

INTEGRATING GREEN-BLUE INFRASTRUCTURE IN DUMBRĂVIȚA

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Abstract:

Accelerated urbanization in Dumbrăvița has weakened ecological connectivity, reduced the availability of green spaces, and increased hydrological fragmentation. This study integrates spatial analysis, orthophoto interpretation, literature review, and field observations to develop an integrated green-blue infrastructure strategy. The proposed approach connects the Forest Green Corridor, Dumbrăvița Lake, and drainage canals through ecological corridors, public green spaces, and nature-based stormwater management solutions. This strategy supports climate adaptation, enhances urban resilience, preserves biodiversity, and improves quality of life.

Introduction:



Dumbrăvița is rapidly urbanizing due to its proximity to Timișoara, placing pressure on natural ecosystems and green spaces. Key assets include the Green Forest, Dumbrăvița Lake, and drainage canals, while major challenges involve habitat fragmentation, soil degradation, reduced connectivity, and unequal access to green areas.

Material and methods:



The research methodology includes:

- spatial analysis of the study area;
- orthophoto interpretation;
- review of urban planning documentation;
- field observations;
- synthesis of strategic objectives.

General and specific project objectives

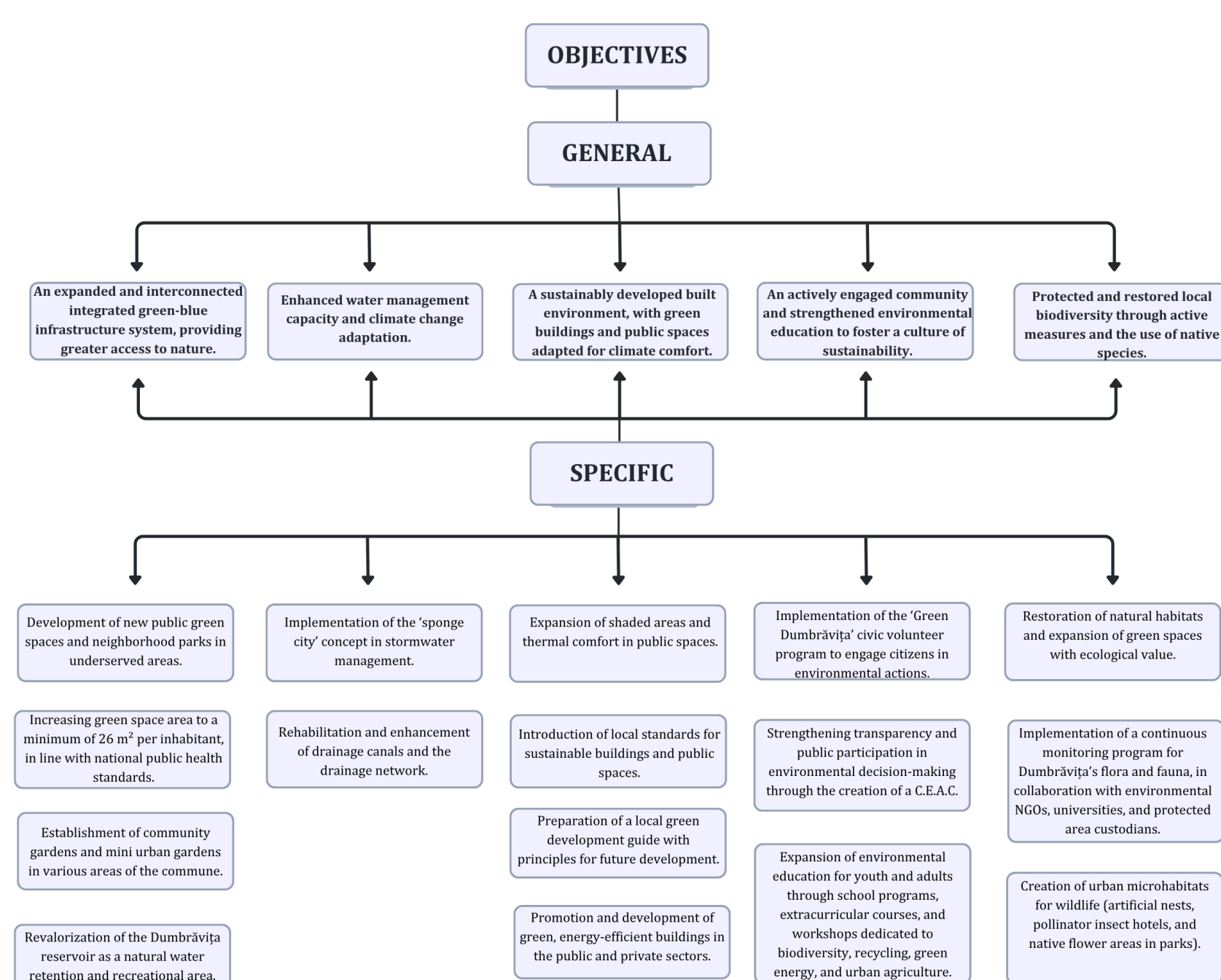


Fig. 1 – Green-blue infrastructure objectives framework
 Source: Own work (Andreea Gheorghe; Andreea Sava)

Conclusion:



Green-blue infrastructure should be integrated as a fundamental component of urban development, as it can restore ecological connectivity, reduce flooding risks, and improve the urban microclimate. Enhancing green spaces and incorporating vegetation into built environments increases urban resilience, while long-term success depends on effective institutional coordination and active community involvement.

