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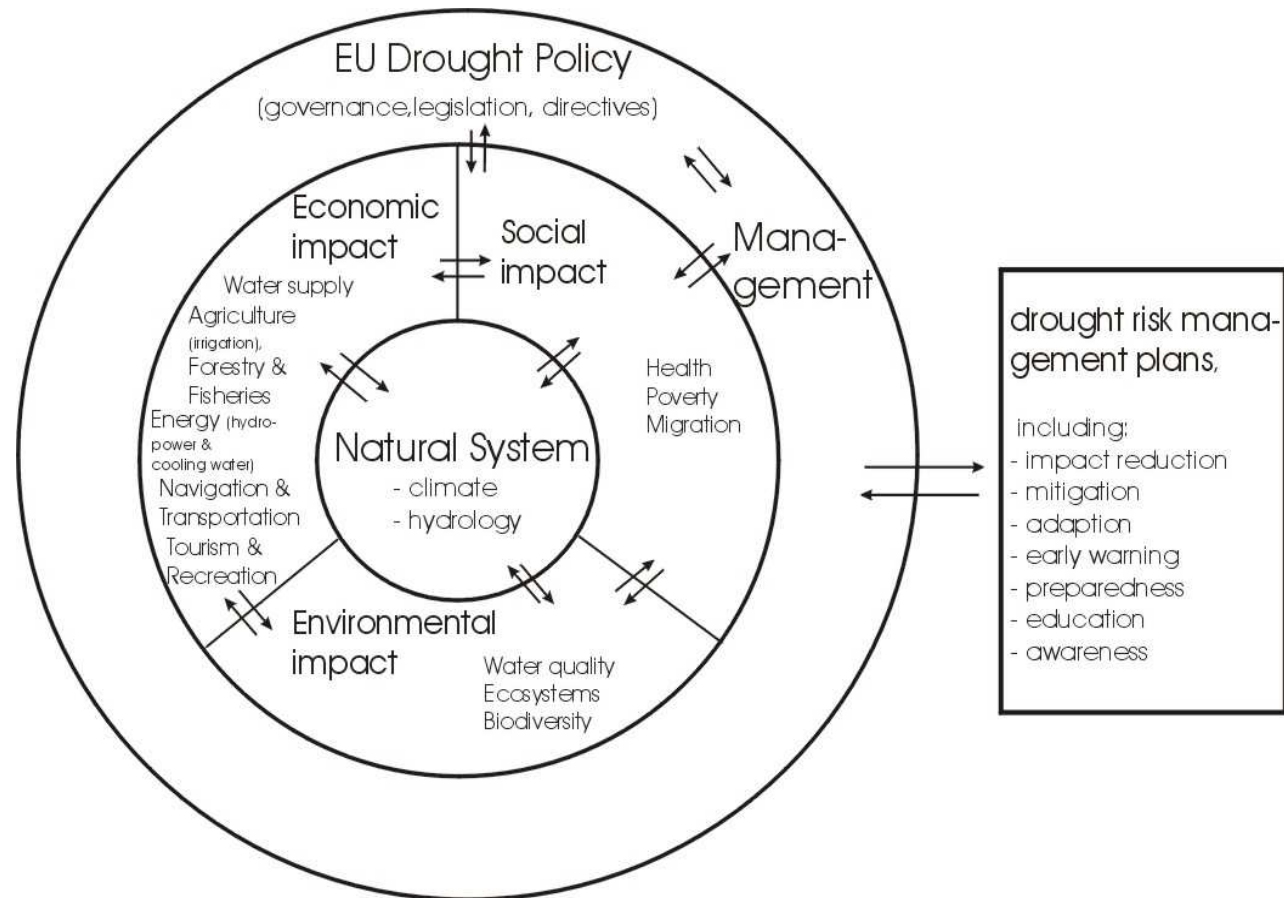
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with support of:

- Water Management Center GbR (WMC), Germany
- Universitetet i Oslo (UiO), Norway
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- Ministerio de Medio Ambiente (MMA), Spain
- Natural Environment Research Council (NERC), United Kingdom
- DG Joint Research Centre, European Commission (JRC), Italy
- Centre National du Machinisme Agricole, du Genie Rural, des eaux et des Forets (CEMAGREF), France
- The International Union for Conservation of Nature and Natural Resources (IUCN), Switzerland.





