



Report on the Review of the  
European **Water Scarcity**  
and Droughts Policy

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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**Report on the Review of the European Water Scarcity and Droughts Policy**

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**1. INTRODUCTION**

Over the past decade, the concerns about drought events and water scarcity have grown within the EU, especially with regard to long-term imbalances of water demand and water availability in Europe.

Following one of the most widespread droughts in 2003 affecting over 100 million people, a third of the EU territory, with a cost of at least € 8.7 billion, the EU Council of Ministers asked the European Commission to address the challenges of water scarcity and droughts (WS&D) in the EU.

The Commission responded to this call in the Communication on water scarcity & droughts in the European Union<sup>1</sup>, which laid down a water hierarchy under which water demand management should come first, and alternative supply options only once the potential for water efficiency has been exhausted. The Communication identified 7 main policy options to address the WS&D challenges. Each of these is assessed in sections 3.1.1 - 3.1.7 below.

The Commission has assessed progress in implementing these policy options in annual follow-up reports in 2008, 2009 and 2010. This report responds to the 2007 Council request to review by 2012 whether the policy on water scarcity and droughts has achieved its objectives of reducing water scarcity and vulnerability to droughts. It also looks into whether action taken in the implementation of the Water Framework Directive (WFD)<sup>2</sup> has contributed to addressing WS&D. This assessment is based on a number of studies<sup>3</sup> launched by the European Commission and on the assessment of the Member States river basin management plans (RBMPs). It is one of the pillars supporting the development of the Blueprint to Safeguard Europe's Water Resources. Further details can be found in the annexed Commission Staff Working Document.

**2. WATER SCARCITY AND DROUGHTS IN EUROPE**

In 2011 and 2012 droughts affected large parts of Southern, Western and even Northern Europe. The 2011 drought has been referred to as the worst in a century with rainfall as low as 40 percent of normal. In both years water availability was significantly reduced in the spring and water use restrictions were put in place in large parts of the EU. Over the past thirty years, droughts have dramatically increased in number and impact. Between 1976 and 2006 the number of areas and people affected by droughts went up by almost 20% and the total costs of droughts amounted to 100 billion €.

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<sup>1</sup> COM (2007) 414 final

<sup>2</sup> Directive 2000/60/EC, OJ L 327, 22.12.2000, p.1

<sup>3</sup> [http://ec.europa.eu/environment/water/quantity/building\\_blocks.htm](http://ec.europa.eu/environment/water/quantity/building_blocks.htm)

In 2007 at least 11% of the EU population and 17% of its territory had experienced water scarcity and the phenomena is getting worse; currently an important share of river basins can be considered as under water stress all year round. During summer months water scarcity is more pronounced in Southern Europe but is also becoming increasingly important in Northern basins, including UK and Germany.

Trends appear to remain stable. A modeled localization of water scarce basins in summer and all year round in 2030 shows that the number of river basins under water scarcity are expected to increase by up to 50%<sup>4</sup>.

Both droughts and water scarcity can cause economic losses in key water-using sectors and environmental impacts on biodiversity, water quality, deterioration and loss of wetlands, soil erosion, land degradation and desertification. Some of the effects are short-term and conditions quickly return to normal whilst other effects may become permanent.

### **3. WATER SCARCITY AND DROUGHTS POLICY IN EUROPE**

The policy instruments identified in the 2007 Communication and the WFD are both important tools to revert the trends of water scarcity and the vulnerability to droughts in the EU. The following sections show the extent to which this has happened to date and identify the gaps in the current WS&D policy.

#### **3.1. Implementation of the 2007 policy options**

##### *3.1.1. Putting the right price tag on water*

Limited implementation of the cost-recovery and incentive pricing requirements of the WFD has taken place. RBMPs provide information on current tariffs for water services, where the definition of water services is often not in line with the Commissions interpretation as it limits their scope to the provision of drinking water and waste water treatment excluding self-abstraction, flood protection, hydropower, navigation etc.<sup>5</sup> Even when a broader definition of water services is used, recovery of financial costs for water services is not yet the norm in all Member States and environmental or resource costs are often not considered.

If water tariffs are set below cost recovery levels, the degree of asset replacement of drinking water systems may not be sufficient to reduce leakage to a sustainable level and funds available for treatment may not be sufficient to achieve environmental objectives<sup>6</sup>.

