

Denmark: Integrated water resource management

Management of Groundwater Resources in Denmark.

In Denmark almost all water supply for domestic and drinking water supply is based on groundwater abstraction. Protection of ground water is a top priority.

All the geological information's from ground water drillings have since 1926 been reported and stored on a national level under the Ministry of the Environment. Despite pressures from pesticide use and other contamination, **it has been possible to maintain a high quality of water, which does not need special treatment or purifying before drinking or other use.**

A **new law on Environmental and Ecological Objectives** including groundwater was issued in Denmark in 2003. In this context a basic characterisation of the water resources has been undertaken in 2004 by the water districts (counties).

The assignment of clear responsibilities is very important.

In Denmark **the state** is responsible **for the international obligations**, the overall administration and establishment and adjustment of the **legislative framework**. Also **research and development** are under the responsibility of the state.

The regional level is responsible for issuing permits on groundwater abstraction based on detailed mapping and planning. The permits are based on a political prioritisation, based on **plans for development of the society and its water demands and environmental objectives**. The regional level is also responsible for **exercising protection** of the groundwater resources and regional monitoring.

The local level is responsible for planning of the water supply for the municipality and the **inspection** of the technical standard at the water supply plants and the quality of the drinking water, and **the water supply plant** is responsible for the quality of drinking water.

Mainstreaming/Sustainability

Issues seen in the context of Integrated Water Resource Management (IWRM) are established and maintained in close co-operation and networking among scientific institutes, national and regional authorities, local municipalities and supply companies and consultants.

At all levels **involvement of stakeholders and public participation** are considered as key-issues for achieving the objectives, and huge efforts are used on **information** for making the groundwater conditions transparent for the society.

In 1987 a **nation-wide groundwater-monitoring network** was established. Partly based on existing wells from more than 4500 water supply plants and partly on more than 50 special monitoring fields, representative of the Danish groundwater conditions. Annual reports from the monitoring program supports that the awareness of the quality of the drinking water and the protection of the groundwater is maintained.

Central policy relevant elements

Summarising, there is a need for:

- 1. A legislative framework with a clear definition and allocation of responsibilities amongst different levels of government**
- 2. Mapping of resources and present and future needs/demand**
- 3. Involvement of stakeholders**
- 4. Information and awareness raising activities**
- 5. A system-wide groundwater monitoring network**