

Smart urban drainage system in Biograd na Moru implemented

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1. Introduction

As part of A.5.8. Smart urban drainage system, one rain garden was built in Biograd na Moru, and two were built in Zadar – one in Park Vruljica and the other one in Kruno Krstić Elementary School Zadar - Ploče school district, and one in Biograd na Moru. Rain gardens slow down the penetration of water, their benefits are multiple in protection against floods and climate change. As the existing drainage system shows more and more deficiencies as a result of increasingly intense stormy rain periods, we looked for new effective solutions, and the benefits of rain gardens proved to be multiple. Their drainage systems slow down the penetration of water, and surpluses are "sanitized" by well-chosen plants with an absorbent character.

2. Smart urban drainage system in Biograd na Moru

Zadar County Development Agency ZADRA NOVA implemented smart urban drainage system as one of the solution for reducing water runoff that is causing floods in Biograd na Moru. Smart urban drainage system will recreate the natural function of the land which includes capturing rainwater filtering out pollutants and recharging groundwater. System can be designed as simple as digging a shell or depression and filling it with native plants and soil amended with sand. At the same time, it can store large amounts of rainwater that can be used in the irrigation process. Also, system is protecting the natural water sources and create cleaner and greener areas for the citizens.

2.1. A rain garden in Biograd na Moru

Infrastructure works in Biograd na Moru started in September 2022 and officially finalized in May 2023. In the rain garden, there are linear grids in several key locations to collect rainwater, drainage pipes are placed underneath to create a sustainable drainage system, water separator to collect and clean excess water and two "rain modules" that work on the sponge principle.



Figure 1. Infrastructure works in Biograd na Moru - initial state

Along with appropriate indigenes and highly absorbent plants, communal urban equipment (benches, trash cans, lamps) was placed in the rain garden.



Figure 2. Walking path constructed with wooden banches and trash cans

3. Conclusion

Smart urban drainage systems reduce the possibility of flooding due to sewage overflows. In addition, they reduce pollution and improve the quality of surface and underground waters. They also improve greenery and increase biodiversity. The built rain garden in Biograd na Moru will affect the reduction of harmful effects on human health and the environment, but will also raise citizens' awareness of flood risks.