



Water Cycle Safety Plans in Directives

Guidelines towards implementation





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Contents

	Contents	2
1	Introduction and scope	3
1.1	Introduction	3
1.2	Scope	3
2	Risk based approaches in EU water related legislation	4
2.1	Introduction	4
2.2	Links between various pieces of EU legislation	4
2.3	The Drinking Water Directive 98/83/EC	5
2.4	The Urban Waste Water Treatment Directive 91/271/EEC	6
2.5	Bathing Water Directive 2006/7/EC (repealed 76/160/EEC)	7
2.6	The Floods Directive 2007/60/EC	8
2.7	The Nitrates Directive 91/676/EEC	9
2.8	The Water Framework Directive 2000/60/EC	9
2.9	Groundwater Directive 2006/118/EC	12
2.10	The Strategy on Water Scarcity and Drought (WS&D)	13
2.10.1	EU Communication on Water Scarcity and Drought (COM 2007/414)	13
2.10.2	2012 Water Scarcity and Droughts - Policy Review	14
2.11	The Blueprint to Safeguard Europe's Water Resources 2012	16
2.12	Marine Strategy Framework Directive	16
2.13	Environmental Quality Standards Directive	17
2.14	EU Thematic Strategy for Soil Protection (COM2006/231)	18
2.15	EU Proposal for a Directive on soil protection	18
2.16	White Paper Adapting to climate change	18
2.17	Ecological status and intercalibration	18
3	WCSP and EU directives	19
3.1	Conclusion from current directives	19
3.2	Integrating the WCSP in stakeholder activities	19

1 Introduction and scope

1.1 Introduction

The water cycle safety plan framework (WCSP) was developed as a risk based integrated approach for the urban water cycle. Meanwhile many of the aspects are also dealt with in various European water related directives or discussions are taking place between the EC and the Member States to include a risk based approach.

Some directives make reference to the need for a risk based approach or risk based requirements. Therefore a link between the requirements of the directives and the work in and results from the WCSP seems logical. The WCSP is directed at the urban scale, focusing on the water utilities point of view, whereas the directives are more on a regional or river basin scale. The geographic orientation (or the scale at which they operate) of the stakeholders in the WCSP can be smaller or larger. These differences in scales need to be addressed.

1.2 Scope

In this report an overview of the water related European directives is provided together with the assessment of the extend they include risk assessment or risk management. Possible links between the directives and the WCSP are identified and suggestions are provided how to practically establish links.

2 Risk based approaches in EU water related legislation

2.1 Introduction

There are quite some pieces of EU legislation and other documents that relate to water and together they more or less cover the whole water cycle. This chapter looks in more detail where and how risk management is addressed in existing EU legislation. The following documents were scrutinized for such aspects that could support water cycle safety planning.

- The Drinking Water Directive
- The Urban Waste Water Treatment Directive
- The Bathing Water Directive
- The Floods Directive
- The Water Framework Directive
- The Nitrates Directive
- The Groundwater Directive
- The Strategy on Water Scarcity and Drought
- The Blueprint to safeguard Europe's water resources 2012
- Environmental Quality Standards Directive 2008
- Two Commission Decisions on ecological status 2005 and 2008
- Marine Strategy Framework Directive 2008
- White paper on Adaptation to Climate Change 2009
- EU strategy and policy on soil protection.

2.2 Links between various pieces of EU legislation

The EU has developed a comprehensive water policy that has gradually shifted from addressing mainly health concerns e.g. quality of drinking water and of bathing water (Drinking Water Directive 1998 and Bathing Water Directive, new Directive 2006) to the environmental impacts of major water-using sectors (nutrients from agriculture, pollution from industry and urban waste water discharge from households),¹ (Urban Waste Water Treatment Directive 1991 and Nitrates Directive 1991).

The Water Framework Directive adopted in 2000 is based on an integrated approach to water management, on the basis of the concept of 'river basin management'. The directive provides a framework for EU water policy aimed at achieving good status of all EU waters by 2015. The WFD is complemented by other EU legislation regulating specific aspects such as the Ground Water Directive (2006), the Environmental Quality Standards Directive (2008), two Commission Decisions (2005 and 2008) on ecological status and the Strategy on Water Scarcity and Drought (2007). More recent related legislation expanding the scope of integrated water management: the Floods Directive (2007), the Marine Strategy Framework Directive (2008) and the White Paper on Adaptation to Climate Change (2009).

¹ A Blueprint to safeguard Europe's water resources.

In 2010 the Commission decided to achieve better harmonization between various water related pieces of legislation. Here we might find a movement towards a more integrated water cycle approach including the assessment and management of risk in the whole water cycle.

