Abstract

Blue-green infrastructure (BGI) is an important tool in rainwater management in urban areas, reducing the negative consequences of urbanization. The progressive expansion of cities, leads to an increase in the proportion of impervious surfaces that disrupt the hydrological cycle.

The main objective of the study carried out within the framework of this dissertation was to identify the needs and opportunities for implementing appropriate BGI elements as a solution of sustainable rainwater management in an urban environment.

An analysis of literature databases found a significant increase in interest in BGI as an effective tool for mitigating the effects of excessive surface sealing in urban areas. The results of the studies conducted in Warsaw and Olsztyn, showed that the dynamics of changes in the structure of urban land use is hydrologically unfavorable. Impervious surfaces, by limiting infiltration, allow the transport of anthropogenic pollutants with surface runoff directly into urban aquatic ecosystems, thereby increasing the risk of their degredation. Progressive urbanization therefore forces the need for intervention in accordance with the tenets of sustainable development. It has been shown that the implementation of BGI in cities should be pursued. In order to improve the BGI planning process, the LUSIA model was developed, the operation of which is based on urban indicators defined in GIS, indicating the prevailing land use, degree of sealing, average height and building density.

Key words: blue-green infrastructure, urbanization, imperviousness, rainwater management, sustainability developement