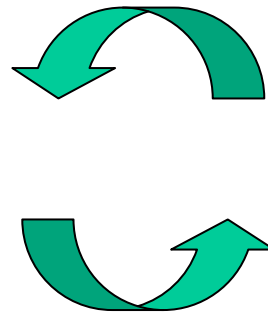
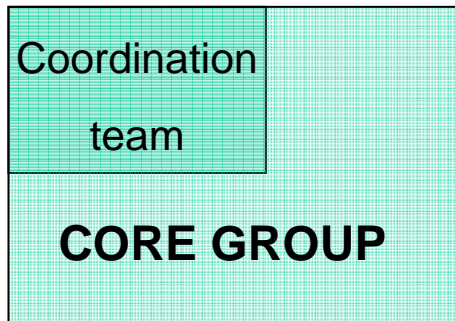
OBJECTIVES:

- ❑ **synthesize knowledge** on past, current and future drought events
 - natural/physical system
 - socio-economic and environmental impacts
 - drought management and policy options
- ❑ compile a **roadmap** providing a short to long term vision on **research needs** and steps forward
- ❑ towards supporting implementation of **drought management plans** within WFD development in the context of an emerging European Drought policy (integrating links with other related policies, e.g. CAP, Regional Funds, health)
 - framework: Europe's risks and vulnerability

OBJECTIVES (cont'd):

- ❑ provide information on **possible impacts** of droughts and **guidance for stakeholders**
- ❑ further extend and develop the **drought network** established as part of the European Drought Centre (EDC) to assess the international state of the art
- ❑ link up with **non-EU experts** (e.g. USA, Canada, Australia, China)
- ❑ initiate a **long lasting platform** beyond the XEROCHORE project through the network (i.e. EDC) that:
 - communicates drought related research, management and policy
 - intensifies communication between various drought actors, as well as wider public.





NETWORK PARTNERS

- climatologists
- hydrologists
- economists
- ecologists
- water resources engineers
- water managers
- planners
- stakeholders
- policy analysts
- policy developers
-

Bringing together all kind of experts dealing with drought:

- 2 international workshops**
- 1 international conference**

Events:



- ❑ **Workshop I: Drought & Physical/Natural System
(Noordwijkerhout, the Netherlands, 15-17 June 2009)**
- ❑ **Workshop II: Drought: Impacts (Venice, Italy, 5-7 October
2009)**
- ❑ **Conference: Drought: Management and Policy Options
(Brussels, 23-24 February 2010)**
- ❑ **Science – Policy meeting (Brussels, 22 February 2010)**