2.3 The Drinking Water Directive 98/83/EC

Drinking Water Directive (98/83/EC) has the objective to protect consumers' health by guaranteeing the quality of drinking water. It sets quality standards for drinking water at the tap (microbiological, chemical and indicator parameters) and the general obligation that drinking water should be wholesome and clean. The inclusion of a WSP-type approach in this directive is being considered in the on-going revision process.

In 2003 the European Commission started the process to revise the drinking water directive that was adopted in 1998. The working groups that paved the way for the 2003 Drinking Water Seminar addressed the issue of 'water safety plans', later called the risk based approach or risk management. At that time the European Commission, experts from the EU Member States and representatives from WHO were convinced that the DWD should be revised to include the principle of risk management. In 2010 the Commission decided not to start a full revision of the directive but to restrict the revision to an update of the Annexes II and III. This implies that the risk-based principle will not be embedded in the Articles of the directive, but that some elements could be addressed in the above mentioned Annexes.

The DWD is a result driven legislation, the regulator does not tell Member States how to treat the water to achieve the required minimum quality standards in the directive but merely looks at the final product, the quality of water delivered to the consumer. But a closer look at the directive reveals that there are some links with risk-based approaches. First of all the preamble to the Directive mentions the Water Framework Directive and the requirement in the WFD that water intended for the production of drinking water should have such a quality that only simple treatment is needed to produce drinking water that meets the quality requirements in the DWD. Secondly the DWD itself states in Article 10 that chemical and materials used in the treatment, production and distribution of drinking water should not have an adverse effect on the quality of the final product. The directive specifies a number of situations where the actual risk to human health has to be assessed:

- Article 3.3 exemption of small water supplies from monitoring is not an exemption from action when a potential danger is apparent.
- Article 7.6 monitoring for additional substances is based on a potential danger to human health.
- Article 8.3 6 whether or not a failure of a parameter or specification, action is required if the supply poses a potential danger to human health.
- Article 9.1 cannot authorize derogation if a potential danger to human health.
- Article 13 publishes adequate and up to date water quality information for consumers (implicitly includes details of supplies that pose a danger to human health).
- Annex I Table C note 2, investigation of Clostridia to determine potential danger to human health.

In 2011 the European Commission started a study with the aim to produce a Best Practices Guidance Document for a risk assessment in small water supplies. The document is ready and available on the EC website. The approach will be further detailed and embedded in the DWD with the help of experts from the Member States. Also the Member States asked for a similar document for large water supplies. The BPGD was produced by KWR and consists of a selection of examples on how to carry out a risk assessment for various types of small water supplies in various circumstances.

Cities or utilities that implement the WCSP can use the results from the drinking water system safety plan to substantiate that all reasonably foreseen risks have been identified and addressed where possible. However, the Commission has indicated that such a risk assessment would not lead to any form of exemption, e.g. for water quality monitoring.

2.4 The Urban Waste Water Treatment Directive 91/271/EEC

The objective of the UWWTD is to protect the environment from the adverse effects of urban waste water discharges and discharges from some industrial sectors. The directive regulates the collection and treatment of waste water from domestic premises and from industry. It sets requirements in terms of level of wastewater treatment and limits for pollutants in the treated wastewater.

A sewerage system is required for all urban areas above a specified size and the collected sewage must receive at least secondary (biological) treatment before it is discharged to the environment. Derogation from this requirement is possible but extremely difficult to obtain. Direct overflows from sewerage systems into receiving surface waters are allowed in case of heavy rainfall conditions.

'Sensitive areas' are identified where sewage requires extra treatment before discharge. One type of sensitive area concerns 'eutrophic waters', where additional nutrients, mainly nitrogen or phosphorus, stimulate the growth of algae and other plants, damaging the natural environment. In these areas, larger sewage discharges must be treated to reduce their load of nutrients. The directive also banned the disposal of sludge to sea from the end of 1998.

The UWWTD has the objective to reduce the adverse effects of waste water and waste water sludge on the environment. The Directive does not explicitly mention risk management aspects but it does indirectly address environmental risk and safety under normal climatic conditions, seasonal variations and heavy rainfall by setting requirements for the treatment and the discharges and overflows. Between Member States, trans-boundary effects of wastewater on water quality are addressed with requirements for co-operation and information exchange.

The WCSP framework addresses the risk to the environment from wastewater, not only during the current conditions but also under climate change including extreme rainfall events. Interaction between stakeholders in the water cycle is addressed, and these stakeholders often operate on different geographical scales. This can be used as an intermediate step for discussion of trans-boundary effects.

2.5 Bathing Water Directive 2006/7/EC (repealed 76/160/EEC)

Bathing Water Directive 2006/7/EC (BWD) aims to ensure good bathing water quality and to protect public health and the environment from pollution at bathing waters. It sets quality standards for bathing waters by establishing limits for physical, chemical and microbiological parameters.

