



Room for nature and water management

A Blue-Green Space is a type of natural climate buffer that provides space for storing water in and around lower-lying nature reserves and in nature reserves along the major rivers. In this way, rain during peak showers can be channelled to the nature reserves, meaning that people can keep their feet dry in the surrounding towns and countryside. And along the major rivers, the space-for-water principle is applied by creating an optimally wide winter riverbed. This means that during peak discharge periods, a lower water level can be achieved than in a narrow bed. This gives rise to special marshland or fluvial nature reserves. These areas are highly valuable for both nature and recreation.

HOW THEY WORK

These types of climate buffer are designed to receive the large amounts of water that are to be expected during persistent rainfall or peak showers. At such times, excess water is received from the area's water system, sometimes through free flow because it is lower, in other cases via locks or pumps. There are often measures for retaining the water so that it can subsequently be allowed to drain away more slowly. For nature, it is essential for sufficient water to remain behind in the climate buffer. In the area around the rivers, natural climate buffers provide capacity for large volumes of water by means of various measures such as dykes being moved further back, flood plains being lowered and overflow gullies being dug.

PROJECTS

- 1 De Onlanden
- 2 IJsselpoort
- 3 Zuidelijk Westerkwartier



De Onlanden

In 1998, heavy rain caused considerable flooding in the north of the Netherlands. To prevent this happening again, a 2,500 hectare area near the city of Groningen has been developed to combine water storage with a marshland nature reserve. And it works. Even during its creation in 2012, De Onlanden ensured that the city remained dry during persistent rainfall and that farms did not need to be evacuated.

The measures

Banks have been constructed to hold the water back and keep it away from the surrounding farmland. Surface vegetation has been removed and the ground excavated. Waterways, bridges, roads and cycle paths have been adapted and extended. For recreation, there are also canoe trails and special spots for observing wildlife.

Due to the natural, fluctuating water level, De Onlanden is now much wetter in the autumn and winter and gradually dries out in the spring and summer. A robust and varied area of marshland has come into existence where many threatened species have been conserved.

The process

De Onlanden has been incorporated into the Peize and Roden-Norg redevelopment processes. This has led to improvement in the structure of farming and at the same time, the rapid establishment of this natural climate buffer.

The effects

- Groningen is no longer threatened by flooding.
- Construction costs were many times lower than those of all the alternatives.
- New natural marshland, ponds with many birds, and the arrival of the otter and other special species.
- Creation of new opportunities for recreation near the city.
- Less flooding in the neighbouring farmland.

Partners

Noorderzijlvest Water Authority (Waterschap), Drenthe Province Forestry Service (Staatsbosbeheer), Natuurmonumenten, LTO Noord (agricultural representation), the Municipalities of Noordenveld and Tynaarlo, Dienst Landelijk gebied (former state agricultural agency)



A naturally
fluctuating
water level



Rivierklimaatpark IJsselpoort

After decades of restriction, the major rivers are now being given more space. Between Arnhem and Giesbeek, along the River IJssel, a water buffer several kilometres in length is to be constructed. There will once again be a landscape that gives water the space it needs. For Arnhem's citizens it will be a lovely spot for escaping the city and cooling down in the summer.

The process

The IJsselpark River Park is an example of climate adaptation in the Delta Programme. The first phase has been completed with the development of the Velperwaard and Koppenwaard (river forelands) with nature in mind. The second phase is in preparation. All those involved are working together on a common integral plan for water safety and room for sustainable development for nature, recrea-

tion and activities. Execution is expected to start in 2022.

The effects

- Climate-proof, robust river system with attention to water safety.
- More space for water and nature in the flood plains.
- Connecting nature reserves, retaining water for dry periods and improving water quality.
- Improving access and enhancing perception of the area.

Partners

Ministry of Infrastructure and Water Management, Gelderland Province, Rijn and IJssel Water Authority, Natuurmonumenten, Eastern Netherlands Water Authority, Municipalities of Arnhem, Duiven, Rheden, Westervoort and Zevenaar.

The measures

The measures necessary for Rivierklimaatpark IJsselpoort will be implemented in the course of 2019 and 2020 after the joint plans have been established. To create space, the Water Authority (Waterschappen) staff are moving the dykes further inland and they are excavating overflow gullies in the flood plains.



Zuidelijk Westerkwartier

In the Zuidelijk (Southern) Westerkwartier, development of nature is being combined with the establishment of water storage zones. At the same time, measures are being taken in the realms of water quality, recreation, agriculture, landscape renovation and quality of life, so that residents can still live, work and enjoy free time safely and pleasantly in a future-proof environment.

The target in the Dwarsdiep is to store 2.7 million m³ of water. It is expected that the water storage facility will be needed once every 10 years. De Dijken will have a storage capacity of 1.1 million m³ of water and De Drie Polders will have a capacity of 1.2 million m³. It is expected that the two zones will be used for water storage once every 25 years.

The process

This concerns the Zuidelijk Westerkwartier Regional Development scheme. In three zones, het Dwarsdiep, De Dijken and De Drie Polders, water storage will be established in combination with nature. Staats-

bosbeheer is participating in the Regional Committee, along with the other parties.

The effects

- There is space in the region for 2,800 hectares of new nature reserve.
- Water management is being addressed. Flooding will be dealt with and the area will contribute to the freshwater supply.
- The water quality in the area is again as it should be.
- The structure of farming will be improved.
- The core features of the landscape will be restored.
- There will be more opportunities for residents and visitors alike.

Partners

Groningen Province, Prolander, Noorderzijlvest Water Authority (Waterschap), Friesland Water Authority (Wetterskip Fryslân), Municipalities of Leek, Marum and Grootegast, Forestry Service, Het Groninger Landschap, LTO Noord, BoerenNatuur.

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New
nature and
water
storage



The measures

Water management measures have priority:

- Raising the water level
- Encouraging the upward seepage of ground water by making channels shallower
- Constructing levees
- Adapting the stream to provide a smaller and more natural profile with more water current and variation
- Widening the brink zones along the waterways
- Construction of a dam to retain water when utilising the storage
- Moving pumping stations
- Adapting pumping stations

www.klimaatbuffers.nl

Natural climate buffers for a secure, liveable and beautiful Netherlands

Natural Climate Buffers Coalition is a partner of Life IP Deltanatuur

Partners: ARK (Nature Development)/LandschappenNL (Dutch Landscapes)/ Nature and Environmental Federations/Natuurmonumenten/the National Forestry Service/Bird Life International The Netherlands/Wadden Sea Society/ World Wildlife Fund