In agriculture, the biggest consumptive sector for water in the EU, operational costs for the provision of water are only partly recovered for 10 Member States and capital costs are often subsidized. An important share of water abstractions for agriculture in the EU is not priced, even in water stressed areas, and there is no financial mechanism for recovering the

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<sup>4</sup> Modelling done under the project ClimWatAdapt.

<sup>5</sup> Infringements procedures have been launched by the Commission against 8 Member States. The ongoing assessment of the Member States' RBMPs shows that a broad definition of water services has been reported in only 6 out of 23 Member States assessed.

<sup>6</sup> Resource and economic efficiency of water distribution networks. Final report from ERM to the European Commission 2012



environmental and resource costs of individual abstractions or for giving incentives to using water more efficiently. Metering is a pre-condition for effective water allocation and pricing<sup>7</sup>.

### *3.1.2. Allocating water and water-related funding more efficiently*

Authorization procedures for water abstraction or use are generally in place in all Member States, but procedures differ significantly and illegal abstractions remain an important challenge in parts of Europe. The practice to restrict water use in times of water scarcity or drought is included in many Member States' water allocation policies.

In some Member States, restrictions are determined according to a hierarchy of water users, under which the environment is sometimes being included as a separate sector. Abstraction rules are sometimes more stringent in areas suffering from chronic water shortage.

Ecological flow schemes<sup>8</sup> are increasingly used as an element of water allocation to restrict water use, to define the maximum limits of changes to the water bodies, to maintain a certain biological condition and to help correct impacts of earlier action.

In Europe, Spain is the only country where, since 1999, trading water use rights has been possible and since 2005, water markets emerged with a diversity of informal and formal trading mechanisms. During the 2005-2008 drought in Spain, water market exchanges alleviated the conditions of those basins where water scarcity was most severe.

Progress has been made in integrating water quantity aspects into the Common Agriculture Policy (CAP), and the provisions of the Commission's proposals for the CAP to include the WFD in cross compliance and to establish conditionalities for the use of rural development funds for irrigation projects are crucial for this trend to continue. The Commission's proposal for 2014-2020 has set efficient water supply and water demand management as key actions of the ERDF and Cohesion Fund investments into water management. Meanwhile, a Communication<sup>9</sup> has reminded Member States about the need to increase the support for water efficiency when using cohesion policy funding. The use of EIB funds for Member States actions to address WS&D is still low.

Adapting land use to reduce the vulnerability of water resources is not common at Member States level and highly fragmented support actions and technical measures are promoted instead of integrated land and water use planning.

Cost-effectiveness and cost-benefit analysis has seldom been used by Member States to prioritize investments under the RBMP process; hence the process has not fully provided a coordination mechanism for allocating financial resources to priority issues<sup>6</sup>.

### *3.1.3. Improving drought risk management*

The development of Drought Management Plans has progressed but their implementation as well as their integration with RBMPs and other planning documents remains limited. Some measures in the RBMPs aim at reducing water abstraction from different sectors, and can contribute to reducing vulnerability to drought; however they are mainly focussing on addressing water scarcity.

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<sup>7</sup> The role of water pricing and water allocation in agriculture. Final report to from Arcadis et al to the European Commission, 2012.

<sup>8</sup> The flow regimes which are necessary to maintain essential processes of healthy river ecosystems and good ecological status of water bodies

<sup>9</sup> COM(2011) 17 final

A prototype of the European Drought Observatory (EDO) has been developed and interoperability arrangements have been established with key data centers at European, regional and local level. EU wide drought indicators are now available on a preliminary basis for precipitation, soil moisture, vegetation response and a combined drought indicator targeted to agricultural drought. Further developments are required to test and improve the indicator set, to add further data from national and river basin level, to test and implement medium to long range drought forecasting and to perform hazard and risk analysis.

Limited progress has been made with the use of EU Solidarity Funds in the area of droughts. The financing mechanism was activated once only for the 2008 Drought in Cyprus. Application rules are currently being revised.

#### *3.1.4. Considering additional water supply infrastructures*

In some Member States, additional water supply infrastructures have been developed before exploiting the full potential of water saving measures, thus in spite of the water hierarchy. The potential environmental impacts of new water supply infrastructure plans have not been systematically considered by Member States.

