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EUROPEAN COMMISSION

Brussels, 18.5.2010
SEC(2010)573

COMMISSION STAFF WORKING DOCUMENT

Accompanying document to the

**REPORT FROM THE COMMISSION TO THE COUNCIL
AND THE EUROPEAN PARLIAMENT**

**Second Follow-up Report to the Communication on water scarcity and droughts in the
European Union (COM(2007) 414 final)**

{COM(2010)228 final}

**Follow-up of the Work programme for the implementation of the measures of the
Communication on water scarcity and droughts**

POLICY OPTIONS	RESPONSIBILITY	TIMING	STATE OF PLAY
1. PUTTING THE RIGHT PRICE TAG ON WATER			
– Combining effective water pricing with metering – – –			
Introduce water pricing policies with incentives for efficient water use; make the "user pays" principle the rule (Article 9 WFD) Continue efforts to spread metering programmes more widely in all water using sectors - including compulsory controls on abstractions (Article 11(3) of WFD)	National	By 2010	Reported to be advanced – to be checked in the RBMPs
Take into account the OECD Work Programme on sustainable financing for sound water management		End 2008- March 2009	Ongoing
2. ALLOCATING WATER AND WATER-RELATED FUNDING MORE EFFICIENTLY			
– Improving land-use planning – – –			
Policy options of White Paper on adaptation to climate change	EU	From 2009	Ongoing
Follow-up of CAP Health Check on cross-compliance	EU	2008/2009	Ongoing
Discussions on the post-2013 CAP (in the framework of the cross-compliance system) and cohesion policies	EU	From 2013	Not started
Study on impact of biofuel development on water availability	EU	Nov 2008	Completed
Continue stringent implementation of SEA Directive in all economic sectors	National	Now	Ongoing
– Financing water efficiency – – –			
Followup of CAP Health Check on modulation and rural development	EU	2008/2009	Ongoing
Study on place of WFD issues in rural development programmes	EU	Oct 2008	Completed

Consider with Member States review of Community strategic guidelines on cohesion 2007-2013	EU and national	From 2009	No review foreseen. Guidelines to be supplemented by a Communication
Discussions on the post-2013 CAP (in the framework of the cross-compliance system)	EU	From 2013	Not started
Improve use of EU and national funds for water management within the programmes for 2007-2013 (including as a result of on-going evaluations)	National	2009/2010	Ongoing
Continue efforts to further develop fiscal incentives to promote water-efficient devices and practices	National	Now	Ongoing
3. IMPROVING DROUGHT RISK MANAGEMENT			
– Developing drought risk management plans –			
Report on drought management plans	EU	2007	Completed
Development of drought management plans (pursuant to article 13(5) WFD)	National	By end 2009	Delay of the consultation procedures on draft RBMP – to be checked in the RBMPs
– Developing an observatory and an early warning system on droughts –			
Develop European Drought Observatory and early warning system	EU	By 2012	Prototype testing ongoing
– Further optimising the use of the EU Solidarity Fund and the European Mechanism for Civil Protection –			
In the framework of the next budget review examine whether further progress needs to be made in the definition of the criteria and eligible operations for the use of the EUSF to better respond to drought events	EU	From 2009	Preparatory work ongoing
In relation to the Community Civil Protection Mechanism, consider all opportunities to focus on drought issues in future annual work programmes.		From 2009	Completed

Request the Civil Protection Expert Group on early warning systems to develop an approach to optimise the use of the drought early warning system and anticipate any civil protection preparatory action	EU	Once early warning system operational	Not completed
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4. CONSIDERING ADDITIONAL WATER SUPPLY INFRASTRUCTURES

Commission preliminary assessment of alternative options	EU	Nov 2008	Completed
Take all adverse effects linked to any new water supply infrastructure fully into account in the environmental assessment	National	Now	Ongoing

5. FOSTERING WATER EFFICIENT TECHNOLOGIES AND PRACTICES

Assessment of possible needs for standards for water-using devices	EU	Mid 2009	Completed
Commission's proposal to include certain water-using devices in the Ecodesign Directive	EU	July 2008	Completed
Consider inclusion of water efficiency criteria in performance standards for buildings	EU	From 2009	Ongoing
Assessment of possible need for a new directive for the water performance of buildings	EU	Mid 2009	Ongoing
Inclusion of a performance indicator on the use of water in the proposal for revising the EMAS Regulation	EU	July 2008	Completed
Enhance efforts to further adopt binding performance criteria for new buildings and for public and private networks, with systems of fines for excessive leakages	National	Now	Only few countries reported actions
Continue efforts to develop voluntary agreements with economic sectors that need water	EU and National	Now	Ongoing
6. FOSTERING THE EMERGENCE OF A WATER SAVING CULTURE IN EUROPE			
Explore, together with CSR Europe, the possibility of launching an Alliance initiative on the efficient use of water	EU	End 2008	Will not be launched in the near future
– Follow-up of Action Plan on SCP/SIP Encourage the extension of existing EU labelling schemes in order to promote water-friendly devices	EU	2008/2009	Ongoing
– Follow-up of Green Paper on agricultural product quality			

