

Urban Ecosystem-based Adaptation

WATER RETENTION AREAS

BUILDING RESILIENT CITIES AND ADAPTING TO CLIMATE CHANGE



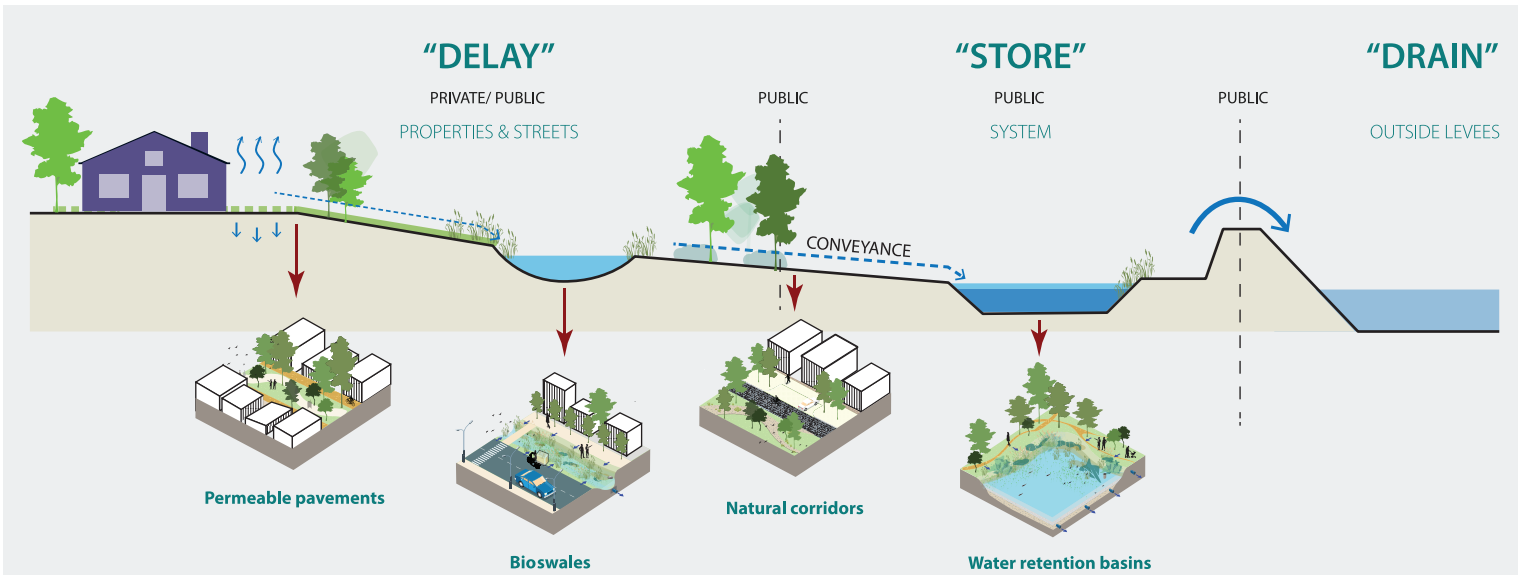
Context and rationale

Located in central Viet Nam, Dong Hoi city is the economic, social and cultural capital of Quang Binh province. The city is particularly vulnerable to climate change due to a variety of factors. These include the province's topographical features, the city's geographical location, its complex economic assets, and rapid urbanization. In recent years, Dong Hoi has faced unprecedented flooding in combination with storms and unexpectedly heavy rainfall, while in the dry season the water level is alarmingly low, resulting in water shortages that affect both production and people's well-being. Growing urbanization

together with the development of traditional 'grey infrastructure' has further exacerbated the city's vulnerability to climate impacts.

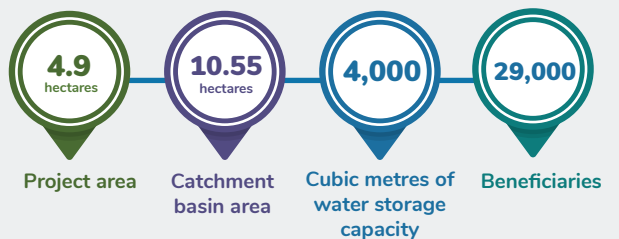
In this context, the project "Support to Viet Nam for the Implementation of the Paris Agreement" (VN-SIPA) is supporting implementation of an Ecosystem-based Adaptation (EbA) water retention measure in Dong Hoi. The measure supports flood risk management and heat stress mitigation while providing urban green spaces for citizens and enhancing urban biodiversity.

