



# Green City Approach – Nature Based Solutions- Prishtina case

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## INTRODUCTION

From the urban perspective, green growth represents a fundamental increase in demand for two major elements:

- for environmental quality of life improvements (e.g., clean air and open space/greenery like parks)
  - for products and services that reduce pressures on the environment (e.g., energy efficiency technologies, sustainable and integrated water management, sustainable mobility, circular economy, etc.).
- In this respect, the research recommends including a Green City Approach in the implementation of the projects on sewer and storm network and management, as far as practicable, in which their applicability for the service area of Regional Water Company Prishtina j.s.c (RWCP) is analysed and recommendations given.

However, it must be noted that any physical implementation of Green City measures as such will affect to a larger extent the municipalities and to lower extent RWCP.

Climate change, as a global challenge on one side, and the chaotic urban growth of capital cities with a high demand in the real estate market for residential purposes, are causing significant challenges for local municipalities and public companies alike, mainly on infrastructure and environment management.

## METHODS

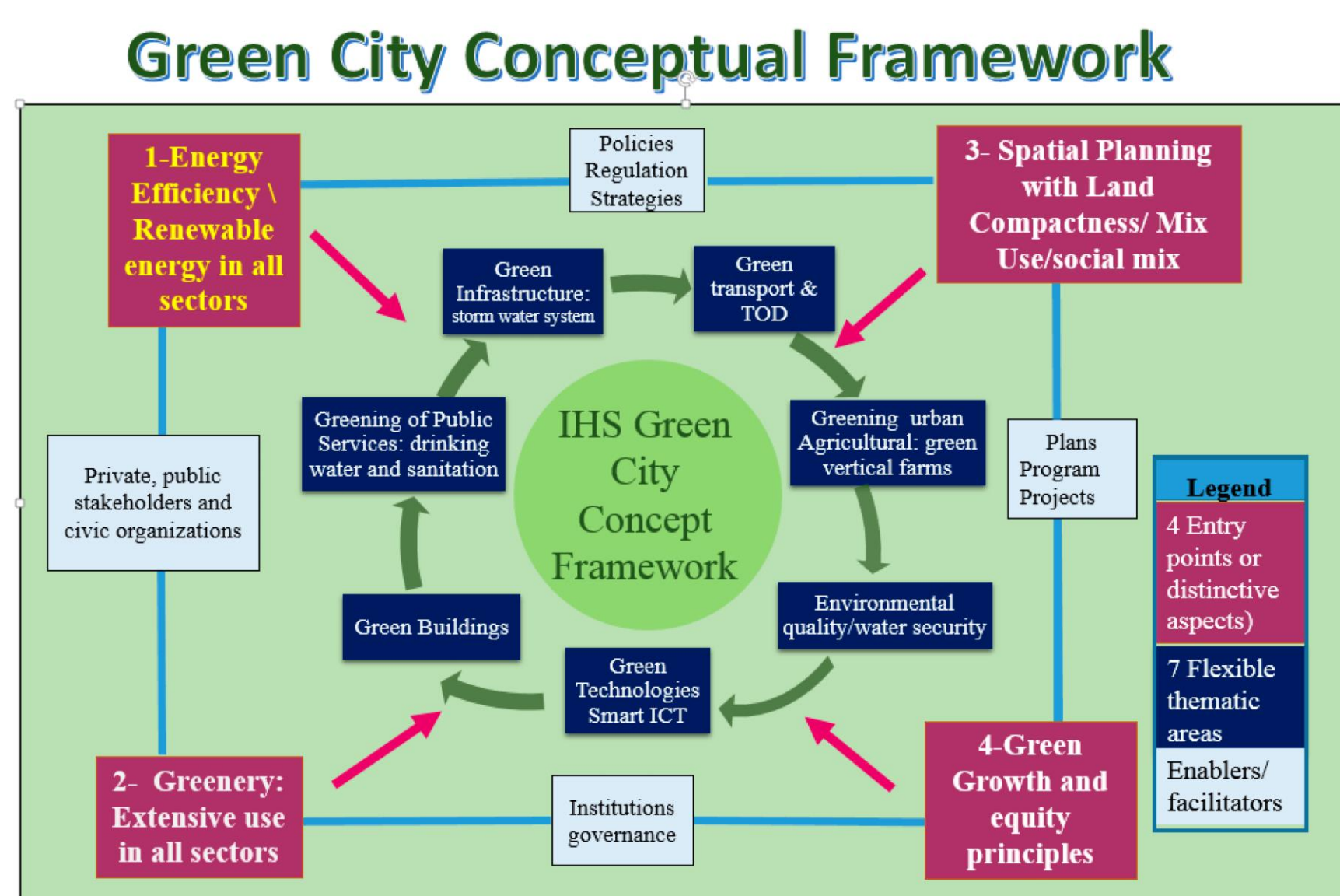


Figure 1: Green city conceptual Framework, Source: IHS Rotterdam

The study has chosen the following approach in order to identify the most appropriate measures and strategies linking "green cities" with the main topic of this study plan, meaning sustainable handling of wastewater and stormwater:

- Collection and Screening of existing studies, strategies and policy papers.
- Assessment of those papers and studies and identification of study plan applicable aspects.
- Identification of additional measures and strategies suitable for the wastewater and stormwater sector with interlinkage to the green city concept.
- Analysis and ranking of collected measures and strategies in terms of applicability to the local context particular in Prishtina as main settlement and surrounding areas.
- Detailed description and recommendations on strategies related to Green City Concept.

## RESULTS

Within the city of Prishtina, two eligible areas for general stormwater retention area (meaning can be considered as a kind of "park") and associated construction of wetlands have been identified. Such are in each case located just at the entrance of the existing rivers Prishtina and Vellusha to the respective tunnel and are even considered within the Urban Development Plan as Flood Retention Area. The two areas are shown in blue on the map