Consider in the light of the public consultation how (1) water management can be better integrated into certification schemes (2) these schemes can be used to promote water-friendly products			
Continue efforts to develop actions in education, information and communication	National	Now	Ongoing
7. IMPROVING KNOWLEDGE AND DATA COLLECTION			
– Set up a water scarcity and drought information system throughout Europe	–	–	–
Set up agreed indicators on the extent and impacts of water scarcity and droughts	EU	2008/2009	Ongoing
Present an annual European assessment based on data provided by MS	EU	From 2009	Ongoing
– Research and technological development opportunities	–	–	–
Action focused on investigation of Europe's risk from droughts, including the development of a platform of exchange	EU	May 2008- Nov 2009	Launched

ANNEX

Additional information to the Second Follow-up Report to the Communication on water scarcity and droughts

1. Putting the right price tag on water

According to the information received from Member States, in general, it can be stated that the **tariff systems** for drinking water supply and sanitation adopted by most Member States are at a very advanced stage of implementation. However, charges for all non-domestic users are being implemented more slowly (UK), and some actions are still necessary regarding industrial and agricultural uses (BE). Most water suppliers are required by law to set tariffs to cover capital and operation and maintenance costs (FI). Capital costs are partly subsidised by the municipality only in some small municipal water utilities. The adaptation of tariff systems that take account of the principle of cost recovery may result in citizens' water bills being increased, which makes the changes difficult to accept: the new tariff systems are, consequently being adopted gradually.

Tariffs that recover the full supply and sanitation cost need to be increased in some cases by 20% (ES, Galicia) or even 85% (LT). However, some current cost recovery policies do not always include the resource and environmental costs. Some countries (PT, DE) have reported that they have incorporated these costs in the water supply or wastewater service charges. Others partially recover these costs via taxes to be paid by water users (LT) or plan to recover

them through charges linked to agricultural diffuse pollution (nutrients and pesticides) rather than to water intakes (BE). In certain parts of Europe charging principles are under development while other parts have still not agreed on the methodology for payments by households

The effects of exhaustive billing measures on water services have been favourable in some Member States, where per capita consumption fell once prices rose in line with increased cost recovery, and the trend seems to continue.

However, in other Member States water consumption has increased even though costs are being recovered in full. The application of progressive block tariffs¹ (FR, UK, ES, MT, PT) and applying penalties for excessive consumption and discounts for water savings (ES) are the most widespread ways of discouraging excessive consumption. Temporary or seasonal modification of prices (FR) or water resource levies depending on the scarcity rate associated with the basin concerned (PT, UK) are also applied for promoting water efficiency.

Concerning efforts to spread **metering** programmes in all water-using sectors, including compulsory controls on abstractions, it was reported that the use of meters for domestic drinking water supply is reaching a high level of implementation in MS (more than 90% in LT). Some shared meters in collective buildings are being replaced by individual meters in each household. The metering of non-domestic water uses is also improving, especially where users are connected to the public supply (UK, Scotland). The metering and control of direct abstractions by final users is also required and is usually associated with the authorisation process itself (AT, CZ, BE, FR, ES, PL). The modernisation of irrigation systems and the replacement of traditional gravity irrigation with pressurised systems (ES) allows easier metering of the supplied volume. In some southern European river basins legal measures have been adopted to also control the existing groundwater extractions (ES, FR). The programmes of measures in the RBMPs will provide information on how this will be implemented in the Member States.

2. Allocating water and water-related funding more efficiently

2.1. Improving land-use planning

The Commission is well aware of the complex links between the competitiveness of the **tourism** industry and environmental issues. The Commission-sponsored Tourism Sustainability Group (TSG) issued a report on 'Action for more sustainable European Tourism' (2007), which inspired the Commission Communication "Agenda for a sustainable and competitive European tourism" (COM(2007) 621 final). Minimising resource use and pollution at tourism destinations is one of the key challenges identified also with regard to the reduction of the ecological footprint and stress on water.

Actions should involve strengthening of environmental management in tourism enterprises, (for instance through the diffusion of eco-management schemes and eco-labels, like the EU flower for tourist accommodation services and camp sites) raising the awareness of visitors in an effort to change their consumption habits and providing the necessary infrastructure and management systems at local destination level. The Commission gives financial support to tourism associations or networks (via calls for proposals) for addressing these issues and is

¹ These embody an increase in the volumetric or per unit charge once a predetermined threshold of consumption is exceeded.

currently exploring the possibilities for drawing up a list of core indicators for sustainable tourism development that will include measures on water management and sewage treatment. Moreover, the fourth edition of the European Destinations of Excellence-Award (EDEN² edition 2009/2010) focuses this time on 'Aquatic tourism', which will be further addressed in the EDEN Network. The EDEN Network is a platform for exchanging good practices at European and national level.

Regarding the water efficiency measures in **urban areas** there are some initiatives at local level to promote a new culture of water management, to be incorporated in municipalities' development plans. NGOs are seeking to create a European Partnership of historical cities that will initiate the dialogue on solutions to retain rainwater in the urban environment.

The proposal for a **Soil Framework Directive**³ is being discussed by the Council and the European Parliament. Its objective is to maintain the functions of soil and in particular its water retention capacity, by halting soil degradation and reducing soil sealing. This will help overcome the impacts of floods and droughts and replenish groundwater tables.