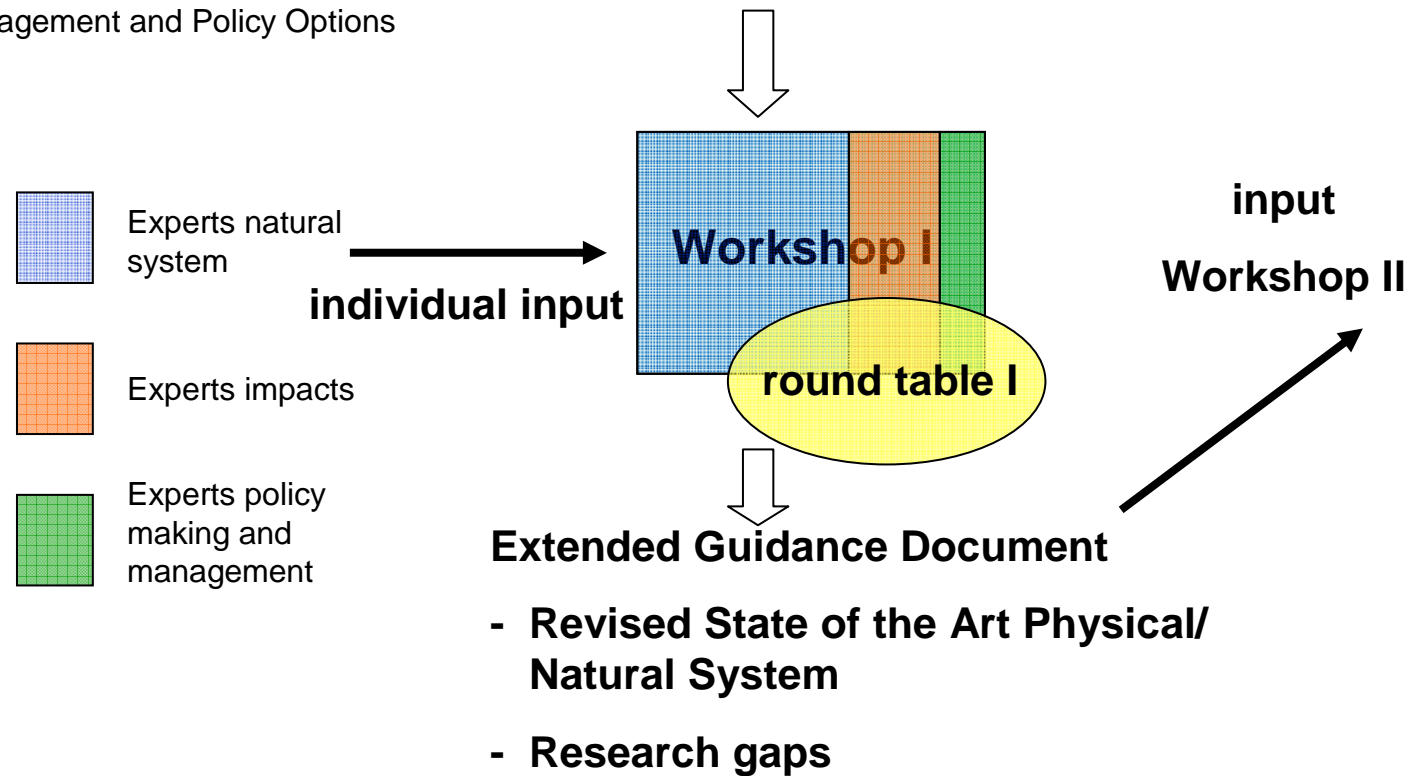
Events:

- Workshop I: Drought: Physical/Natural System
- Workshop II: Drought: Impacts
- Conference: Drought: Management and Policy Options