In the preamble to the directive it is stated that this directive should use scientific evidence in implementing the most reliable parameters for predicting microbiological health risk and to achieve a high level of protection. Further epidemiological studies should be undertaken urgently concerning the health risks associated with bathing, particularly in fresh water.

The public should receive appropriate and timely information on the results of the monitoring of bathing water quality and risk management measures. In order to prevent health hazards, especially in the context of predictable short-term pollution or abnormal situations. New technology that allows the public to be informed in an efficient and comparable way on bathing water across the Community should be applied.

The directive classifies bathing waters in four categories: poor, sufficient, good and excellent, with the requirement for all bathing waters to be classed as sufficient by 2015. The directive requires Member States to identify and assess causes of pollution to bathing water and to take action to prevent both bathers' exposure to pollution and to reduce the risk of pollution.

Monitoring points for bathing water quality are selected on the basis of most bathers expected or the greatest risk of pollution expected, according to the bathing water profile.

Bathing waters may temporarily be classified as poor and still remain in compliance with the directive under condition that Member States take adequate measures, including a bathing prohibition or advice against bathing, with a view to preventing bathers' exposure to pollution, identification of the causes of pollution and reasons for failure, take adequate measures to prevent, reduce or eliminate the causes of pollution and alert the public on the causes and measures taken.

The BWD is a risk based directive that not only focuses on intestinal Enterococci and *E.coli* as key parameter for the quality of the water but also assesses any risk posed by Cyanobacteria and phytoplankton/algae.

The BWD has a clear link to the WCSP framework. The BWD does not clearly include the approach but integrates the need to identify risks to public health and the environment as well as the need to take adequate measures to prevent some specific risks. Elements from the WCSP could be used directly to feed into the BWD assessment of potential risks addressing interactions in the water cycle. With focus on climate change the WCSP approach can lead to pro-active management of bathing water risks.

2.6 The Floods Directive 2007/60/EC

Floods Directive 2007/60/EC (FD) promotes the assessment and management of flood risks considering climate change aspects. The directive's aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. It requires Member States to identify water courses and coast lines at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to implement control measures to reduce the flood risk. For such zones Member States need to draw up flood risk maps by 2013 and establish flood risk management plans focused on prevention, protection and preparedness by 2015. The directive applies to inland waters as well as all coastal waters across the whole territory of the EU. With this directive the rights of the public to access this information and to have a say in the planning process is also reinforced.

Implementation of the directive has to be carried out in coordination with the application of the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, as well as through coordination of the public participation processes in the preparation of these plans. All assessments, maps and plans prepared need to be made available to the public.

Furthermore, Member States need to coordinate their flood risk management practices in shared river basins, with third countries, and not undertake measures that would increase the flood risk in neighbouring countries. Member States need to take into consideration long term developments, including climate change, as well as sustainable land use practices in the flood risk management cycle addressed in this Directive.

Between 1998 and 2004, Europe suffered over 100 major damaging floods, including the catastrophic floods in the summer of 2002 affecting major parts of Europe including the United Kingdom, Czech Republic, Slovakia, Italy, Spain, Germany, Romania, Bulgaria, Croatia, Hungary and Ukraine. Severe floods in 2005 further reinforced the need for concerted action. Since 1998 floods in Europe have caused more than 700 deaths, displacements above half a million people and at least €25 billion in insured economic losses.

Catastrophic floods endanger lives and cause human tragedy as well as heavy economic losses. Floods are natural phenomena but through the right measures reduction of their likelihood and consequences can be achieved in many cases. In addition to economic and social consequences, floods can have severe environmental impacts, for example when installations holding large quantities of toxic chemicals are damaged consequently releasing chemicals to the environment or wetland areas destroyed. The coming decades are likely to see a higher flood risk in Europe and increasing economic damage.

The FD can link the city driven approach in the WCSP to the larger scale of river basins. Flood risk mapping developed in accordance with the FD provides input for the WCSP but does not explicitly cover urban generated floods. Using the local expertise on the whole water cycle, effects of flooding can be estimated in more detail by the local stakeholders. The local initiatives in the WCSP to protect against flooding

or to prevent and mitigate consequences of flooding can feed into the reporting for the directive. Both the directive and the WCSP address the effects of climate change.

2.7 The Nitrates Directive 91/676/EEC

The Nitrates Directive aims to protect water quality across Europe by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. It is proving to be effective: between 2004 and 2007, nitrate concentrations in surface water remained stable or fell at 70% of monitored sites in the European Union. Quality at 60% of groundwater monitoring points is stable or improving. All Member States have drawn up action programmes: there are more than 300 of them across the whole EU. The quality of programmes is improving. Across the 27 EU Member States, 39.6 % of territory is subject to the implementation of action programmes. Farmers are becoming increasingly positive about environmental protection, exploring new techniques such as manure processing.