The **Common Agricultural Policy** (CAP) Health Check agreed in 2008 has resulted in changes to the standards for Good Agricultural and Environmental Condition (GAEC). In particular, in line with the commitment made in the Commission Communication on Preparing for the 'Health Check' of the CAP reform⁴ to respond to new challenges, better water management objectives have been included with regard to cross compliance with a new GAEC issue relating to protection and management of water. From 2010 Member States will have to define a standard that will apply at farm level regarding compliance with authorisation procedures for using water for irrigation when such use is subject to authorisation. Other obligations relating cross-compliance should help raise farmers' awareness of these authorisation procedures, in particular through the provision of better information to farmers and the possibility of having CAP payments reduced in case of infringement. The Commission will carefully monitor application of the cross compliance rules resulting from the Health Check during the implementation phase.

The CAP Health Check has also allowed better targeting of the Farm Advisory System (FAS). This system requires the national authorities to offer advice to farmers, at least on the rules included in cross-compliance. With the inclusion of water issues in the scope of cross-compliance, the FAS will consequently incorporate water issues from 2010. Member States may also use the FAS for advising farmers on standards extending beyond cross-compliance, e.g. water commitments under agri-environmental measures.

In December 2008 the European Parliament and the Council reached agreement on the 'Climate action and renewable energy package' that contains ambitious commitments to fight climate change and promote renewable energy up to 2020 and beyond. The Directive on promotion of the use of energy from renewable sources (Renewables Directive⁵), which is part of the package, sets mandatory national targets for the share of renewable energy in final consumption and target of 10% renewable energy in transport by 2020. The Directive also sets out sustainability criteria that **biofuels** and bioliquids will have to meet to be eligible to count towards the Directive's targets, for national renewable energy obligations and for

² http://ec.europa.eu/enterprise/sectors/tourism/eden/index_en.htm.

³ COM(2006) 232, 22.9.2006.

⁴ COM(2007) 722, 20.11.2007.

⁵ Directive 2009/28/EC of 23. April 2009 on the promotion of the use of energy from renewable sources.

national financial support. Water protection is not part of the mandatory sustainable criteria, but producers do have to ensure that the raw material used for biofuels is in compliance with CAP's environmental cross-compliance rules, which includes provisions related to water protection (. The Directive also sets out reporting requirements on measures taken (if any) for e.g. water protection and requires private operators to provide information on measures taken in areas where water is scarce. A Communication on the practical implementation of the EU biofuels/biofuels sustainability scheme is under preparation.

A significant increase in biomass production in the EU will not require total irrigation water consumption to be increased in most areas. Growing biomass that needs less water than the present food crops could decrease the pressure on water resources. However increased biomass production in water-scarce areas could put additional pressure on an already stressed resource, if production requires further irrigation. In Southern Europe (FR, EL, IT, PT and ES) increased biomass cropping could be responsible for extra water abstraction problems in regions where water is scarce.⁶

Environmental impacts of large-scale biomass projects are taken into account in legal acts in several Member States (AT, DE, LT, FI). In one Member State (FI) the bio-energy contribution to the total energy use is 20%. Several countries reported that some bio-energy crops are fully or almost fully rainfed (DE, FR, UK) or that water demand for biomass is already dealt with in some draft RBMPs (FR, ES, FI).

A recent study⁷ has assessed the water requirements of thirteen bioenergy crops across the world and shows that the water consumption (water footprint) varies with climate, location and crop as well as with agricultural practice. The findings could help to select the best crops and locations to produce bioenergy.

A study carried out for the Commission⁸ on the impact of bioenergy development on water availability shows that to avoid increased pressure on European water resources, European feedstock for bioenergy should be more concentrated in northern and central parts of Europe than in the south. The strict implementation of the Water Framework Directive in southern Europe will have consequences for the capacity of these countries to increase national production of biomass with irrigated crops in particular as the current water abstraction has to be decreased to reach 'good status'. In order to reduce the pressure in these areas alternative water supply options, such as wastewater reuse, could also be considered as potential solutions for irrigation needs for bioenergy crops. Human health considerations, which often block the use of wastewater in the food production sector, are not as relevant for bioenergy production. However, the study states that in general efficient production techniques and development of drought-resistant crops are more critical for increased biomass production in Europe than access to irrigation water. The study shows that with no strict limits on water use, bioenergy could account for 2.6% of agricultural water abstractions and 1.4% of total water abstractions in southern Europe. This value could be reduced to 0.1% of total water withdrawals if stricter water abstraction measures are applied.

⁶ Dworak, T. et al. (2009) Assessment of inter-linkages between bioenergy development and water availability.

⁷ Gerbens-Leenes, W., Hoekstra, A.Y. & van der Meer, T.H. (2009). The water footprint of bioenergy.

⁸ Dworak, T. et al. (2009) Assessment of inter-linkages between bioenergy development and water availability.

