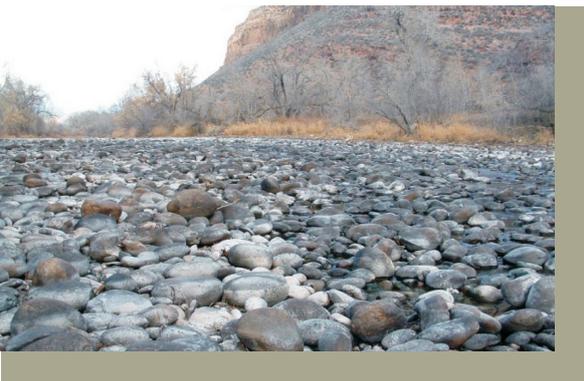




## How to deal with drought

# science policy brief 4

### Water Framework Directive 2000/60/EC: Implementing a programme of measures (Art. II, including Annex VI part b)



#### **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, and assessment of the possible impacts of droughts and guidance on appropriate responses.

#### **Policy focus**

Contribution to the understanding of drought and the natural system (climate and hydrology) and how it impacts on the characterisation of water bodies and pressures, socio-economic impacts and related drought management, environmental impacts on water availability for ecosystems.

#### **Purpose of this science-policy brief**

The Water Framework Directive (WFD) specifies that Member States should develop Programmes of Measures (PoMs) in order to achieve the environmental objectives and address the problems associated with the pressures set on water bodies. These PoMs should be reviewed every six years, as a part of the River Basin Management Plans, and comprehensively and consistently address the impacts of drought:

The WFD lacks explicit reference to measures for mitigating the impacts of drought and water scarcity. For surface waters, these measures are only supplementary (WFD Annex VI, part b).

If we want to achieve a good status at local level, quantitative measures against drought and water scarcity will be necessary for many water bodies (both surface and groundwater), in combination with qualitative measures,

Due to climate change, there could also be a need to integrate more measures for drought and water scarcity in the second and third PoMs.

The Xerochore project contributed to the improvement of drought management, through better knowledge on the processes and options for mitigating drought impacts.

## Policy milestones and relevant Xerochore Key outputs

By 2009 Member States should establish a programme of measures for drought and water scarcity constraints, for each river basin district, or for part of an international river basin district within its territory, taking into account the results of the analyses required in Article 5, in order to achieve the environmental objectives (good ecological status) established in Article 4 (see Deliverables 5.1 and 5.2 of Xerochore).

The PoMs shall be reviewed by 2012 in order to prepare the second PoMs, at the latest 15 years after the date of entry into force of the Water Framework Directive (by 2015) and every six years thereafter. Xerochore Deliverables 5.1 and 5.2 could help by integrating mitigation and adaptation measures to drought, water scarcity, and climate change within the second PoMs.

The PoMs shall include measures to prevent or control the input of pollutants into water bodies (see Deliverables 5.1 and 5.2 of Xerochore).

Controls (through the use of monitoring and prevention tools) over the abstraction of freshwater from surface and groundwater bodies, and impoundment of fresh surface water, including a register or registers of water abstractions and a requirement of prior authorisation for abstraction and impoundment. Within the frame of the WFD, these controls shall be periodically reviewed and, where necessary, updated. Member States can be exempt from these controls, when these abstractions or impoundments do not have significant impact on the water status.

The Xerochore D1.2 Extended Guidance Document on the Natural System & Drought contributes to a better knowledge on monitoring the status of surface and groundwater water bodies through:

Impact of measures on the spatio-temporal development of drought (scale, duration, severity). Appropriate tools include combined observational - modelling frameworks (more information on the topic can be found on Deliverable 1.2 "Extended Guidance Document on Natural System").

The processes needed for selecting drought mitigation options (measures and tools), while developing a drought plan within the RBMP (contribution to WFD Annex VI).

The list of actions that could contribute to drought mitigation (contribution to WFD Annex VI).

The tools and processes used worldwide for coping with drought (contribution to WFD Annex VI).

## Limitations identified by Xerochore:

Measures for mitigating drought impacts should be selected according to the severity, duration and spatial extent of the event. The lack of drought indicators that are inter-comparable across the EU to identify e.g. large-scale, prolonged drought events on a common basis hinders the process of defining actions for each drought stage.

The WFD addresses quantitative issues in compulsory terms only for groundwater bodies (Article 17). However, these should refer to both surface and groundwater bodies and be part of compulsory actions.