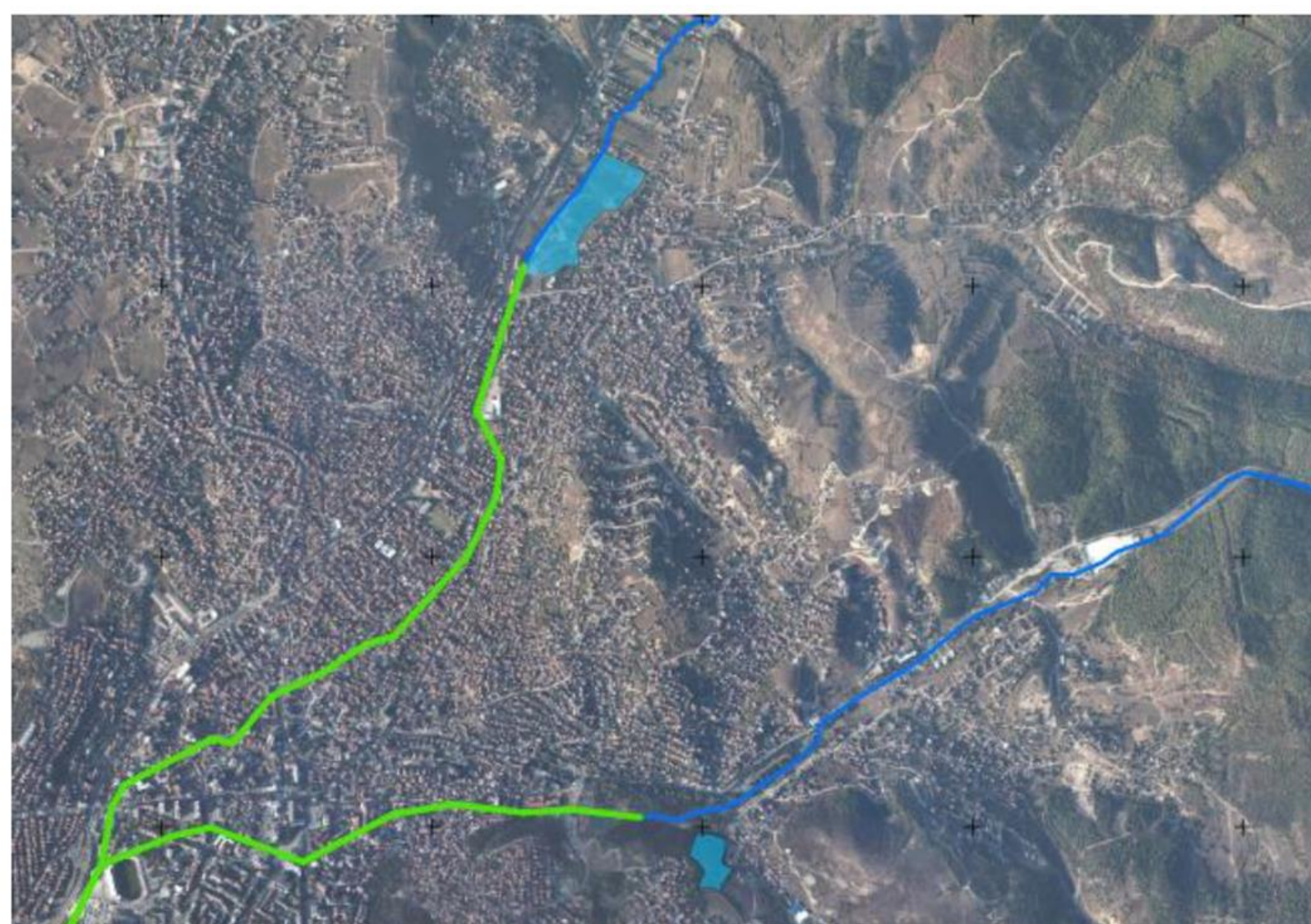


Figure 5:- Overview map of areas potentially to be used as stormwater retention basins

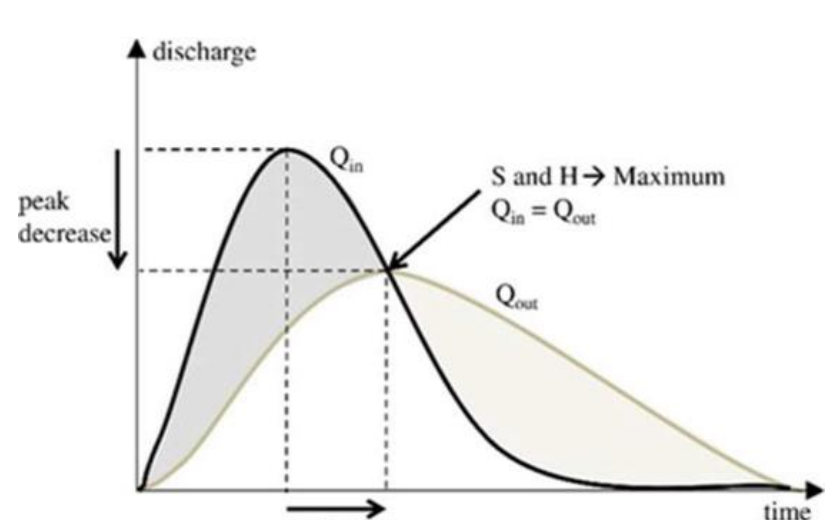


Figure 6:-Principle of wave attenuation

The retention basins should have the following purpose and aim: Stormwater retention and attenuation of flood waves in case of high stormwater events, meaning during certain flooding event a certain peak flood wave at the beginning could be redirected to the area/park; this would lower the impact of the flood event within the city itself, meaning would decrease the peak flow. The principle of such wave attenuation is shown in Fig

## CONCLUSIONS

Based on the research, it is recommended to include the following four main components related to green city topics:

- Soil Retention basins/ Constructed wetlands for stormwater treatment.
- Rainwater harvesting.
- Groundwater infiltration/ recharge.
- Wastewater reuse.

