

Decision support system for operational management in a regional water system

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Introduction

Operational management of regional water systems in Western Brabant (The Netherlands) is complex, due to the large number of different water users and functions that need to be served.

Water shortages

In the future, water management in the service area of waterboard Brabantse Delta will become more complex due to the salinization of the Volkerak-Zoom Lake and climate change. Nowadays the lake is used as a fresh water source during dry periods. Anticipating on water shortages will become more eminent. In the case of Brabantse Delta, this requires:

- a shift in mind-set (from 'abundance' to 'shortage' thinking);
- an improved and more accurate operational management (no spillage), and
- the development of a Decision Support System (DSS) to improve daily operational water management as well as the capacity to anticipate and deal with (impending) calamities.

Adaptation concept

Adaptation to climate change often implies the implementation of structural measures - a physical change in the water system itself. Less knowledge and experience is gained on institutional and instrumental (e.g. a DSS) adaptation. The main focus of operational decision support systems in the Netherlands is on extreme wet situations (flooding) and not (yet) on water shortages. This is the mind set that needs to be achieved.

Decision Support System

The envisaged DSS aims to:

- Improve the decision making process of operational water management;
- Give a better insight into the actual water system behavior to, and
- Serve as a communication and presentation tool to decision-makers.

Functionalities and capabilities needed to maintain the current service level for important fresh water resources are:

- Long term weather forecast (month-season);
- Short-term weather forecast (day-week);
- To provide real-time information on the current hydrological situation of the service area;
- To provide a knowledge base for operational water management of the regional water system.

Long-term weather forecasts give insight into the probability of water shortages later in the season. Conservation interventions like the filling of (upstream) water buffer capacities can be considered.

Short-term weather forecasts give insight into possible water distribution problems and solutions. Water allocation and distribution can be optimized on short notice and alternative fresh water sources can be operated.



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