Demand management strategies are not promoted as obligatory measures in the WFD. However, economic instruments have often proved successful, as a means to affect water use patterns and consumer behaviour.

An important administrative shortcoming is the overlapping of jurisdictions and responsibilities among agencies, particularly with regard to the selection and implementation of drought mitigation actions.

## **Main recommendations**

PoMs should, when and where necessary, incorporate measures to cope with drought and climate change and particularly with the effects of additional pressures which lead to a deterioration of the status of water bodies. Emphasis should also be given to the incorporation of environmental protection actions, aimed at the protection and restoration of aquatic ecosystems during and after drought events.

WFD Annex VI (part b) provides a list of quantitative measures that could be included in the PoM. It would also be of value to provide guidance on the criteria used for the selection and evaluation of measures, in order to promote the analysis of uncertainty of climate change, as well as the selection of measures with cross-sectoral benefits. Furthermore, a comprehensive catalogue of measures for combating drought and water scarcity impacts should be developed, including aspects of forest management, soil management and protection of permanent grasslands.

Demand management options should be integrated as compulsory measures, in order to foster the sustainable use of water resources through the reduction of water consumption and the increase in water use efficiency. Demand management can also improve the resilience of water systems in the case of extreme events.

The list of measures for the PoM can also include “Green Infrastructure”, which is expected to contribute to adaptation to climate change and extreme climatic conditions.

The PoM should be developed in integration with the Rural Development Programme, developed under CAP.

Measures reported in the PoM, particularly for drought management, may be subject to the Strategic Environmental Assessment Directive (SEA) provisions and should be assessed according to Article 4.7 of the Water Framework Directive.

Existing decision support systems should be enhanced to incorporate the multi-faceted drought impacts and address issues such as environmental sustainability, conjunctive use of surface and groundwater, evaluation of the performance of traditional water management approaches, adaptation measures to strategic sectors (e.g. agriculture, energy

**Further information on the XEROCHORE project:**

**Starting/Ending date of project:**

1st May 2008 30th April 2010

**Participating countries/institutes:**

Fondazione Eni Enrico Mattei, Italy [Coordinator]

Wageningen Universiteit, The Netherlands

Water Management Center GbR, Germany

Universitetet i Oslo, Norway

Ministero dell'Ambiente, della Tutela del Territorio e del Mare, Italy

Ministerio de Medio Ambiente, Spain

Natural Environment Research Council, United Kingdom

National Technical University of Athens, Greece

EC DG Joint Research Centre, European Commission, Italy

Centre National du Machinisme Agricole, du Genie Rural, des Eaux et des Forets, France

The International Union for Conservation of Nature and Natural Resources, Switzerland

**Type of R&D:**

Specific support action

**Programme:**

7th Framework Programme  
Theme 6: Environment  
(Including Climate Change)

**Web-Links:**

Xerochore:

<http://www.feem-project.net/xerochore/>

European Drought Center:

<http://www.geo.uio.no/edc/>

European Drought Observatory:

<http://edo.jrc.ec.europa.eu>

production).

The evaluation of different sets of quantitative measures should be encouraged and promoted in scientific research (cost effectiveness analysis of water scarcity and drought measures). In addition, measures for boosting ecosystem storage capacity for water in Europe should also be evaluated and explored.

A set of EU common agreed indicators for characterising and monitoring drought and water scarcity should be established, which consider the different nature of both phenomena.

International networks for disseminating experiences on the implementation of drought mitigation measures should be established in order to communicate success stories, as well as failures.

### **Additional technical / scientific information**

Xerochore Working Document on "Provisions and Gaps of the Water Framework Directive 2000/60/EC regarding drought management".

Xerochore Working Document on "Pan-European Drought policy framework".

### **Selected related projects / activities**

DSS-DROUGHT: A decision support system for mitigation of drought impacts in the Mediterranean regions (INCO-MED project, 1997-2001).

ARIDE: Assessment of the Regional Impact of Droughts in Europe (FP4 project, 1998-2000).

ASTHyDA: Analysis, Synthesis and Transfer of Knowledge and Tools on Hydrological Drought through a European Network (FP5 project, 2002-2004).

AQUASTRESS: Mitigation of Water Stress through new Approaches to Integrating Management, Technical, Economic and Institutional Instruments (FP6 project, 2005-2009).

European Drought Centre (EDC) and the European Drought Observatory (EDO).