

URBAN GEOSYSTEMS MAPPING AS A FRAMEWORK FOR ASSESSMENT AND PLANNING

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Structural organization of nature environment and local tangible and intangible culture may be represented by means of urban geosystem mapping. Conception of urban geosystems is based on geosystem theory (Sochava, 1975) and represents both natural and anthropogenic landscape pattern. Urban geosystem description includes parent material, relief, geological processes, moisture content, soil sealing, vegetation and building density, height, functionality, architectural look and condition, littering and aesthetic value. The main factor of an urban geosystem formation and functioning may vary along the city – in some geosystems natural processes are mostly controlled by relief, in other – by building density or vegetation.

The mapping and assessment of urban geosystems were carried out in a historical residential town Tarusa (Central Russia) on the base of field research, analysis of DEM and satellite data. We recognized 72 types of urban geosystems and classified them according to anthropogenic transformation degree (from natural landscapes to industrial zones) and relief morphology (from flat moraine planes to ravines and steep valley slopes affected by landslides).

Integral value of urban geosystems is derived from independent ecological, cultural-historical and aesthetic values and assessment of natural risks. Indicators of ecological value (as criteria for ecological assessment) we consider environment littering, the state of vegetation and soil sealing which shows the rate of disruption of natural circulations. Cultural-historical value is defined from historical documents, poetry and paintings assigned to a place and its current condition – architectural heterogeneity and disturbance. Aesthetic attractiveness is evaluated according to Kochurov-Buchatskaya method (2007) adapted for urban territories and includes type of perspective, visibility, attractive points et al. Assessment of natural risks considers erosion, karst, river flooding, waterlogging and landslide and is based on the character of parent material, relief analysis and surface water reallocation caused by buildings and soil sealing.

Assessment of Tarusa urban geosystems integral value has identified the problematic sites of the town and specified the areas of the future urban growth, locations which should be protected from any disturbances and territories more likely to be transformed into recreational zones.

Keywords: urban geosystems, landscape value assessment

References

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