These topics and measures should be seen as interlinked, and there should be adaptation and reconciliation between them. For example, treated stormwater from constructed wetlands can be used for groundwater recharge. Therefore, in order to ensure that the entire water system aligns with the Green city approach, it is strongly recommended that an Integrated Water Resource Management (IWRM) study be conducted for the city of Prishtina.

## DISCUSSION

Green City Action Plan:

- The plan sets a vision and strategic goals for the different sectors and cross-cutting issues. For the water sector, the vision is to :
  - establish a functional water supply and wastewater treatment including recovery of resources,
  - modern, efficient and resilient water services shall be established
- Other strategic visions related to this study include the categories Land Use and Environmental System, which both set a focus on the establishment of green areas. The green areas shall be of an interconnected network and shall effectively improve recreation, human well-being and health of the inhabitants.
- The plan identifies in total 29 different policy and investment actions in the Buildings & Energy, Transport & Mobility, Urban Planning and Land Use, Waste and Water sector.
- The following direct actions are related to the water:
  - a. Investments in Potable Water Distribution System (Renovation and refurbishments of existing networks)
  - b. Rainwater Harvesting System - alternative sources of water shall be uses such as rainwater harvesting on roofs, usage of industrial water and grey water reuse.
  - c. Increasing Efficiency of Water Use - Comprehensive public-awareness campaign about water scarcity and saving with the goal to introduce consumer-friendly daily habits to the citizens.

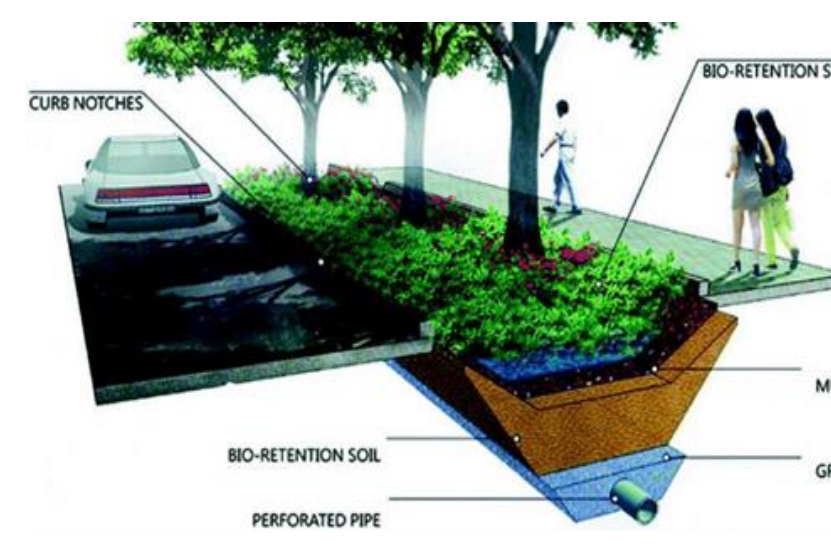


Fig.2 Greenery and filter strips at streets and general public space - Greenery besides public streets and permeable pavements & parking lots can be used to hold back stormwater or infiltrate it into the ground. Furthermore, cleaning is done by the natural layer and the plants contribute to the climate, clean air etc.



Fig3. Soil Retention basins/ Constructed wetlands for stormwater treatment- these are nature- based solutions for retention and primary cleaning of stormwater runoff (as well as emergency overflow of mixed systems).



Fig.4 Vertical Greenery / Rooftop greenery - planting of greenery on vertical walls and rooftops to increase rainwater retention, resilience to heat etc.

References: <https://www.ebrdgreencities.com/assets/Uploads/PDF/6f71292055/Green-City-Action-Plan-Methodology.pdf>

Integrated Water Resources Management (IWRM) is a process that promotes the coordinated development and management of water, land and related resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. IWRM is a cross-sectoral policy approach designed to replace the traditional, fragmented sectoral approach to water resources and management that has led to poor services and unsustainable resource use. Integrated Water Resources Management is based on the understanding that water resources are an integral component of the ecosystem, a natural resource, and a social and economic good.

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