In approximately 30% of the screened RBMPs, the development or upgrade of reservoirs and other water infrastructure is foreseen to increase the water availability and reduce socio-economic impacts of reduced water availability.

25% of RBMPs include the development or upgrade of water transfer schemes, but with different degrees of relevance, wastewater re-use is included in 50% and artificial aquifer recharge and rainwater harvesting in 30% of the RBMPs.

The development or upgrade of desalinization plants is only presented in a few RBMPs but is of high importance for River Basins in Southern Europe. Adverse environmental effects of desalination are not always sufficiently considered in the plans.

#### *3.1.5. Fostering water efficient technologies and practices*

Although substantial water efficiency gains have been achieved in irrigated agriculture, improving irrigation schedules and modernizing technologies can still provide significant water savings. Uncertainty remains however on how water saving at the field level is effectively translated into overall water saving at the farm and river basin level. In some cases, modernization has led to intensification or more area being cultivated rather than a decrease in water use<sup>10</sup>. Efficiency margins are still significant in building, e.g. in relation to eco-design of taps and shower heads.

In the EU there is a large diversity of the efficiency of drinking water supply systems. In some cases, water distribution systems with low water efficiency (high leakage rates) can be at their optimal economic efficiency level, meaning that additional investments in leakage reduction would result in increased costs to the public but would not result in additional benefits to either the public or the environment<sup>6</sup>.

The assessment of the RBMPs shows that they often have not been adequately coordinated with other physical and socio-economic plans e.g. on land use. This lack of coordination,

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<sup>10</sup> Water saving potential in agriculture in Europe, Final Report from Bio Intelligence Service to the European Commission, 2012



together with the absence of supporting financing plans, severely hinders the implementation of the RBMPs in general and of measures relevant to WS&D (including water efficiency measures) in particular.

### *3.1.6. Fostering the emergence of a water-saving culture in Europe*

Member States are implementing a broad spectrum of awareness raising activities to foster water saving, but other tools such as incentive pricing, financing mechanisms for water saving eco-design for water using appliances etc are not always sufficiently present.

In the area of sustainable consumption, two main trends regarding food and agricultural product certification and labeling schemes are emerging: schemes with a focus on providing information on the water footprint of a product and schemes that are focused on encouraging good water stewardship. Labeling on the basis of a water footprint is not currently recommended as most consumers would not have sufficient knowledge to interpret the information and given the unresolved issues on transparency and reliability of data underlying the footprint and its failure to address impacts of the consumed water<sup>11</sup>.

The European Water Partnership has developed the European Water Stewardship (EWS) scheme with the aim to promote efficient practices by key water users. Criteria for certification are closely linked with the main WFD requirements and the EWS can therefore be a useful tool to optimise water management at RB level.

### *3.1.7. Improving knowledge and data collection*

EU wide coverage and long-time series of water quantity data are not yet available therefore, the basic step of identifying water scarce river basins remains a challenge. Streamlined data on state and pressures, impacts and effectiveness of responses to address WS&D still need improvement.

Progress towards the application of common WS&D indicators has been made under the Common Implementation Strategy for the WFD. Three indicators have been agreed so far:

- The Standardized Precipitation Index for meteorological drought
- The fraction of Absorbed Photosynthetically Active Solar Radiation (fAPAR) for drought impacts on vegetation.
- The Water Exploitation Index Plus (WEI+) for the pressure on the water resources from water abstractions

These indicators can be calculated on the basis of information, either already available or under development (e.g. physical water balances being developed by the EEA).

Water scarcity and water use efficiency research is scattered within the 6th and 7th Framework Programmes and stronger efforts are required to develop synergies with Member States research activities inter-alia on water savings and efficiency and to ensure appropriate coordination with policy needs. This is gradually being implemented in recently launched projects.

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<sup>11</sup> Water footprinting and product labelling, Final Report from RPA to the European Commission, 2011

### **3.2. Integration of Water Scarcity and Droughts measures in the RBMPs**

A screening of how water scarcity and droughts issues are covered by the RBMPs has been carried out for all countries which have submitted their RBMPs (therefore excluding PT, EL, and parts of ES and BE)<sup>12</sup>.

