

WFD, Floods and other EU Directives

WFD Implementation, strategies and policies

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SHORT DESCRIPTION

This document intends to describe the Water Framework Directive, Floods and other EU Directives related to waters and environment. Further it lists the strategies and policies in execution to implement the main steps of the Water Framework Directive within the involved SHARE countries.

The information given to the various EU Directives is a condensed account. For further and detailed information please visit the website of the European Commission (http://ec.europa.eu/environment/water/index_en.htm; http://ec.europa.eu/environment/nature/index_en.htm).

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Introduction

It is evident that waters all across Europe have been exposed to the pressures of human activity since hundreds of years with partially harsh effects on water quality and the environment.

The European Parliament and the Commission have established with the EU Water Framework Directive 2000/60/EC (WFD) a framework to protect all European surface waters and groundwaters. Thereby not only the water quality concerning pollutions and emissions but the ecological integrity with special regard on the biota, the hydrology and morphology is considered. With the objective to reach the good ecological status for all waterbodies by 2015 the EU Member States are obliged on a common framework to monitor all their territorial waterbodies and to apply measures of protection and melioration. Further, coherences exist between the Water Framework Directive and a row of other directives of conservational and water management issues. Within the frame of the Birds Directive 79/409/EEC and the Habitats Directive 92/43/EEC wetlands, aquatic habitats, animals and plants are under conservational status and must be protected. The recently decided Floods Directive 2007/60/EC aims to mitigate the effects of floods and obliges the Member States to undertake measure and monitoring programmes.

This technical review describes the Water Framework Directive (WFD), Floods and other EU Directives related to waters and the environment. It goes more into detail concerning the main steps of WFD implementation, the strategies and policies in execution within the SHARE Project Partner Member States.

EU Directives

Detailed information on the various mentioned directives can be found on the website of the European Commission here http://ec.europa.eu/environment/water/index_en.htm and here http://ec.europa.eu/environment/nature/index_en.htm.

Water Framework Directive 2000/60/EC

WFD implementation

In 2000 the European Union has established a framework with the objectives to protect all inland waterbodies, groundwater and accompanying environment, to prevent and reduce pollution, to promote sustainable water usage, to improve aquatic ecosystems and to mitigate the effects of floods and droughts. By 2015 the good ecological and chemical status has to be achieved for all Community waters.

The whole process of implementation follows several steps (Table 1). In the first step of implementation all Member States have to identify all river basins in their national territory and assign them to individual river basin districts. Further, competent authorities are to be designated for the application of the rules and measures required by the framework.

By 2004 each Member State have to analyze the characteristics of each river basin district, review the impacts of human activity on the water, analyze the economics of water usage, register areas requiring special protection and survey all waterbodies used for human consumption. These issues have to be revised in 2013 and every six years thereafter.

According to the results of the above mentioned analysis and the framework's aim for the year 2015 management plans have to be designed for all river basin districts by 2009. These plans and programmes of measure must then be implemented by 2012.

For supporting the implementation of the WFD several guidance papers have been elaborated within the 'Common Implementation Strategy'.

Table 1 Time schedule/Deadlines of the main steps of the WFD. (Directive 2000/60/EC; http://ec.europa.eu/environment/water/water-framework/info/timetable_en.htm)

DEADLINES	OBJECTIVES	ARTICLES WFD
2000	Enforcement	Art. 25
Implementation		
2003	Transposition into national law	Art. 23
2004	Identification of river basin districts and competent authorities	Art. 3
Surveys		
2004	<ul style="list-style-type: none"> - Analysis of river basin district characteristics - Examination of pressures and impacts of human activities - Economical analysis of water usage 	Art. 5
Monitoring		
2006	Register of sites for the intercalibration	Annex V
2006	Monitoring programmes for the status of waterbodies are established Monitoring of the status of surface waters, groundwater and protected areas	Art.8
Involvement of the public		
2006	Publications of time schedule, working programme and of most important issues of water management	Art. 14
2008	Publication of river basin management plan drafts	Art. 13
Management plan and programmes of measures		
2009	Finalization of management plan and programmes of measures First management cycle starts	Art. 13 & 11
2010	Introduction of pricing policies	Art. 9
2012	Implementation of measures	Art. 11
Achievements of objectives and next management cycles		
2015	Accomplishing environmental objectives First management cycle ends Second river basin management plan & first flood risk management plan	Art. 4 & 13
2021	Second management cycle ends	Art. 4 & 13
2027	Third management cycle ends, extension of time for meeting the objectives	Art. 4 & 13