Guidance Document

-State of the Art

Physical/Natural System



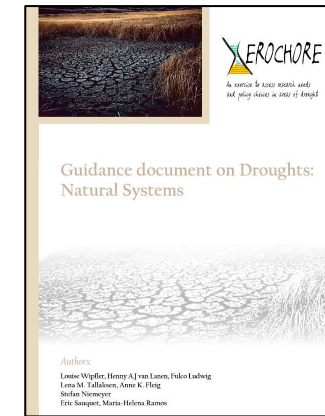
Guidance Documents



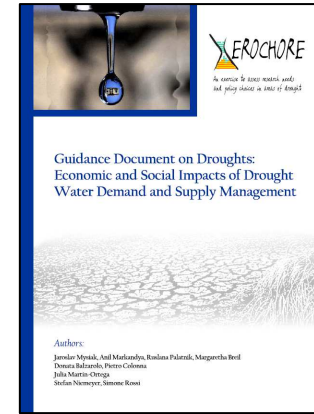
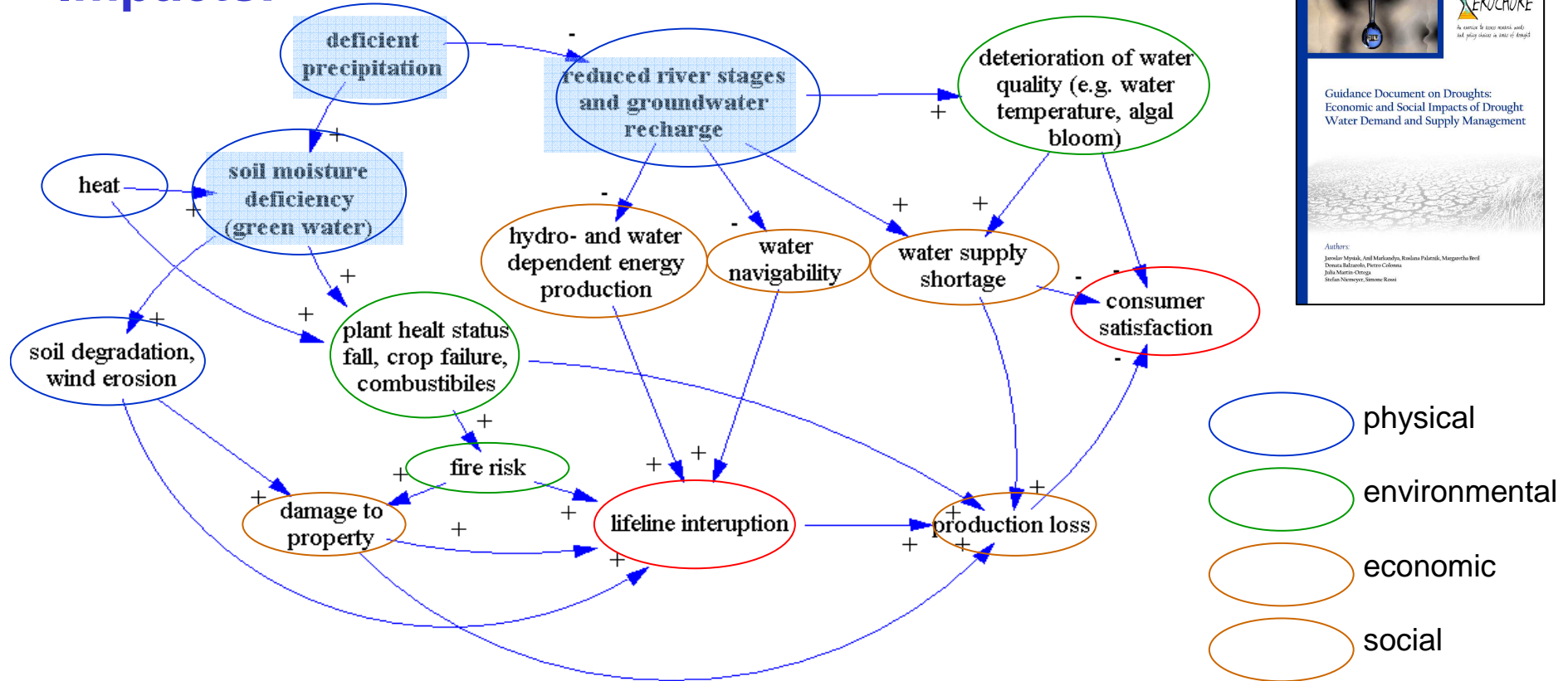
- Natural/Physical System
- Socio-economic Impacts
- Environmental Impacts
- Drought Management and Policies

Guidance Document Natural/Physical System:

- ❑ Exploration of hydroclimatic aspects of drought.
- ❑ Propagation of meteorological droughts into hydrological droughts
- ❑ Integrated drought assessment framework (hydrology and climate)
- ❑ Drought monitoring (incl. early warning) and forecasting



Impacts:

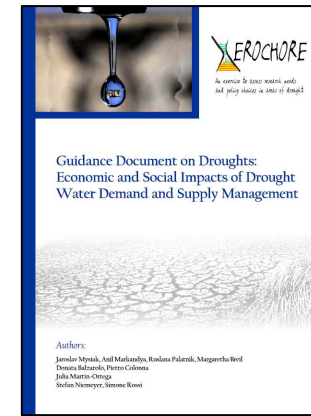


Mysiak (2009)



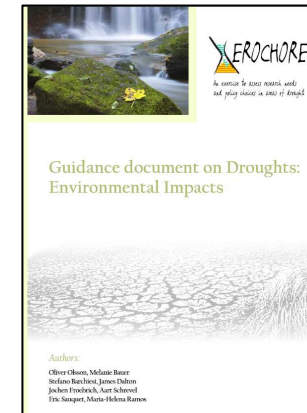
Guidance Document Socio-Economic Impacts:

- Economic and social effects of droughts
- Water demand- and supply management (WDM and WSD) for the key sectors: agriculture, energy production, residential water use, water-intensive manufacturing.