Agriculture remains the major sources of water-related problems, and farmers need to continue to adopt more sustainable practices. Huge efforts are still needed in order to restore water to optimal quality across the EU.

The Nitrates Directive is based on extended monitoring networks that monitor the nitrate concentrations in ground, surface and marine waters and establish trends in nitrate concentrations. The Member States also assess the trophic state of the waters in their territories.

Member States have designated territories draining into waters that are or could be affected by high nitrate levels or eutrophication as vulnerable zones. Some Member States (AT, FI, DE, IE, LT, LU, MT, NL and SI) decided to provide the same level of protection to their whole territory rather than designate nitrate-vulnerable zones. Member States had to establish codes of good practice for farmers to be implemented on a voluntary basis throughout their territory and develop specific action programmes for compulsory implementation by farmers located in nitrate-vulnerable zones.

The Directive is not directly a risk based Directive but, as its aim is to protect water quality across Europe, it has a risk basis. After all the basic idea is to limit the release of nitrate into the aquatic environment by Good Agricultural Practice with the aim to protect groundwater, surface water and marine waters from eutrophication and at the same time protect sources of water intended for the production of drinking water. There is a direct link between the implementation of the Nitrate Directive and the protection of human health from the adverse effects of high nitrate and nitrite levels in drinking water.

Nitrate pollution is also a risk factor addressed in the WCSP both for environmental risk and for human health. With climate change there is especially attention for cyanobacteria blooms related to increasing nutrient loads in surface waters.

2.8 The Water Framework Directive 2000/60/EC

The Water Framework Directive 2000/60/EC (WFD) has the objective to protect European water resources (rivers, lakes, groundwater, estuaries and coastal waters). It

requires Member States to achieve “good ecological and chemical status” in all water bodies by 2015, by preventing water pollution and deterioration of water quality, and to ensure that the achieved status does not deteriorate. In terms of quantity, the Directive restricts abstraction of water from water sources to a quantity that corresponds to the portion of the overall recharge not needed by the ecology.

The European Union took a groundbreaking step when adopting the Water Framework Directive. It introduced a new legislative approach to managing and protecting water, based not on national or political boundaries but on natural geographical and hydrological formations: “river basins”. The WFD also requires coordination of different EU policies, and sets out a timetable for action, with 2015 as the target date for getting all European waters into good condition.

The WFD is especially relevant given that 20% of surface waters are at serious risk from pollution; 60% of European cities over-exploit their groundwater resources; 50% of wetlands are endangered and demand for water is growing all the time. Three quarters of the Europeans get their supply of water from groundwater sources and nearly half of the EU population lives in ‘water-stressed’ countries, where abstraction of water from freshwater sources is too high.

The WFD is based on river basin management plans that are drawn up after extensive public consultation and are valid for a six-year period. The Directive is implemented through six-year recurring cycles; the first cycle covers the period 2009-2015. Threats to water resources are increased risk of both droughts and floods in the coming decades caused by climate change but also threats to water quality from pollution and physical changes to water course, such as new dams. Damage is caused by households, industry and agriculture, through urban developments, flood defences, power generation, use of fertilizers and pesticides, navigation, recreation, wastewater discharges, coastal defences, freshwater fishing, mining and forestry. Water must be managed and protected.

Isolated measures to improve water quality cannot be successful without taking account of what happens upstream and downstream. Integrated river basin management adopts a holistic approach to protecting the whole body of water, its sources, tributaries, delta and river mouth, through a coordinated strategy involving all interested parties in decision-making. The river basin approach is the best way to manage water. Member States have to draw up river basin management plans to safeguard each one of the 110 river basin districts. Waters must achieve good ecological and chemical status, to protect human health, water supply, natural ecosystems and biodiversity. The WFD classification scheme for surface water ecological status includes five categories: high, good, moderate, poor and bad. High status means no or very low human pressure. To define good chemical status, environmental quality standards have been established for 33 new and eight previously regulated chemical pollutants of high concerns across the EU.

The WFD is backed up by other EU Legislation such as the REACH regulation on chemicals and the Directive for Integrated Pollution and Prevention Control (IPPC) for industrial installations. The rules for groundwater are slightly different and good chemical and quantitative status is the objective, Member States must use geological

data to identify distinct volumes of water in underground aquifers, and European law limits abstraction to a portion of the annual recharge. Groundwater should not be polluted at all- any pollution must be detected and stopped.

Water is involved in a wide range of human activities and therefore in the policies applied to regulate them, integration is the only way forward for sustainable water management. This should include agriculture, farming and livestock as the main consumer of water, land-use and development, including facilities for wastewater disposal, energy generation, industrial manufacturing processes, tourism, ecosystems, drinking water supply.

