (8). Almost at every stage of construction, it is possible to reduce the environmental hazard by introducing “green structures”. At the first and second stages, it is possible to reduce the intensity of the extraction of building materials through the using of plant biopolymers and recycled materials in the production of "green structures". At the third stage, thanks to the "green planning", you can lay in the project of facade or roof gardening. At the sixth stage during the operation of the facility, “green structures” perform environmental, economic (energy efficiency) and social functions. At the seventh stage, the circuit is closed, and the components of "green structures" can be reused. Due to the natural origin, “green structures” are almost completely naturally utilized (the eighth stage), due to which the disposal of the construction object “under zero” is carried out.