WS&D are recognized as relevant issues by RBMPs across the EU. Water scarcity is reported for the whole Mediterranean area, and for some areas in Central, Eastern and Northern Europe. 41% of the RBMPs do not consider water scarcity as a relevant concern. Drought is reported for a wide range of River Basin Districts across Europe but 40% of the RBMPs do not consider drought relevant.

The analysis of water quantity aspects lacks adequate foundation in many RBMPs: quantity data are insufficient and water scarcity is often not clearly distinguished from droughts and viceversa. Water demand scenarios are presented for only 35% and water availability scenarios for less than 25% of the RBMPs. 80% of the plans do not assess the uncertainty of data and 90% do not specify the sources of funds to implement the relevant measures.

Measures to ensure the achievement of the WFD objectives by enhancing the resilience of the ecosystems are included in 45% of the RBMPs. Only in a few basins that face water scarcity, restrictions to new water-consuming developments are envisaged as a high priority in the RBMPs.

The influence of other sectoral policies on the reduction of water scarcity and the mitigation of drought effects is not sufficiently covered: for only 12% of the RBMPs, the pressures on water resources by the different sectors are identified.

In international basins, there is still a major gap in dealing with water quantity in a way that reduces conflict risks and contributes to the WFDs objectives. Only 5% of the screened international RBMPs include co-ordinated measures for the entire international RBD to deal with WS&D.

### **3.3. Gaps in the current Water Scarcity and Droughts policy**

The above assessment shows a diversity of inter-linked policy gaps in addressing water scarcity and droughts in Europe. These include:

- **Conceptual gaps:** the understanding of the causal relationships between drivers, pressures, states and impacts that would help identifying the most cost-effective measures for addressing WS&D is still not sufficient. Water scarcity and droughts are often not distinguished and indicators to illustrate the two phenomena have so far been insufficient. The newly agreed indicators need to be calculated for the entire EU at appropriate geographical and time scale. This requires a coherent dataset at EU level.
- **Information gaps:** The RBMPs include only limited data on current and future water demand and availability as well as on measures that target WS&D, availability of funding and their expected impact on WS&D. The absence of robust information hampers a proper assessment of the effectiveness and socio-economic impacts of measures.

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<sup>12</sup> The report may consequently underestimate the WS&D challenge in Europe

- Policy, governance and implementation gaps: overall, most support actions and measures proposed by Member States to address WS&D target pressures, state & impacts, giving priority to measures to increase water supply. Measures that target key drivers at the origin of WS&D, or the implementation of accompanying measures such as metering, pricing/subsidies and restriction of water consumption are proposed in a few RBMPs only. Responsibilities for and financing of the proposed measures is unclear. Adequate coordination with other planning processes and availability of financial resources is not satisfactory. Finally, the links between water scarcity and ecological flows are not well established.

#### **4. TACKLING WATER QUANTITY ISSUES BETTER IN THE FUTURE**

The main aim when dealing with WS&D is to restore or sustain the water balance in all European river basins while taking fully into account the water requirements of aquatic ecosystems.

While the WFD requirements on water quantity are not spelled out in great detail for surface waters<sup>13</sup>, Good Ecological Status is unlikely to be reached in a water body with significantly altered flows due to e.g. over-abstraction. Therefore adequate management of water quantity is an implicit requirement of the WFD. A common understanding of water scarcity and droughts has been reached in the framework of the CIS process. This needs to be fully considered in the next RBMPs.

The European Innovation Partnership on Water<sup>14</sup> can play a significant role in facilitating the development of innovative solutions to deal with water quantity issues, while the European Innovation Partnership (EIP) on Agricultural Productivity and Sustainability<sup>15</sup> will address water management at farm level, contributing to a more efficient use of water in agriculture. In addition, a number of tools are important to improve water quantity management in the next RBMPs. The main ones are highlighted here below:

##### **4.1. Defining and implementing ecological flows**

The establishment and enforcement of adequate ecological flows for all water bodies in Europe is essential for dealing efficiently with WS&D issues and to achieve Good Ecological Status as required by the WFD as well as significant co-benefits for energy savings, climate change mitigation and adaptation, nature and biodiversity. It requires the adaptation of current water allocation to consider the ecological needs of water-dependent ecosystems. If water allocations reflect ecological flow requirements, it will be possible to prevent or mitigate the effects of WS&D.