Green-blue infrastructure vision for Dumbrăvița

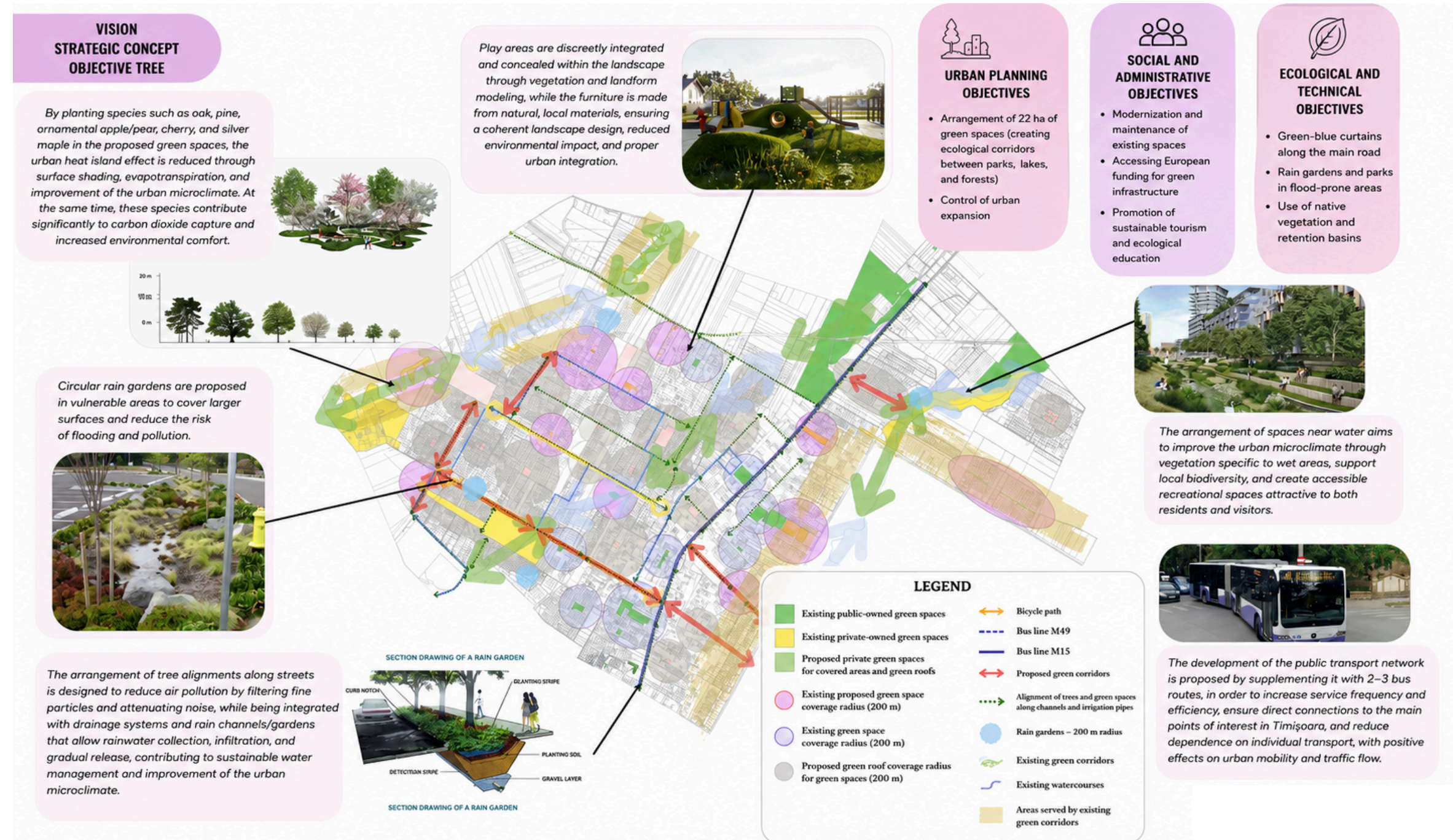


Fig. 2 – Integrated green-blue infrastructure vision and spatial strategy for Dumbrăvița
 Source: Own work (Anamaria Pop et al.)