Adequate prevention of negative environmental impacts through instruments such as the Environmental Impact Assessment⁹ (EIA) and the **Strategic Environmental Assessment**¹⁰ (SEA) Directives must be fully implemented in order, inter alia, to preserve water resources, as a guarantee for sustainability. With the objective of reinforcing resilience before future water scarcity events, all economic sectors are to be considered before significant decisions are made. Most Member States reported that they fully implement the EIA and SEA Directives.

2.2. Financing water efficiency

The agreement reached in the framework of the **CAP Health Check** has resulted in increasing financial transfers from the first pillar to rural development policy through compulsory modulation. Additional financial resources of €3.3 billion allows Member States to reinforce their efforts under their rural development programmes to meet the new challenges faced by European agriculture including the need for better water management. In addition, the European Economic Recovery Package makes available €1.020 billion earmarked for the improvement of broadband infrastructure in rural areas and for addressing the 'new challenges' as identified in the Health Check. With regard to water, an indicative list of operations has been identified for Member States to propose in their Rural Development Programmes (RDPs) with a view to improving water-use efficiency and preserving water quality. The study undertaken for the Commission (March 2009) on the place of the WFD issues in rural development programmes emphasised that Member States have the flexibility to select the most appropriate measures to address the specific needs of their territory and decide (up to a certain amount) how to spend their budgets. This leads to important differences in Member States' Rural Development Programmes and especially in the priority they give to environmental and particularly water-related issues. The study concluded that the actions taken under the RDPs will not be sufficient in many cases to solve water problems, which is not in any case the aim of the Rural Development Regulation (RDR), and additional efforts in the agricultural sector will be needed. There is no doubt that Rural Development Programmes are an important tool that can have a significant impact on achieving the WFD objectives. However, particular attention is needed in order to tackle concerns regarding possible negative impacts on water management due to new farm investments (Art 28 and Art 30 RDR), in particular those aiming at increasing irrigation areas and new large-scale water storage. The funding of the measures fostering better water management, like the improvement of existing supply systems, water-saving technologies and equipments, leakage reduction, reuse of waste water, soil protection, environmental and water resources protection and monitoring and research to improve knowledge are increasingly taken into account in EU and national budgets. The effects of recent severe events (like the 2005 drought in PT) mobilised private funds from agricultural and industrial sectors to lower water consumptions.

Rural Development Programmes (CZ(2008), IT(2007-13), ES) include subsidies for the modernisation of irrigation systems using such methods as sprinkling, dripping, micro-and sub-irrigation as major influences in water saving. In other Member States funds are mainly used to foster the improvement of water infrastructures (IT, ES, PT) or the reduction of irrigation at farm level (FR).

⁹ Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, OJ L 175 5.7.1985, p.40.

¹⁰ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, OJ L 197, 21.7.2001, p.30.

Also, it would be desirable that water supply utilities receive **aid** only if networks' yields reach certain thresholds (FR, from 2009, 75% in rural areas or 85% in urban areas) or if they improve security by means of connections between water utilities (FI). In some other Member States, regional aids are applied in order to replace less energy- and water-efficient devices (ES) or there are 'rebate' schemes for water efficient household appliances (MT, UK).

At regional level, a wide range of measures are supported (IT, ES) pursuing more water saving and reuse, promoting technologically advanced systems for monitoring, managing information and supporting decision systems for the management of water bodies.

In order to enhance users' interests in water efficiency, **tax policies** must also be developed. Only a few Member States reported having implemented such policies. Rainwater harvesting is already considered for tax credits or tax enhanced allowances in some Member States (FR, UK, BE) while municipal budgets are being replaced by fiscal initiatives to decrease operational costs of water utilities (FI). Fiscal measures should serve to better mobilise small scale private investments in water efficiency and more efforts must be focussed on this across Europe.

The 2007-2013 **Cohesion** Policy provides for significant investments in infrastructure related to water management (storage, distribution and treatment), clean and water-efficient technologies as well as risk prevention measures. In the 2007-2013 programming period €22 billion will be directly allocated to water management measures, including €8 billion for management and distribution of water.

The Community Strategic Guidelines on Cohesion covering the period 2007-2013 will not be reviewed but supplemented by a Communication. The Communication will stress the potential and means for improved sustainable development, including in terms of ecosystem services like water supply, at regional level with the current Cohesion Policy programmes 2007-2013.

In March 2009 the Commission published the working document 'Regions 2020 – Climate change challenges for European Regions' concluding that sectoral challenges will occur mainly in agriculture, fisheries, forestry, and the energy and tourism industries, and significant investment will be required to face drought, heat waves, forest fires, coastal erosion and flooding. In particular, urban life will have to adapt to more extreme weather conditions, which is likely to put strain on existing infrastructure in areas such as water supply, drainage, health, energy and public transport. Exposure and sensitivity of regions to climate change already display significant differences, with regions affected in a different way depending, among other issues, on their location in the European climate zones. Regions also differ in adaptive capacity so the impact on regional growth potential, environmental sustainability as well as equity will vary. Regions with a high dependency on vulnerable sectors will have to face social costs of structural change or adaptation. The Mediterranean regions will suffer the most from worsening conditions. In this framework, following the severe drought of 2008 the Cohesion Policy funding has already been used to co-finance desalination plants (ES, EL) that were needed to ensure a stable drinking water supply for a metropolitan area or islands.