Design and benefits of the water retention areas in Dong Hoi



- 01 The central element is a multi-season outdoor stage which can be used as an open-air theatre, playground, or residential meeting point. During the rainy season, the space collects and stores water.
- 02 The sidewalk, parking area, and playground area are paved with permeable materials, such as small bricks, which increase the capacity of surface areas to absorb water.
- 03 Close to the central water discharge channel, a bioswale is constructed. The bioswale is a concave area that collects, stores and infiltrates surface water until the central drainage system is capable of holding more water.
- 04 Trees, bushes, and plants are selected according to their capacity to cope with water fluctuations and for their contribution to biological diversity.

Water retention areas in numbers



Along the Cau Rao River Park

Benefits of urban Ecosystem-based Adaptation (EbA)

Minimize risk and vulnerability

- Increased ability to control storm water
- Additional water retention through open areas
- Reduced flood risk for downstream areas
- Fewer urban heat islands

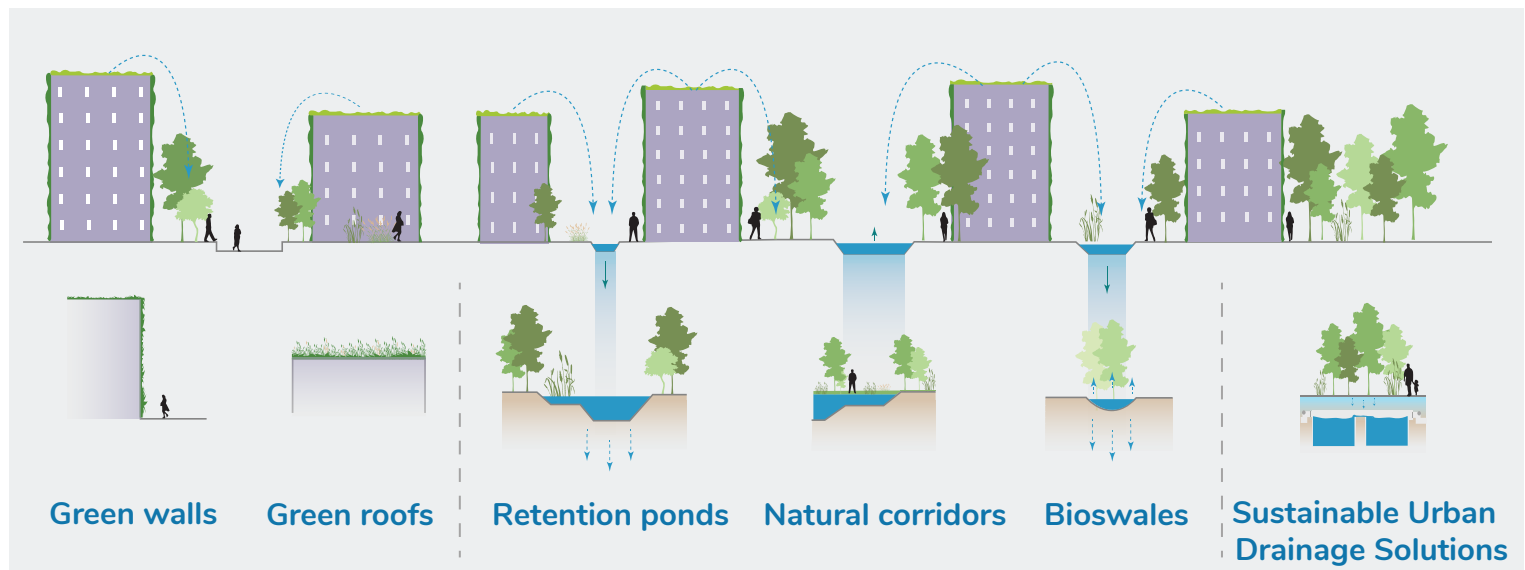
Ecological services

- Groundwater recharge
- Diverse habitats for native plants and animals in urban areas
- Micro-climate regulation through generating green spaces in urban areas
- Multi-functional areas for reduction of climate change impacts (flood regulation, increased water-retention areas)
- Creation of an educational space on ecosystem-based adaptation and a recreation area for local communities
- Enhanced physical and mental health of users and the surrounding community

Elements of Ecosystem-based Adaptation in Dong Hoi

The VN-SIPA project is supporting in Dong Hoi the development of urban Ecosystem-based Adaptation (EbA) with policy advice, capacity development and the implementation of EbA measures which contribute to flood water capture and storage, mitigation of

heat islands and air purification. The following measures are supported in Dong Hoi: natural corridors, water retention ponds, bioswales, green walls and green roofs, and sustainable urban drainage solutions (SuDS).



What is Ecosystem-based Adaptation?

Ecosystem-based adaptation (EbA) is commonly understood as the use of biodiversity and ecosystem services to help people adapt to the adverse effects of climate change (Convention on Biological Diversity, 2009).

It has been proven in many parts of the world to bring various additional co-benefits compared with grey adaptation measures; such as restoring local ecosystem services and increasing people's well-being.

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