
MATERIALS OF THE INTERNATIONAL CONFERENCE “MEGACITIES 2050: ENVIRONMENTAL CONSEQUENCES OF URBANIZATION IN EUROPE”

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MEGACITIES 2050: FROM URBANIZATION THREATS TO SUSTAINABLE URBAN DEVELOPMENT

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Urbanization is a global land-use change tendency, responsible for substantial environmental changes. At the same time urban ecosystems are vulnerable to global changes, and their adaptation is necessary to maintain sustainable functionality and important ecosystem services. Sustainable urban development demands for integration of innovative green technologies and natural-based solutions in urban management, which is only possible through a collaboration of scientists, landscape designers, civil engineers and policy-makers.

Key words: urbanization, green areas, urban soils, ecosystem services, green technologies, natural based solutions

Globally, urbanization is growing rapidly with more than two thirds of the world population expected to live in cities by 2050 [9; 1]. Urbanization influences the environment and human well-being by e.g. contributing to climate change, soil degradation and biodiversity reduction. At the same time, urban ecosystems are very sensitive to global changes, and their adaptation is necessary to maintain sustainable functionality and the most important ecosystem services [5].

Historically, urbanization was mainly studied as a potential environmental threat, resulting in such as soil, water and atmospheric, forest degradation and biodiversity loss. Numerous evidences of the unfavorable ecological state of urban environments accumulated by the beginning of 21st century [8; 3]. Urbanization alters vegetation, soil and fluxes of substances and energy. An established urban ecosystem strongly differs from a natural or agricultural ecosystem when urbanization converts it to serve urban purposes. Urban ecosystems are characterized by the man-changed and artificial landscapes with

considerable anthropogenic disturbances (e.g. environmental pollution, soil sealing, waste disposal). Cities generally consume much more energy than they generally provide, resulting in intensive emissions of heat, air and water contaminants and greenhouse gases.

Together with the continued increase of the global urban populations, this motivated the development of novel concepts like ‘sustainable cities’. The concept of sustainability resulted in the design of, for example, ‘emission free’ cities [6] and ‘climate adapted’ cities [7] which investigate urban areas as source of unique natural and urban-specific resources, rather than an environmental threat.

The international conference Megacities 2050 aimed to search for solutions of the environmental problems of modern megapolises and to maximize the capacity of urban ecosystems to support specific (‘natural’) functions and services. Urban green areas provides a set of key ecosystem services, e.g. climate mitigation, biodiversity, water and air quality control [2]. The role of green infrastructure in sustainable urban development was clearly illustrated in papers, focused on the restoration of the historical parks of Saint Petersburg and studying interrelationships between soil quality and plantations’ state in Moscow. Urban soils are key for regulating healthy urban ecosystems. Reserving minerals and nutrients (provisioning service), carbon sequestration contributing to climate mitigation, runoff and flood control (regulating service) and archiving historical artefacts (cultural service) are widely recognized ESs of urban soils. Currently, urban soils face a paradox of being of the highest value regarding property and building issue, and being almost totally ignored with regard to the ES they can provide [4]. Different aspects of monitoring and assessment of urban soils at the multiple scales from local (e.g. urban soil constructions) to regional (mapping basal respiration in the Moscow region) were also discussed in the papers of the issue. Finally, practical applications of green infrastructure, for example, for dust control were presented and an economic value of green areas and natural-base solutions was analyzed.

The conference allowed receiving a multi-disciplinary feedback from a broad audience, including scientific and research community, municipal services, environmental protection agency and stakeholder working in urban management and greenery. Such a multi-disciplinary discussion is an essential step towards sustainable urban development, since implementation of innovative technologies and natural-based solutions gets feasible only when all interested stakeholder’ group collaborate for the purpose of smart urban management.

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МЕГАПОЛИСЫ 2050: ОТ УГРОЗ УРБАНИЗАЦИИ К УСТОЙЧИВОМУ РАЗВИТИЮ ГОРОДОВ

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Урбанизация — глобальная тенденция изменения современного землепользования, фундаментально изменяющая окружающую среду. В свою очередь, урбозкосистемы подвержены воздействию глобальных (в том числе климатических) изменений. Адаптация городских экосистем к глобальным изменениям — необходимое условие сохранения их устойчивого функционирования и предоставляемых ими экосистемных сервисов. Устойчивое развитие городов подразумевает внедрение современных технологий зеленого строительства и рационального природопользования в систему городского менеджмента, что достижимо только при взаимодействии всех заинтересованных сторон, включая научное сообщество, ландшафтных архитекторов, инженеров-градостроителей, городскую и муниципальную администрацию.

Ключевые слова: урбанизация, зеленые зоны, городские почвы, экосистемные сервисы, ландшафтно-адаптивные решения