Sustainable and efficient use of water resources and strategies for mitigation of climate change effects are included as priorities in a number of 2007-2013 Operational Programmes (CZ, IT, PT). The European Regional Development Fund is also supporting actions related to rain-water harvesting investment by farmers in certain member states (MT, CY).

3. Improving drought risk management

3.1. Developing drought risk management plans

Moving from 'crisis response' to 'risk management' in the context of water management is the way to improve society's resilience to water scarcity and droughts. It is clear that there are significant variations in the way that Member States across the EU consider and tackle these issues depending on their recent history and suffering with regard to water stress. Taking advantage of recent experiences in tackling drought problems can ensure the widespread of the development of specific drought plans across Europe as supplements to the River Basin Management Plans. Some Member States have already identified areas or entire basins affected by drought, suffering permanent or semi permanent water scarcity, soil degradation and desertification processes was already reported by some Member States (see details in the main text of the report). Several Member States (BE, ES) have defined their specific indicator systems and progressive measures at river basin level under their already ongoing drought plans. The drought management plans already developed (BE, CY, ES, FR, UK) were reported to include maps of water stress, the identification of warning or alert systems and sector-specific measures, such as temporary restrictions on irrigating water-intensive crops.

However, many Member States (AT, DE, FI, LT, PT) are considering droughts as a matter to be addressed in the context of the ongoing river basin management plans, or as specific chapters of RBMPs which are to be adopted (IT).

In order to restore the sustainability of the water cycle, water efficiency improvement and demand management practices were included in the Drought Management Plans (DMPs) of some southern European Member States (PT, ES, IT, FR). Consumption was rationalised by revising existing abstraction permits and limiting or refusing to grant new permits (IT, FR), or through restrictions on water uses (IT, PT, ES, CY). Other Member States reported that such initiatives required the involvement of transboundary actions (BE, FR). During severe droughts water markets (e.g. to exchange water rights) helped to temporarily allocate water resources more efficiently (ES, FR).

The measures taken during drought periods were often accompanied by public awareness campaigns (FR, ES, CY) to explain the link between water consumption and environmental protection to the public and to make unpopular decisions such as restrictions or tariff increases more acceptable (FR).

The Commission intends to foster exchanges of information and best practices on drought risk management and to propose methodologies for drought thresholds assessment and drought mapping by means of general recommendations that started with the 'Drought Management plan report'.

3.2. Developing an observatory and an early warning system on droughts

The prototype of the European Drought Observatory (EDO) for drought forecasting, detection, and monitoring in Europe is currently engaged in pre-operational production of drought indices using meteorological information, modelled hydrological parameters, and remote sensing data. Relevant indices (in particular, the Standardised Precipitation Index - SPI) show the general precipitation status for predefined periods. Soil moisture estimations are produced, along with their anomalies and seven-day forecasts.

All these drought indicators are made available online for visualisation and search by means of a map viewer. The tool generates maps of the different indicators and provides functionalities to browse the maps, search the data, produce graphs, and output the maps in various formats.

Several activities are currently ongoing in Europe to monitor and manage drought, water scarcity and desertification risks (see main text of the report for details). The measures taken during drought periods were often accompanied by public awareness campaigns (FR, ES, CY) to explain the link between water consumption and environmental protection to the public and to make unpopular decisions such as restrictions or tariff increases more acceptable (FR).

The European Environmental Agency (EEA) has kept up its efforts to produce better information and indicators on water scarcity and drought and progress has been made in establishing a European Water Scarcity and Drought Information system (WSDIS).

As a first step towards the development of a coherent water scarcity, drought and desertification information system for Europe the EEA continued its inventory of activities and information sources and a gap analysis has been undertaken at national and European level in order to identify the different links and overlaps in terms of objectives, priorities, methodological approaches, risk assessment and management.

The EEA also manages the regular water reporting, including reporting on water quantity as specified in the new reporting sheet (the basis of which is the updated WISE-SoE water quantity reporting sheet) accepted in February 2009.

3.3. Further optimising the use of the EU Solidarity Fund and European Mechanism for Civil Protection

Mobilising the EU Solidarity Fund (EUSF) for drought is difficult due to the ten week timelimit for presenting applications to the Commission following the first damage caused. Prior to filing an application for EUSF funds for drought damages, the applicant has to present all preventive measures taken to minimise the damages to justify the request, because unconditional post-disaster assistance could discourage countries from taking cost-effective risk-reduction measures and putting ex ante financial instruments in place.

The European Community Civil Protection Mechanism provides a framework for effective and rapid cooperation between Member States when mutual assistance is needed to respond to major emergencies (including droughts) that overwhelm the national response capacities.

The Commission Communication adopted in March 2008 on reinforcing the EU's Disaster Response capacity¹¹ advocated reinforcing the Community Civil Protection Mechanism by taking an integrated approach encompassing all stages and all types of disasters, including extreme droughts. The Communication 'A Community approach on the prevention of natural and man-made disasters'¹² adopted in February 2009 is concerned with options for an EU approach to preventing disasters, and taking an integrated multi-hazard approach. As well as addressing improvements to disaster prevention policies, it also includes improvements to the effectiveness of the existing financing and legislative instruments. The Council adopted on 30 November 2009 Council Conclusions on a Community framework on disaster prevention

¹¹ COM(2008) 130 final, 5.3.2008

¹² COM(2009)82 final/2,4.3.2009.

within the EU. The conclusions mandate the Commission to take forward a wide range of activities including the development of guidelines on risk assessment and mapping for hazard-specific disaster prevention, and the preparation of a sectoral overview of the major risks the Community may face, as well as the enhancement of Community disaster management training.