There is a link with the Commission's 2007 communication addressing the challenges of water scarcity and drought and the Floods Directive. Member States should have flood risk management plans, ready to link into the next cycle of the RBMPs for the 2016-2021 period.

The purpose of the WFD is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and ground waters, to prevent further deterioration and protect and enhance the status of aquatic ecosystems and dependent terrestrial ecosystems and wetlands, to promote sustainable water use, enhance protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing out of discharges, emissions and losses of priority hazardous substances, ensure the progressive reduction of pollution of groundwater and prevents its further pollution and contributes to mitigating the effects of floods and droughts, the provision of sufficient supply of good quality surface water and groundwater needed for sustainable, balanced and equitable water use, significant reduction in pollution of groundwater, protection of territorial and marine waters and achieving the objectives of relevant international agreements.

Risk aspects addressed in the WFD.

Article 4 of the WFD sets environmental objectives for surface water, ground waters and protected areas.

Article 7 of the WFD makes a special reference to bodies of water used or intended to be used for the abstraction of water intended for human consumption providing more than 10 m³ a day as an average or serving more than 50 persons. Member States shall ensure the necessary protection for such water bodies with the aim to avoiding deterioration in their quality in order to reduce the level of purification treatment required in the production of drinking water and Member States shall establish safeguard zones for those bodies of water.

Article 11 requires Member States to establish a programme of measures in order to achieve the environmental objectives set out in Article 4. In Article 11.3 the basic measures as minimum requirements to be complied with are specified, including measures to meet the requirements of Article 7; measures to safeguard water quality in order to reduce the level of purification treatment required for the production of drinking water. Article 11 also mentions measures to promote an efficient and

sustainable water use and the control over abstraction of water from groundwater and surface water sources.

Annex VI makes reference to other EU Directives to be included in the programme of measures such as the DWD, UWWTD, BWD, Nitrates Directive etc.

The WCSP can provide a major contribution to effective implementation of the WFD, especially related with the activity of the urban water utilities, results providing an overview of current and future risks for water quality and quantity from the urban systems. The objectives for water in the WFD provide targets for the risk identification in the WCSP especially with respect to environmental water quality. The WCSP is focused both on existing and on future developments and threats such as climate change and can thus provide a valuable addition.

2.9 Groundwater Directive 2006/118/EC

The Groundwater Directive 2006/118/EC (GWD) has the objective to protect groundwater from pollution and deterioration. It sets groundwater quality standards (at present, the maximum limits for pollutant concentrations have been set for nitrate and pesticides) and introduces measures to prevent inputs of pollutants into groundwater.

The Groundwater Directive (GWD) is designed to prevent and combat groundwater pollution. The provisions of the Directive include:

- criteria for assessing the chemical status of groundwater;
- criteria for identifying significant and sustained upward trends in groundwater pollution levels, and for defining starting points for reversing these trends;
- preventing and limiting indirect discharges (after percolation through soil or subsoil) of pollutants into groundwater.

Groundwater is considered to have a good chemical status when:

- measured or predicted nitrate levels do not exceed 50 mg/l, while those of active pesticide ingredients, their metabolites and reaction products do not exceed 0.1 µg/l (a total of 0.5 µg/l for all pesticides measured);
- the levels of certain high-risk substances are below the threshold values set by Member States; at the very least, this must include ammonium, arsenic, cadmium, chloride, lead, mercury, sulphate, trichloroethylene and tetrachloroethylene;
- the concentration of any other pollutants conforms to the definition of good chemical status as set out in Annex V to the Water Framework Directive;
- if a value set as a quality standard or a threshold value is exceeded, an investigation confirms, among other things, that this does not pose a significant environmental risk.

Member States must have set a threshold value for each pollutant identified in any of the bodies of groundwater within their territory considered to be at risk. As a minimum, Member States must establish threshold values for ammonium, arsenic, cadmium, chloride, lead, mercury, sulphate, trichloroethylene and tetrachloroethylene. For each pollutant on the list, information (as defined in Annex III to this Directive) must be provided on the groundwater bodies characterised as being at risk, as well as

on how the threshold values were set. These threshold values must be included in the River Basin District Management Plans provided for under the Water Framework Directive. By 22 December 2009, the Commission will draw up a report based on the information provided by Member States.

Member States must identify any significant and sustained upward trend in levels of pollutants found in bodies of groundwater. In order to do so, they must establish a monitoring programme in conformity with Annex IV to this Directive.

Taking account of Annex IV to the Directive, Member States must also define a starting point for reversing these upward trends. Trend reversals will focus on concentrations which pose a risk to associated aquatic ecosystems, dependent terrestrial ecosystems, human health or legitimate uses of the water environment.