Strategic solution tree for green development

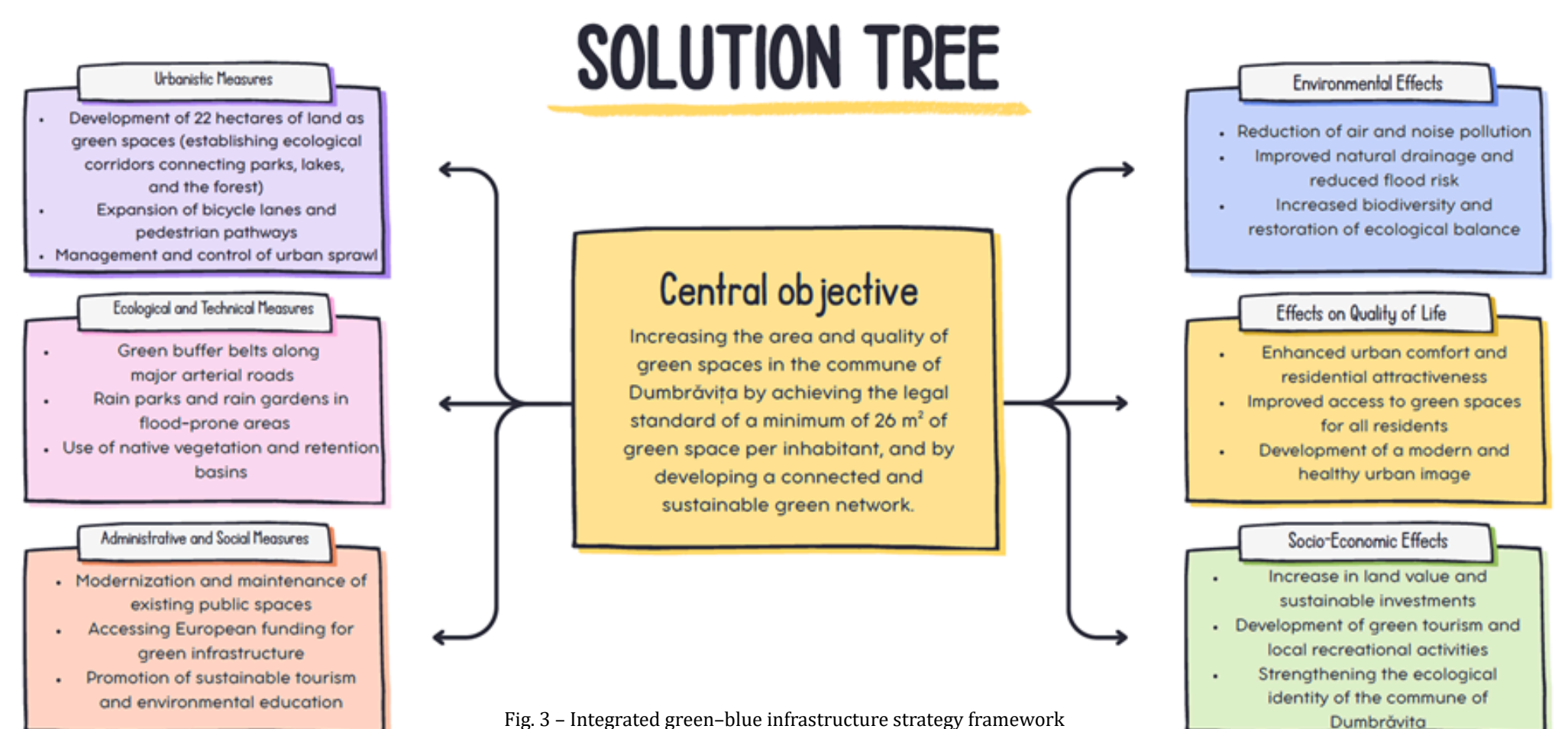


Fig. 3 – Integrated green-blue infrastructure strategy framework
 Source: Own work (Anamaria Pop et al.)