4. Considering additional water supply infrastructures

Several Member States reported that they had to develop alternative water supply infrastructures in order to tackle the water scarcity and drought problems in the river basins. Measures taken include the improvement or extension of existing desalination plants (ES, CY) and installation of mobile plants or transfers of potable water (CY).

Considering the energy-intensive nature of some options, these need to be weighed-up carefully. There remain in particular environmental and economic concerns about the high energy use of the desalination process. As regards the environment, if the energy required to increase water supply is produced by burning fossil fuels, these options will contribute to global warming. For this reason mitigation measures are needed to either improve efficiency or incorporate the use of renewable energy sources.

In order to reduce the pressure in water-scarce river basins alternative water supply options, such as wastewater reuse, could also be considered. Reuse of treated wastewater received a strong boost (IT, ES) during periods of water stresses and scarcity. Although the properties of treated wastewater do not always make it fit for drinking water supply, its capability to replace other sources led it to be allocated to agriculture irrigation, urban and industrial applications and environmental enhancement, for example to ensure minimum ecological flows (ES).

There is no European directive or guideline specifying the standards for treated wastewater in irrigation that would help to promote the reuse of treated wastewater. In this respect, in 2007 a Working Group of experts from EU and Mediterranean countries, stakeholders and non-governmental organisations issued a report entitled 'Mediterranean Wastewater Reuse Report'¹³ presenting non-mandatory recommendations. In the context of growing water scarcity there is a need to make wastewater reuse more acceptable and widespread. To that end further investigations as well as coordination and information exchange between the EU Member States is clearly needed specifically concerning the introduction of standards applicable across the EU for treated waste water for irrigation (e.g. of energy crops)..

Any proposal for new water infrastructures, not only storage or water transfer, but also resources as yet considered un-conventional must undergo an environmental, health, social and economic impact assessment. Almost all reporting Member States confirmed that before new alternative water supply infrastructures are established they undergo the full process of environmental impact assessment.

5. Fostering water efficient technologies and practices

In July 2009 an assessment was finalised for the Commission of how improvements to the efficiency of water-using devices and the water performance of buildings could contribute to overall water savings, together with details of the measures that could be applied at EU level

¹³ http://ec.europa.eu/environment/water/water-urbanwaste/info/water_reuse.htm

and how they could be implemented. The quantitative analysis shows that the introduction of mandatory requirements through extension of the Ecodesign Directive¹⁴ to cover water-using devices could induce significant savings if all water-using products are included - a 19.6% reduction in EU total public supply. This would correspond to a 3.2% reduction in annual total EU abstraction. However, if only energy-related products are included (without considering dishwashers and washing machines), the reduction is much lower, at around 6%.

Furthermore, reducing the water consumption of energy-related products such as taps, showers and baths (as adopted in the extended Eco-design Directive), can also result in an indirect reduction of energy consumption: a potential reduction of 20% of the heating needs of these products. This would lead to a reduction in energy use of 18.4TWh/year. This represents savings amounting to 0.50% of total EU primary energy supply. Reducing energy use would in turn result in yearly CO₂ savings of approximately 2.89 MtCO_{2eq} if standard energy-related water-using devices are replaced (excluding dishwashers and washing machines).

With regard to buildings it was concluded that small behavioural changes could provide significant savings. Small changes in showering time, bathing frequency or use of taps can result in savings of 20 to 30%. However, consideration of users' behaviour with new water-efficient products is needed to ensure that potential consumption reductions of some efficient fixtures are not neutralised by changes in the way they are used. The study concludes that the best result in terms of water savings would be achieved by buildings and products if a combination of several instruments is used. Several initiatives to develop standards and legislation for water-using devices have been taken up in different Member States. For example, general criteria for tap and toilet water-saving devices are being developed (CY) and a revision of the standards for spigots to reduce the outflow are being revised (FR).

A few Member States reported that they are at an advanced stage in the development of regulations or recommendations on water performance criteria of buildings (FR, ES, CZ, FI). Others have established a technical code for buildings referring to sustainable water use, water-saving measures and water flow control, as well as energy efficiency measures (ES), or have introduced new standards regarding rainwater harvesting and use (MT, FR).

Only one Member State reported that it is planning to update the water supply and sewerage system (CZ). Other Member States are continuing to carry out a programme to improve and/or replace old domestic water supply networks in rural areas (CY, ES). Some Member States are undertaking continuous leakage-reduction programmes (MT, CZ, BE). Others are trying to reduce leakage by voluntary measures (FI). Some Member States offer financial support for communities if they invest in modernising the drinking water supply system and an online information system on the efficiency of each community participating in the modernisation (FR).