The programme of measures drawn up for each river basin district under the Water Framework Directive must include preventing indirect discharges of all pollutants, in particular those hazardous substances mentioned in Points 1 to 6 of Annex VIII to the Water Framework Directive (List I of Directive 80/68/EEC), as well as the substances mentioned in Points 7 to 9 of the Annex (List II of Directive 80/68/EEC), when deemed to be hazardous. Furthermore, pollutants not listed as hazardous must also be limited if they pose a real or potential risk of pollution.

Except in those cases where other Community legislation establishes more stringent requirements, preventive measures may exclude, among other things, the results of authorised direct discharges, pollutants present in such small quantities that they pose no risk, the results of accidents or natural disasters, or pollutants resulting from discharges which, for technical reasons, the competent authorities consider to be impossible to prevent or limit without resorting to measures that would increase the risk to human health or to the environment or to measures that would be disproportionately costly.

The WCSP provides the framework to address various issues in the GWD. Trends in contamination of groundwater are addressed, including those derived from climate change (e.g. low river flows with high contaminant concentration infiltrating into the groundwater). The options for reducing or preventing contamination are evaluated in the WCSP providing a reference for the proportionality of costs.

2.10 The Strategy on Water Scarcity and Drought (WS&D)

2.10.1 *EU Communication on Water Scarcity and Drought (COM 2007/414)*

The 2007 EU Communication addresses the challenge of water scarcity and droughts in the European Union. It promotes, among other measures, the development of drought risk management plans. The Communication identified seven policy initiatives that had to be addressed if Europe was to move towards a water-efficient and water-saving economy. Each year a report is presented on the annual progress towards the implementation of the set orientations.

Seven policy options are identified for tackling water scarcity and drought issues:

1. Putting the right price tag on water
2. Allocating water and water-related funding more efficiently
3. Improving drought risk management
4. Considering additional water supply infrastructures
5. Fostering water efficient technologies and practices
6. Fostering the emergence of a water-saving culture in Europe
7. Improve knowledge and data collection

There are on-going and previous studies that will help bridge the important knowledge gaps as regards water scarcity & droughts in the EU. These studies will feed into the Policy Review of the Strategy for Water Scarcity and Droughts, which will be integrated in a "Blueprint to safeguard European waters", to be finalised by the end of 2012. Studies cover the following areas: GAP analysis, water efficiency activities, water use in agriculture and instruments for better planning.

GAP analysis

GAP analysis on water scarcity & droughts: Identification of the extent of water scarcity & droughts in Europe and assessment of existing and potential selected measures for tackling water scarcity & droughts.

Water efficiency activities

Buildings and water efficiency: Recommendation on policy options for improving the water efficiency of buildings.

Leakage reduction in water distribution networks: 5-8 pilot studies in water-scarce parts of Europe to analyse and quantify factors of relevance for leakages at a river basin level. Identification of best practices for reducing water-losses in the EU or other countries. Recommendations on policy options for water efficiency in distribution systems.

Activities to halt desertification in Europe: 3-5 pilot projects on innovative technologies, techniques or practices in order to contribute to the exchanges of good practice and innovation at the local level for halting desertification in Europe.

Water use in agriculture

Water pricing in agriculture: Case studies on water pricing policies for the agricultural sector in selected river basins. Recommendation on best practices.

Water saving in agriculture: Clarification on the current situation of agricultural water use in Europe, and compilation of conclusions from a range of studies on possibilities for water saving in agriculture.

Instruments for better planning

Water foot printing and product labeling: Review of water foot printing applications and water related information in food labeling and recommendations on how these can be applied in policymaking.

2.10.2 2012 Water Scarcity and Droughts - Policy Review

The Environmental Council of 30 October 2007 supported the Commission's 2007 Communication and invited the Commission specifically to review and further develop the water scarcity and drought policy by 2012. The review of the Strategy for Water Scarcity and Droughts will – together with an analysis of the Implementation of the Water Framework Directive and a review of the vulnerability of environmental resources such as water, biodiversity and soil to climate change impacts and man-made pressures - be integrated into a planned "Blueprint to safeguard European waters".

Risk aspects in the water scarcity and drought communication.

While "drought" means a temporary decrease in water availability due for instance to rainfall deficiency, "water scarcity" means that water demand exceeds the water resources exploitable under sustainable conditions. At least 11% of the European population and 17% of its territory have been affected by water scarcity to date. Recent trends show a significant extension of water scarcity across Europe. Water scarcity and droughts are therefore not just a matter for water managers. They have a direct impact on citizens and economic sectors which use and depend on water, such as agriculture, tourism, industry, energy and transport. In particular, hydropower which is a carbon neutral source of energy, heavily depends on water availability.

