



# SNOWMAN

**an initiative for transnational research  
funding and cooperation in Europe**

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# The ERA-net SNOWMAN

- **Sustainable maNagement of sOil and ground WWater under the pressure of soil pollution and soil contaMinAtioN**
- **Duration of the project:**  
January 2004 - June 2009
- **Coordinator:** BMLFUW, Austria

# SNOWMANs ambition is to be...

- a network of national funding organisations and administrations
- providing the research funding platform for soil and groundwater
- bridging the gap between knowledge demand and supply

# Defining a European Soil and groundwater Research Agenda

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# New SNOWMAN Research Program

- Procedure:
  - Discussions with visionaries from Snowman countries to set the scope of SNRP and to define societal developments relevant to scope;
  - Discussion with funders and users on knowledge questions related to social developments;
  - Discussion with researchers on research needs to answer the knowledge questions;
  - Continued feed back to research funders



# Relevant Societal Developments

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- **Energy and climate change**
- **Sustainable water management**
- **Sustainable agriculture**
- **Sustainable urbanisation**

# Energy and Climate Change

- **Energy savings and sustainable production:**
  - **Storage of heat and cold: potentials and effects**
  - Thermal energy: potentials and effects
- **Emission of greenhouse gasses**
  - CO<sub>2</sub>-production and storage
  - NO<sub>2</sub> and Methane production
- **Bio fuel crop production**
- **Effect of climate change on soil quality**

# Sustainable Agriculture

- **Ecosystem services:**
  - What is it, what is the role of soil?
  - What are impacts, how to respond?
- **Relation between soil functions and agriculture;**
  - Effects on soil quality, How to support sustainability?
- **Role of soil in mineral cycles:**
  - Carbon, Nitrogen, Phosphorus



# Sustainable Agriculture

- Agricultural practices and soil functions:
  - **Compaction, irrigation, salination?**
- Land slides and erosion
- Rural planning

# Sustainable Water Management

- **Retention and flooding**
- **Groundwater quality:**
- **Soil as a water filter**
- **Water management strategies**
- **Sediments**

# Retention and storage

- What can be the contribution of soil for storage? **Recharge of aquifers**
- What influences the capacity?
  - Vegetation
  - Soil type
  - Erosion
  - Sealing
  - Flooding

# Retention and storage

- Filtering:
  - **Effect of filtering capacity on quality (nitrate, phosphate)**
- Management strategies:
  - **Managing droughts**
  - **Shallow aquifers and land use planning**
  - **Effectiveness of measures in highly polluted areas**
  - **Groundwater usages in urban/industrial areas**

# Groundwater quality

- State:
  - **What is sustainable groundwater quality and ecology (natural quality, directive requirements)**
  - Need for strategic groundwater reservations
- Effects:
  - Land use
  - Urbanisation
  - **Pollution (diffuse, new components)**
  - Flooding

# Sustainable Urbanisation

- **Contamination:**
  - Risks, management, remediation
- **Urban ecology:**
  - Role, positive effects
  - Threats, sealing
- **Urban planning**

# Management of contaminants

- **Diffuse pollution**
- **Emerging contaminants**
- **Regional management of soil and groundwater pollution**
- Brownfield redevelopment strategies

# Remediation

- Improving existing technologies
- Natural attenuation
- **Biological breakdown of persistent components**
- **Breakdown of emerging contaminations**
- **Fate of hazardous pollutants in ground- and surface water**



# Regional management of contaminated ground- and surface water

- Pollution of groundwater from mining activities
- Pollution of groundwater from related chemical industries
- Redevelopment of old industrial sites in urban areas
- Redevelopment of abandoned army sites

# Conclusion

- There are fields of common knowledge and research questions between IWRM and SNOWMAN
- Communication between both ERANET's has to be continued
- Explore possibilities of cooperation for period after 2009