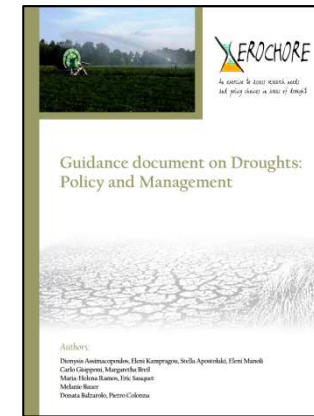
Guidance Document Environmental Impacts:

- **Definition of environmental variables that can enhance understanding of:**
 - **how the effects of drought are influenced by ecosystem structure such as species composition**
 - **how drought alters key ecological functions for the preservation of water quality and habitat integrity**
 - **what flow conditions are required for reducing ecosystem sensitivity to drought**



Guidance Document Drought management and policies:

- ❑ Overview of drought mitigation options, European and national policies and management efforts addressing drought
- ❑ Examples in the form of Case Studies
- ❑ Policy recommendations for drought management and processes for developing drought management plans (DMPs) within WFD river basin management plans
- ❑ Minimum required content of DMPs





XEROCHORE has produced 5 Science Policy Briefs on the link between drought and the EU Water Framework Directive, i.e.:

- characterisation of water bodies and of the analysis of pressures and impacts (Art. 5)
- monitoring of surface water and groundwater status and of protected areas (Art. 8 - relevant also for Art. 1)
- recovery of costs for water services (Art. 9)
- implementing a programme of measures (Art. 11, including Annex VI part b)
- river basin management plans (Art.13)



An exercise to assess research needs and policy choices in areas of drought

How to deal with drought

science policy brief 1

Water Framework Directive 2000/60/EC:
Characterisation of water bodies and of the analysis of pressures and impacts (Article 5)



Xerochore - An exercise to assess research needs and policy choices in areas of drought

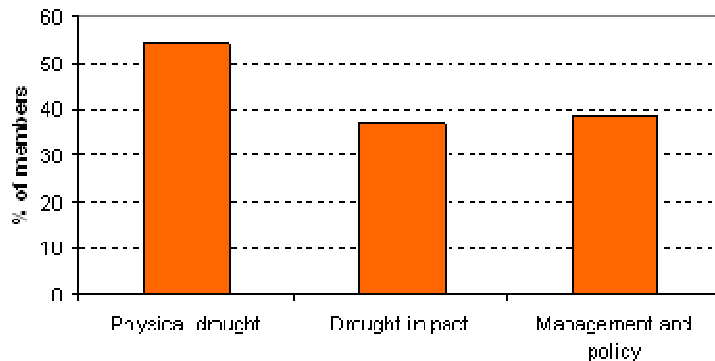
Assessment of research needs and policy choices in the area of drought. Review of the state-of-the-art and identification of research gaps in the natural system, impact assessment, policy-making and integrated water resources management with assessment of the possible socio-economic and environmental impacts of droughts and guidance on appropriate management responses.





XEROCHORE has extended the network of drought experts through the European Drought Centre:

Distribution of members over drought fields



- number of member tripled
- better distribution of members over drought fields
- 30% are overseas members

offers long-lasting platform to share and exchange knowledge on drought across drought fields

Conclusions:

- ❑ **Synthesis of knowledge on past and future droughts and identified research gaps that support development of drought management plans (DMPs) within the WFD development:**
 - Guidance Documents
 - Science Policy Briefs
- ❑ **Provisions of information on possible impacts of droughts and guidance for stakeholders.**
- ❑ **Establishment of long-lasting network of drought experts through the extended European Drought Centre.**



XEROCHORE



Further information:

- ❑ **XEROCHORE:** <http://www.feem-project.net/xerochore/>
- ❑ **European Drought Centre:** <http://www.geo.uio.no/edc/>
- ❑ **European Drought Observatory:** <http://edo.jrc.ec.europa.eu>