Water scarcity and droughts also have broader impacts on natural resources at large through negative side-effects on biodiversity, water quality, increased risks of forest fires and soil impoverishment. In a context where changes in climate are foreseen in spite of significant EU mitigation efforts, this trend is expected to continue and even worsen, as underscored in the recently adopted Commission Green Paper on adaptation to climate change. According to the Intergovernmental Panel on Climate Change 2, climate change would bring water scarcity to between 1.1 and 3.2 billion people if temperatures rose by 2 to 3° C. Drought affected areas are likely to increase in extent. In these circumstances, it has become an EU priority to devise effective drought risk management strategies.

The results from the water scarcity and drought activities feed into the WCSP as input, especially for hazards for public health (e.g. extended periods without supply) and for the environment (such as water scarcity affecting ecosystems). The effects are assessed in more detail in the WCSP and can then feed back into the reporting for WS&D. The WCSP also looks at the local impact of climate change on WS&D.

2.11 The Blueprint to Safeguard Europe's Water Resources 2012

The Blueprint for Water Resources sets out ten steps to sustainable water by 2015. The Blueprint is being developed as the EU policy response to the continuing challenge of delivering the EU's water policy goals. It draws on a wide range of ongoing assessments, including River Basin management plans, and the EU Strategy on Water Scarcity and Drought. The Blueprint will identify current gaps and future priorities and provide guidance to water policy development until 2020. It will also take advantage of analysis that integrate economic and climate modeling till 2050.

The Blueprint to Safeguard Europe's Water will be the EU policy response to a number of old and emerging challenges. It will aim to ensure good quality water in sufficient quantities for all legitimate uses. The time horizon of the Blueprint is 2020 since it is closely related to the EU 2020 Strategy and, in particular, to the planned Resource Efficiency Roadmap. The Blueprint will be the water milestone on that Roadmap.

The Blueprint will synthesize policy recommendations building on four on-going assessments:

- The assessment of the River Basin Management Plans delivered by the Member States under the Water Framework Directive;
- The review of the EU action on Water Scarcity and Drought;
- The assessment of the vulnerability of water resources to climate change and other man made pressures and;
- The Fitness Check which will address the whole EU water policy in the framework of the Commission Better Regulation approach.

Five major themes have been identified and are covered in the Blueprint: improvement of tools needed for the sustainable management of water resources, unlocking measures in key policy sectors to improve water resources efficiency and sustainability (e.g. through the European Innovation Partnership EIP), economic measurements such as e.g. water pricing, effective governance to deliver the implementation of existing and any new policies and finally improved knowledge sharing and identification of research priorities and improvement of the science policy interface.

The Blueprint does not include a section of risk-based approaches nor does it actually mention risk assessment or risk management. However, in the March 2012 analysis of responses a request is made for a risk based approach on monitoring (section 17 monitoring).

The WCSP can be seen as a tool for sustainable management of water resources at the urban scale. The collective results from the Blueprint feed into the WCSP process as identified and expected threats.

2.12 Marine Strategy Framework Directive

The Marine Strategy Directive 2008/56/EC has the objective to protect and preserve the marine environment, prevents its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected. The directive also aims to prevent and reduce inputs in the marine environment, with a view to phasing out pollutions as defined in Article 3(8) of the directive so as to ensure that there are no

significant impacts on or risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea. The directive establishes a framework within which Member States shall take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest. For that purpose, marine strategies shall be developed and implemented by the Member States.

Risk addressed in the Marine Strategy Directive

Aspects related to risk are briefly mentioned in the preamble to the directive. Member States should develop marine strategies and these strategies should culminate in the execution of programmes of measures designed to achieve or maintain good environmental status. However, Member States should not be required to take specific steps where there is no significant risk to the marine environment, or where the costs would be disproportionate taking account of the risks to the marine environment, provided that any decision not to take action is properly justified.

The risk addressed in the Marine Strategy Directive has to be assessed by the Member States and also whether or not they take further action to prevent or phase out pollution. The actions to be taken have to be balanced against the risks for the marine environment. Application of the WCSP approach could be an important tool for Member States to balance risks and costs and to use the WCSP in their decision making processes and to underpin the justification of their decisions.

2.13 Environmental Quality Standards Directive

The Environment Quality Standards Directive 2008/105/EC in the field of water policy has the objective to achieve good surface water chemical status by laying down environmental quality standards for priority substances and certain other pollutants. This objective cannot be sufficiently achieved by the Member States and therefore, by reason of maintaining the same level of protection of surface water throughout the Community, this is better achieved at Community level through the adoption of measures by the Community in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty.

Member States are obliged to apply the EQS laid down in Part A of Annex I of the directive for bodies of surface water and shall apply the EQS for bodies of surface water in accordance with the requirements of Part B of Annex I. Member States may opt to apply EQS for sediment and/or biota instead of those laid down in Part A of Annex I in certain categories of surface water.