##### **4.2. Defining and implementing targets for water efficiency**

RBMPs need to include quantitative data on water demand and availability including better forecasting of water availability and consumption. Data should also be more transparent, revealing uncertainties, time spans, and sources. In drought-prone areas, drought uncertainties and variations (e.g. of the water availability) should be considered in the RBMP's baseline and not be interpreted as unexpected natural climate extremes.

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<sup>13</sup> Quantity requirements are explicit for ground water

<sup>14</sup> COM(2012)216

<sup>15</sup> COM(2012) 79

There is still a large potential for water efficiency measures in all the main water using sectors: agriculture, industry, distribution networks, buildings and energy production. But the water saving potential is very context specific and targets are best set at local level by stakeholders who have full knowledge of the different water use sectors and components of the hydrological cycle and who can ensure that targets are coherent and that efficiency measures are implemented where the socio-economic costs are the lowest.

#### **4.3. Promoting economic incentives for efficient water use**

Proper implementation of the WFD article 9 is crucial for tackling WS&D. Widening the scope of current economic instruments is necessary to ensure that they provide incentives for sustainable water abstraction and use: where there are currently no tariffs, they need to be put in place; consumption based water tariffs need to be promoted; the role of abstraction charges and taxes needs to be expanded so that the environmental and resource costs are internalised into the water users decisions.

Ensuring that economic instruments better reflect the economic value of water will also give incentives for additional investments in leakage control by water service providers, contributing to both full cost recovery and the long term sustainability and efficiency of water service provision. Finally, earmarking financial revenues for WS&D related measures will also support achieving WS&D targets.

The establishment of water market/trading mechanisms with a defined cap for the environment is a mechanism that can provide the opportunity for Payment for Ecosystem Services and thereby for achieving a sustainable balance for river basins with deficit. Incidental benefits include the (temporary or permanent) reallocation of water use rights among economic users that can deliver additional economic benefits.

#### **4.4. Guiding land use to respond to water scarcity**

Ensuring that new economic development is coherent with the water availability is the basis for long term sustainability, and specific attention on land use is required. This re-emphasises the need for proper integration between RBMPs and other economic and physical planning processes.

To ensure this, RBMPs need to be adequately coordinated with other physical & socio-economic plans prior to adoption and financial resources for their implementation need to be identified. This will ensure that costs and benefits of actions are properly considered and that the implementation of the WFD principle of cost effectiveness is used to achieve the objectives of the RBMP at the least cost.

#### **4.5. Enhancing drought management in Europe**

Further development of the EDO to operate as an early-warning system will be a necessary tool to help Member States and economic operators to act as early as possible and prepare for forthcoming droughts. This should be combined with an effective adaptation of the EU Solidarity Fund in case of drought emergency to cope with damages that could not be avoided.

Further efforts are required to develop and implement a coherent set of actions to address drought at the river basin scale within the planning process of the WFD. Land use developments should be coherent with the water availability in the RBDs, including its

variability. In this respect, Green Infrastructures such as retention measures can play a very positive role.

Moreover, alternative water supply options with low environmental impact such as water re-use need to be further relied upon.

#### **4.6. Promoting resilience to climate change.**

Climate change is expected to worsen the impacts of already existing stresses on water as changes in precipitation, combined with rising temperatures, will cause significant changes in the quality and availability of water resources. A combination of adaptation measures must be included in the policy answers to water scarcity and drought.

### **5. CONCLUSION**

The overall objective of the WS&D policy - to revert the WS&D trends - has not been achieved, even if progress has taken place in implementing the 7 policy instruments identified in the Commissions Communication from 2007<sup>1</sup>.

The WS&D policy has to some extent been considered as self-standing by Member States and a stronger focus on quantity issues in the implementation of the WFD is critical. In the next implementation cycles of the WFD this need to be ensured along with further integration of water quantity issues into sectoral policies.

The majority of measures applied by Member States target pressures, state and impacts and only very few measures target key drivers.

The identified policy gaps and concrete options to address them are considered in the Commission Communication 'Blueprint to Safeguard Europe's Water Resources' with a view to integrating water quantity issues more fully into the overall policy framework. Where relevant, further policy measures may be addressed in the Adaptation to climate change Strategy foreseen for spring 2013.