The chemicals and the petroleum refining industry are responsible for approximately half of all water use by manufacturing industry, while the basic metals, paper and food processing industries account for most of the remainder. The water use of manufacturing industry can be reduced by recycling and reusing water, changing production processes, using more efficient technology, reducing leakage and developing on-site treatment. (The highest annual amount of water abstracted for manufacturing industry is in DE and FR).

¹⁴ Directive 2005/32/EC, OJ L 191, 22.7.2005, p.29.

To reach voluntary agreements with the economic sectors that need water would be a significant step ahead in ensuring efficient water use in all Member States. Some Member States continued to develop agreements with specific economic sectors, such as horse riding courses, the car washing industry (FR), the cattle industry (PT), manufacturers of water using-appliances (FI).

In May 2009, the Commission adopted a Communication on agricultural product quality policy¹⁵, laying down strategic orientations to improve EU policy on agricultural certification and labelling schemes. The Commission intends to draw up guidelines to encourage the inclusion of sustainability criteria in product specifications for geographical indications, and to maintain the credibility of environmental and other aims in certification schemes generally. In the case of the organic farming standard, farmers are already required to 'make responsible use of ... natural resources, such as water'¹⁶.

6. Fostering the emergence of a water-saving culture in Europe

The extended Framework Directive on ecodesign¹⁷ covering not just energy-using items, but also energy-related products (ERPs) includes energy-using products, plus other products that do not consume energy, but which impact on energy consumption. Among these are water-using devices such as water-efficient shower heads or taps that do not consume energy but can contribute to saving energy required for heating.

In parallel, work on implementing the current Ecodesign Directive is in progress with the aim of adopting within a short period of time implementing measures for given priority product groups, including washing machines and dishwashers.

Bearing in mind that civil society plays a crucial role when it comes to the development of a water-saving and efficiency culture in Europe, Member States actively continued to organise information campaigns at national, regional or local level. The *Aquawareness* - the European Water Awareness and Water Stewardship Programme launched in June 2008 by the European Water Partnership (EWP), involves stakeholders from various sectors in developing joint solutions for more sustainable water management. Regional workshops exploring the local and national priorities and challenges which Europe's water is facing were organised. As well as awareness campaigns, policy recommendations are being suggested to policy makers, and the water stewardship programme was launched with the representation of the four sectors considered as being the most significant water users (agriculture, industry, tourism and urban areas).

Member States actively continued to organise information campaigns at national, regional or local level such as Water Week, free-of-charge distribution of water-saving devices or television and radio advertisements focused on water saving (CY, MT, BE, FI, ES, PT, PL). Websites and public information systems (CZ, PT, AT), the publication of reports on the state of the water (CZ), inclusion of water management issues and good practices in irrigation in educational programmes (FR, PT), development of actions at schools to promote water-saving devices (FR, BE, PT) and the development of national strategies to educate consumers on efficient water uses (BE, ES) are only some examples of the activities carried out. These

¹⁵ COM(2009) 234 final, 28.5.2009

¹⁶ Article 3 of Council Regulation (EC) No 834/2007, OJ L 189, 20.7.2007, p. 1.

¹⁷ 2009/125/EC

measures need to be continued throughout Europe, and in order to gain feedback on their efficiency they should also be evaluated.

The companies which are members of Corporate Social Responsibility (CSR) Europe, explored the possibility of launching a new initiative on water scarcity in the framework of the European Alliance on CSR, but decided not to start such an initiative as they considered that there might be a risk of duplication with other activities.

7. Improve knowledge and data collection

7.1. Water scarcity and drought information system throughout Europe

Consolidated datasheets are needed to provide the most useful drought monitoring and forecasting systems, including drought indicators that can be used for feeding models and processes. This would help better identify spatial and temporal patterns and trends, and large-scale drivers, predictflow characteristics at ungauged streams and provide drought monitoring and forecasting.

Waterbase (managed by the EEA) is a series of covering databases on the status and quality of Europe's water and the quantity of Europe's water resources. It contains timely, reliable and policy-relevant data, collected through the WISE-SoE data collection process (formerly known as Eionet-Water). Its added value is that data collected through WISE-SoE are comparable at European level¹⁸.

GMES¹⁹ (Global Monitoring for environment and Security) is an Earth observation programme led by the European Union, building on full decade of research activities. GMES is a system delivering information on the Earth's environment, based on a space infrastructure and 'in situ' observation infrastructure and elaborated through a service component. Several GMES services would be useful for the monitoring of droughts, in particular the Land Monitoring service, Emergency Response service and climate Change service. A series of pre-operational services are being financed under the Space Theme of the Seventh Framework Programme for Research (FP7), such as the project SAFER²⁰ which provides the pre-operational emergency service of GMES, not only during the response phase but also during the early warning and reconstruction phases. The project GEOLAND2²¹, is preparing GMES Land services in order to deliver on an operational and sustainable basis information on land cover and land cover changes, as well as terrestrial Essential Climate Variables (ECVs) including vegetation parameters and water parameters on a systematic basis. In July 2009, the European Commission called for new proposals for extending services to new areas, such as water management, biodiversity monitoring, forest monitoring and agri-environment observation. Consequently, water policies, land use and irrigation practices are strongly supported by GMES services. A regulation for the GMES programme proposed by the European Commission is now under legislative procedure and is expected to be adopted by the end of 2010, including financing of GMES Initial Operations for the period 2011-13.