In the preamble to the directive reference is made to risk where it concerns the review of the list of priority substances for action by the EC. This list is reviewed continuously prioritizing substances or action on the basis of agreed criteria that demonstrate the risk to, or via, the aquatic environment, in accordance with the timetable provided for in Article 16 of Directive 2000/60/EC. In other words the Directive directly refers to the WFD with respect to risk issues.

In order to be complete the following pieces of legislation and policy documents are briefly mentioned.

2.14 EU Thematic Strategy for Soil Protection (COM2006/231)

The EU Thematic Strategy for Soil Protection addresses the protection and sustainable use of soil, based on guiding principles including preventing further soil degradation and preserving its functions and restoring degraded soils to a level of functionality consistent at least with current and intended use.

2.15 EU Proposal for a Directive on soil protection

The EU proposal for a directive of the European Parliament and of the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC (COM 2006/232).

2.16 White Paper Adapting to climate change

The white paper on Adapting to climate change: Towards a European framework for action COM(2009) 147

2.17 Ecological status and intercalibration

The general objective of the WFD is to achieve 'good status' for all surface waters by 2015. 'Good status' means both 'good ecological status' and 'good chemical status'.

The so called "intercalibration exercise" is a key element in making this general environmental objective operational in a harmonised way throughout the EU. The following paragraphs describe the assessment of ecological status and how 'good ecological status' is intercalibrated in the EU.

- Commission Decision of 17 August 2005 on the establishment of a register of sites to form the intercalibration network in accordance with Directive 2000/60/EC of the European Parliament and of the Council.
- Commission Decision of 30 October 2008 establishing, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, the values of the Member States monitoring system classifications as a result of the intercalibration exercise.

3 WCSP and EU directives

3.1 Conclusion from current directives

Various Council directives address risk management, however not in a comprehensive way. The various water related utilities therefore need to apply various risk based approaches to comply with these directives, leading to inefficiency. This is even more the case when various utilities need to work together. The WCSP framework provides an opportunity to integrate the various needs in terms of risk management. Changing directives is not easily done, and therefore integrating the WCSP into the directives is something that can only be realized on the very long term. Rather than compel the use of WCSP in the directives, the WCSP has been designed to fit in with current approaches.

Figure 1 shows how the various interactions between the directives and the WCSP could work.

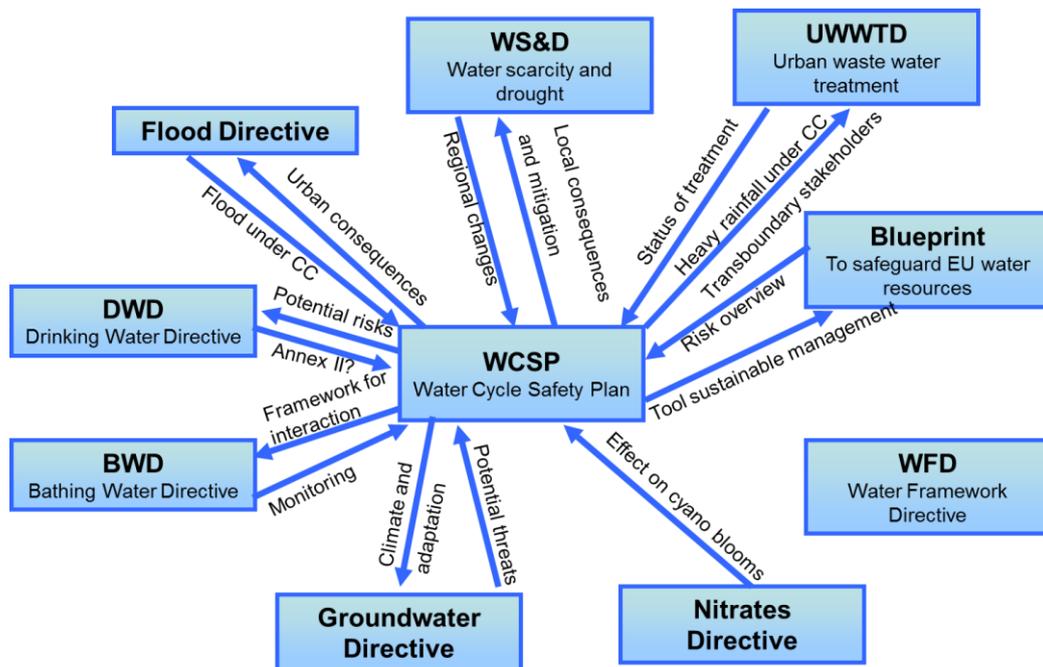


Figure 1 Interactions between the water cycle safety plan and EU Council directives and Policy papers

3.2 Integrating the WCSP in stakeholder activities

The various stakeholders in the WCSP all have tasks to fulfill the international directives. By smart organization of these tasks within the WCSP this could be done efficiently while integrating the effort from the various stakeholders in joint products.