

# Water management balance

German Delegation

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# Introduction

- water management balance: quantitative comparison of water demand and water loss
- the more intensive use of water in a region or river basin, the more detailed the water balance economic considerations
- responsibility: various authorities of water management

# Methodology and Results

- balance method is applied (total balance sheet, longitudinal balance, ...) depending on the task, and the presence of required data
  - time series balances along a river, for example, allow the determination of allowable withdrawals or loss amounts for sub-basins
  - detailed longitudinal balance are use in complex river catchments with varied uses
- ➔ water mangement balances are basics of the water resources management

# Methodology and Results

- Summary balance sheets - creating long-term strategies for development of water management in a large catchment area in terms of management
- balance decisions even when approval of water use, based on a water resources management
- WBalMo application for balance of large river basins, such as Spree and Schwarze Elster

# Methodology and Results

## **Total balance sheet**

- basic principle: comparison of the natural water supply with current and planned immediate or long-time water use
- determining the availability of surface and ground water for different users
  - total balance sheet: simplest type of water management balance
- comparison of natural water resources with the sum of the losses and outflows on a balance sheet profile, eg at the confluence of two rivers

# Methodology and Results

## **Longitudinal balance**

- describes the water balance of resources between different profiles
- calculation scheme corresponds in its basic form, the sum of the balance sheet
- must be repeated along the main watercourse and its tributaries each accounting steps, depending on the number of balance sheet profiles
- must be considered, the resulting balance of outflows balance profiles in the upper reaches or tributaries

# Methodology and Results

## **Detailed water-economic balance**

- an example is the complex model system WBalMo (Kaden et al, 2005) to simulate more detailed water-management balances

# Methodology and Results

## **German Hydrological Yearbook**

- data collection, which appears regularly
  - 10 sub-volumes
- based on the "Guidelines for the preparation of the German Hydrological Yearbook“ issued by the Regional Working Group on Water (LAWA) and the Federal Minister for Transport (3rd edition, Stuttgart and Bonn 1994)



# Methodology and Results

## **German Hydrological Yearbook**

- receives e.g. hydrographic data from selected monitoring stations of the river basins
- alphabetical and hydrographic register of monitoring stations
- hydrological description and a map of the monitoring stations
- graphic illustrations of water levels, outflows and runoff discharges of surface water, ...