¹⁸ <http://dataservice.eea.europa.eu/>

¹⁹ Global Monitoring for the Environment and Security. <http://www.gmes.info/>.

²⁰ SAFER started on 1st January 2009 and will last for 36 months, with an estimated total cost of €39.3 million.

²¹ GEOLAND2 started in September 2008 and will last 36 months with an estimated total cost of €32.5 million

Finally, reliable data on drought is being collected in the framework of INTERREG programmes through a number of projects co-financed by the European Regional Development Fund (ERDF) for several programming periods. Some Member States are following this kind of drought monitoring (ES, IT). The 'Guidelines to drought phenomena evaluation' have been elaborated by the JRC for an integrated system for monitoring and forecasting drought events and planning mitigation measures. The JRC analyses updated climatic conditions in different Italian regions, the rest of Europe, the Western Balkans, and the Mediterranean Basin.

7.2. Research and technological development opportunities

Besides research on management options addressed by AQUASTRESS, specific research needs on droughts are being discussed in the XEROCHORE Support Action which is currently establishing the state of the art of drought-related national and regional policies and plans and will lay down a roadmap that will identify research gaps and steps to be taken in order to fill them. In particular, support for European Drought Policy will be provided through expert recommendations on impact assessment, policy-making, drought in the context of integrated water resources management and guidance on appropriate responses for stakeholders. The large consortium (over 80 organisations) is closely linked to the European Drought Centre and the Water Framework Directive Common Implementation Strategy Working Group on Water Scarcity and Droughts, which has led to the development of an internationally recognised exchange platform on drought issues between the research and policy communities. This is strengthened by links established with relevant research (RTD) projects that include drought components, e.g. WATCH, CIRCE, as well as the recently launched MIRAGE project on Intermittent River Management. It is expected that the exchange platform, now established and developed within the XEROCHORE project, will be further strengthened by the Commission through the clustering of projects dealing with climate change and water security (including drought aspects) from 2010 onward.

Like the ROST project, which worked on the improvement of plant drought, salt and cold stress tolerance, CEDROME aims to develop drought-resistant cereals to support the efficient use of water supplies in the Mediterranean area.

The European Territorial Cooperation programmes (previously INTERREG programmes) within the Cohesion Policy are also largely contributing to research and technological development opportunities. For example, in the previous programming period, ERDF co-financed PRODIM (Proactive Management of Water Systems to face Drought and Water Scarcity in Islands and Coastal Areas of the Mediterranean) a joint project between CY, EL, IT and MT in the framework of INTERREG IIIB ARCHIMED programme. This project aimed at developing a methodological framework on water shortage based on proactive planning. Case studies from EL, IT, CY and MT served for the preparation of both strategic water shortage preparedness and emergency plans. Other examples under the European Territorial Cooperation can be found in the framework of the transnational cooperation programme "Alpine Space 2007-2013" - Water Management Strategies against Water Scarcity in the Alps or INTERREG IV B North West Europe: AMICE (Adaptation to the expected spatial impacts of climate change), and also under the interregional cooperation programme INTERREG IV-C: REGIOCLIMA (which aims at enhancing cooperation among selected EU regions towards avoiding risk and reaping the benefits from a changing climate). Many other projects co-financed under the ERDF, are being developed in the framework of 2007-2013 European Territorial Cooperation programmes. The list of projects directly or indirectly linked to drought-related research under the 6th and 7th Research Framework

Programmes mentioned above is not exhaustive²². Research on drought will also be addressed in the current call for proposals (published in July 2009) under the heading 'Early warning systems to predict climate change related drought risks in Europe and Africa'. The ERA-Net IWRM-Net²³ second joint call for research proposals²⁴ also tries to enable partners to work on synergies between research needs and policy, and promotes interdisciplinary activities concerning IWRM across Europe to meet the various challenges linked to climate change, droughts and water scarcity.

Several drought-related research programmes are being carried out at national level, mainly focused on issues such as climate change, its impacts, proposed adaptation measures, its effect on expected water availability (CZ, ES, FR, PL) or on biological flows versus resource availability and new opportunities for the food-processing industry (FR).

Taking into account that groundwater resources play a major role during drought events, Member States are further researching aquifer modelling (BE) artificial recharge (FR) and groundwater monitoring networks (AT).

Considering that the biggest fresh water consumer in the EU is agriculture, adequate research efforts should be devoted at both national and international level to improve the sector's water efficiency, with special attention to irrigated farming in the most drought-sensitive regions. The EU's 7th Framework Programme for Research and Technological Development is offering research opportunities to address water scarcity and water-use efficiency at European level.

²² A compilation of RTD projects from the 6th and 7th Framework Programmes directly or indirectly linked to drought-related research is available at: <http://ec.europa.eu/research/environment/pdf/cop-15.pdf>.

²³ IWRM-Net (towards a European-wide exchange Network for integrating research efforts on Integrated Water Resources Management) is a network composed of national and regional research programmes managers and funders.

²⁴ <http://www.iwrm-net.eu/spip.php?rubrique43>.