

Ministry of Environment of Denmark

Environmental Protection Agency

## Water Sector Collaboration Denmark-Morocco

## **Sustainable Groundwater Management in Denmark**

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## Denmark-Morocco Water Sector Cooperation 2023-2026



- Support development of the water sector in Morocco.
- Sustainable groundwater management, efficient water services and water-climate adaptation.
- Sharing of knowledge, best practices, expertise, solutions on sustainable water management and water governance.
- Networking and facilitation of sharing of international experience in the water sector.
- Addressing water scarcity & security
- Working towards sustainable management of water
- Working smart and efficient



### **Focus Areas**



- Groundwater management, mapping, protection and utilisation.
- Water utility management, water services, optimisation practices, network operation, asset management, non-revenue water and customer communication.
- Nature-based solutions in planning and management of climate adaptation and flood management.
- DGH, ONEE and Tensift RBO.
- Danish EPA, 3WATER, ministries, local authorities, utilities, private sector etc.



## Danish governmental structure with regards to drinking water





Legislation, Orders, Guides, Approval of pesticides, River basin management plans, Groundwater mapping, including vulnerability studies and monitoring



#### **Regional governments (5)**

Responsible for mapping and monitoring of soil pollution, and cleaning up polluted sites Also permits for extraction of raw materials, such as sand and gravel

#### **Municipalities (98)**

Responsible for the water supply, licenses to extract groundwater and for wastewater treatment, supervision of water utilities, municipal plans, action plans and plans for groundwater protection

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### Groundwater Strategy in Denmark (1998)

- Groundwater is a strategic resource 100% drinking water, nature and production
- Groundwater is less sensitive to seasonal changes in water consumption and variations in climate conditions.
- Mapping of locations, distribution and interconnectedness of groundwater resources in the country. The work is still going-on and being refined all the time.
- We protect rather that purity.
- Developed state-of-the-art surveying technologies and mapping and modelling tools - overview and detailed information on hydrology, hydrogeology, flow patterns, geochemistry etc.
- Quality control, digitalisation, overview, detailed knowledge and decisionmaking



## **GERDA** – geophysics database



7 The Danish EPA

### Approximately 200 local hydrological models with a scale of 100x100 m

Groundwater management: And action plan areas from local vulnerability studies





# Groundwater management: DEPA provides catchment areas for local waterworks using local hydrological models







- A holistic and long-term approach is necessary integrated and sustainable solutions
- Governance, laws, regulation and enforcement are necessary
- Institutional and financial resources are required
- Need for comprehensive data, mapping and analytical tools
- Informed decision-making
- Transparency and accountability data management, public
- Coordination and information sharing
  - Taking the difficult decisions

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