IWRM Action Hub

CASE STUDY

# The Netherlands: The new approach to IWRM in the Veluwe Region

**Summary**

Due to the growing build-up area and changing land use in the Veluwe nature conservation area, the old water management infrastructure no longer coped. Action was thus taken and the traditional technical solution was replaced by a new integrated approach, which combines nature and landscape conservancy with modern water management. This case highlights the importance of utilising inhabitants' knowledge when drafting new projects.


**Background**

The Veluwe is the largest nature conservation area of the Netherlands. The area is rich in brooks and springs. Due to the growing build-up area and land use changes, the old water management infrastructure no longer copes with the new demands. In early 1990's, the traditional technical solution was replaced by a new, integrated approach, which combines nature and landscape conservancy with modern water management. The brook restoration project primarily focused on the creation of extra water storage capacity.

The floods are caused because water discharges too rapidly from the area. This rapid discharge is caused by a combination of a steep, natural incline and upgrading works that has been carried out in the past as a result of agricultural activities. Hence, the of course of action has been to increase the discharge capacity of the water system in order to avoid flooding. However, in view of the integrated approach to water systems, it was also decided that the storage capacity within brook's own basin be increased. The plan also links up with the integrated approach to high water problems of the Province of Gelderland as defined in the Master Report entitled "Space for Water in Gelderland".

This project aimed to reduce the lateral influx into the Ijssel and introduce an integrated approach for the water system to prevent both flooding and dehydration within the basin itself. The focus was to improve the water quality, to abolish migration barriers and to strengthen the scenic character. The final result was reduction in the peak discharge of the basin from 3 times the Design Discharge to the Design Discharge.

**Actions taken**

The Veluwe Water Board introduced an integrated approach for the water system in order to prevent both flooding and dehydration within the basin. An impulse has been given to nature development through the construction of natural banks. Space was created along the brook for extra water storage capacity in the shape of natural, gradual banks which further included retention basins construction.

As regards the prevention of dehydration, the infiltration capacity in the area was improved which

provided ideal conditions for seepage potential. These actions have resulted to policies that are in support of preventing floods in the basin following the good examples of increased storage capacity.

In addition, actions were also taken in several other smaller rivers that drain into Veluwe for instance, the Verloren Beek, one of the basins of the nine rivers that form Veluwe. To achieve a reduction in the peak discharge of the basin as mentioned before, a number of both natural and gradual retention banks were constructed in these basins.

Meanwhile in Epe (another river basin) excess water is temporarily retained in special locations called retention areas. Though the retention areas were initially intended to serve as a measure to correct the water balance in "Wetland Epe", an added value has been given to them by the creation of these areas in the most natural way possible and more important managing them as a new wet nature area. This was achieved by a means of prolonged retention of water in the basin, consequently reducing the peak discharge during periods of extreme precipitation. Overall, six retention basins with a total surface area of 6.2ha have been set up.

**Outcomes**

Following the actions taken, water no longer rapidly drains but is rather retained longer in the minor tributaries. This was achieved by constructing natural, gradual banks as well as a number of retention basins. It helped to maintain a prolonged retention of water in the basin, which as well reduced the peak discharge from this area during periods of extreme precipitation. Space was created along the brook for extra water storage capacity in the shape of natural, gradual banks and the construction of retention basins. As regards the prevention of dehydration, the infiltration capacity in the area was improved and seepage potential given greater opportunity. Moreover, an impulse was also given to nature development through the construction of natural banks.

The combination of collapsible culverts in the brook, and use the various retention basins resulted an increase in the water storage capacity of the system by 30,000 $m^3$. Apart from conserving and developing natural values in the area, the creation of extra storage capacity in the Eperbeken basin was one of the most important aspects of the realization of this initiative.

This case describes a new approach to an old problem; not solving a local flooding problem in the

traditional, sectoral manner but rather with a broad, integrated approach. Conservancy of nature and landscape values and co-operation with the population in order to look at floods not only as a threat but also as an opportunity for broad rural development, nature restoration, recreation, "enrichment" of the habitat and for a new approach to water.

**Lessons Learned**

Classical, traditional solutions do not always work in a changing, unique situation.

Ensure getting support for the measures among the inhabitants is important.

Combining water management functions with user functions for the inhabitants (skating, swimming, nature, playground) is important.

Finding solutions in keeping with the scale of the problem, project phasing and clear appointments of tasks can help.

Use the inhabitants' knowledge/experience for the measures.

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**Related IWRM Tools**
Integrated Flood Management Plans, Civil Society Organisations , Nature Based Solutions

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