Proposed green-blue corridor network

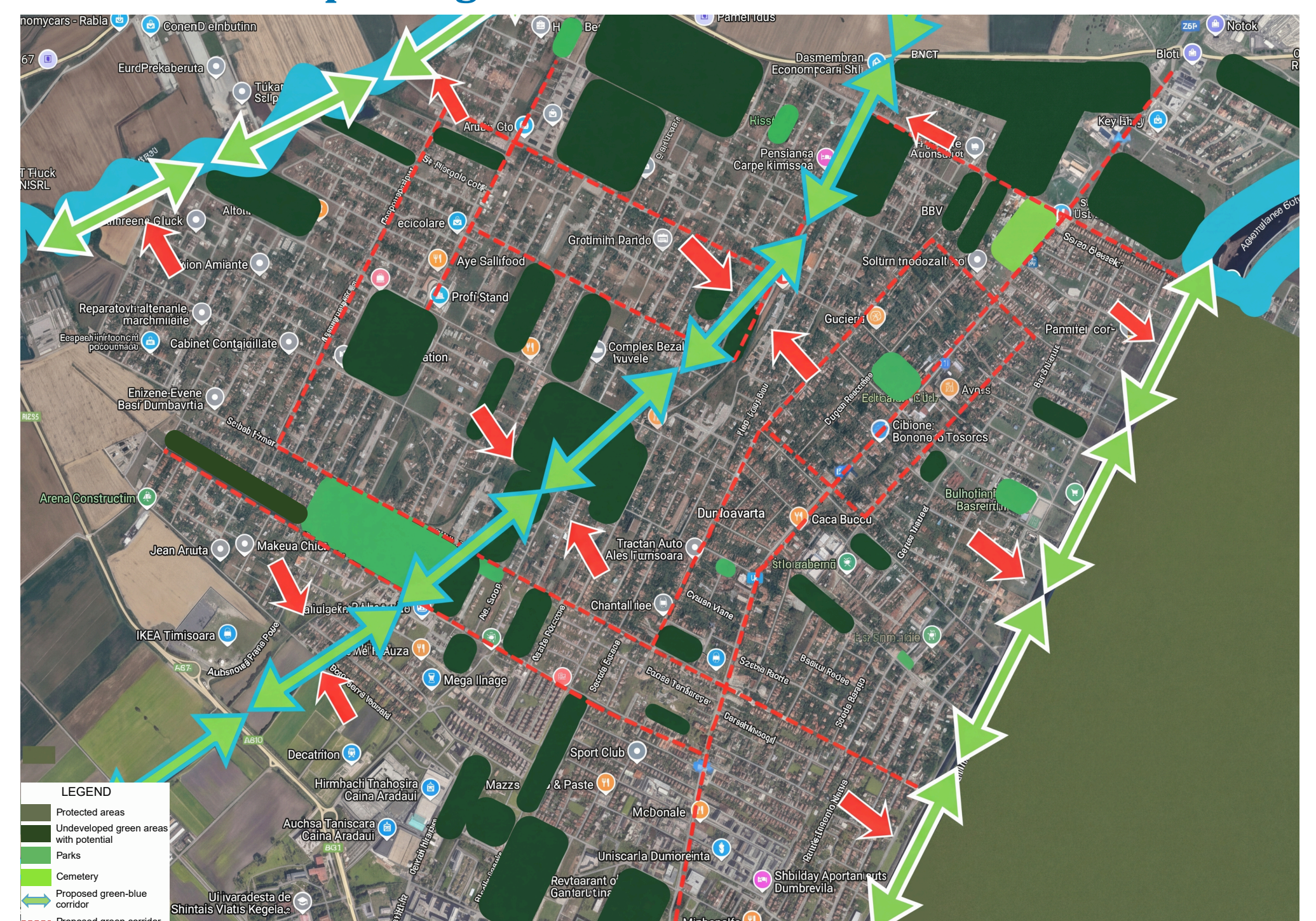


Fig. 4 – Proposed Green-Blue Corridors and Connectivity Network in Dumbrăvița
 Source: Own work (Andreea Gheorghe; Andreea Sava)