WFD objectives and assessment

For all European surface waterbodies it is directed in Article 4 WFD the environmental objective to reach the good ecological and chemical status by 2015 and to prevent deterioration in status class. To assess the status of surface waters and groundwater for a comprehensive overview on each river basin the Member States had to establish monitoring programmes, being effective by December 2006 (Article 8 WFD). A precise and unbiased monitoring is the key for determining the status of waters and to decide what measures are needed in the river basin management plans to reach the objective. To ensure that the good ecological status means the same in all Member States and is pursued with

similar ambition the Commission started an intercalibration process to harmonize the Member States' monitoring programmes and status classes. Five assessment levels for the classification of the status are foreseen (high, good, moderate, poor, bad). The new approach of the WFD is to assess aside of water quality and chemical status the ecological integrity of surface waters referring to biological, hydro-morphological and general physico-chemical quality elements. This means that different and type specific characteristics of ecology have to be considered. Thus, the assessment has to be done on basis of the specific reference status (very good ecological status) that widely conforms to an undisturbed waterbody. The 'good ecological status' is defined as the minor deviation to the reference status. Waterbodies far away from natural conditions, due to banks- and soil-constructions, channeling, tunneling etc., or those of artificial nature in a whole, will be declared heavily modified with the objective of the good ecological potential. The reference status is the highest ecological potential which is assumed to be as far as possible the status of the most comparable waterbody, bearing in mind the physical conditions of the modified or artificial waterbody.

For the classification of running waters the assessment of the following quality elements are mandatory:

Biological quality elements

- Phytoplankton
- Macrophytes and phytobenthos
- Benthic invertebrate fauna
- Fish fauna

Hydromorphological quality elements

- Hydrological regime
- River continuity
- Morphological conditions

Physico-chemical quality elements

- General conditions: nutrient concentration, salinity, pH, oxygen balance, acidity and temperature conditions.
- Specific synthetically and non-synthetically pollutants

Floods Directive 2007/60/EC

Directive 2007/60/EC of 23 October 2007 purposes to assess, manage and reduce the risk of floods within the European Union considering impacts on human health and life, the environment, cultural heritage and economic activity. The Directive covers all type of floods as along rivers and coastal areas as well as urban and sewer floods. The management measures shall be organized on a river basin district scale as it is also established by the WFD. This Directive shall be implemented into national law by 26 November 2009.

By 22 December 2011 the Member States must have done a preliminary assessment of flood risks for each river basin district in their territory. This includes information on the boundaries of the river basins, flood events in the past, the likelihood of future floods with the estimated consequences. Here on river basins have to be categorized by their potential risk of flooding and a report must be published and reviewed by 22 December 2018 and every six years thereafter. The Member States must also draw up maps showing the risk and probability of floods and their potential damage on population, property and environment. The maps must be published by 22 December 2013 and reviewed every six years thereafter.

For each river basin a management plan to reduce the probability of floods and the impact of flooding has to be prepared and implemented by the concerning Member States by 22 December 2015 and reviewed every six years thereafter. The management measures must take in account water management, soil management, spatial planning, land use and nature conservation and they must not increase the risk of flood in neighboring countries.

To support the Member States in the implementation of the Floods Directive the 'Working Group F on Floods' has been established.

Birds Directive 79/409/EEC (amended by 2009/147/EC)

The Birds Directive enacted 1979 by the European Council and amended by version 2009/147/EC provides for the protection and management of all wild birds, native in the territories of the EU Member States, inclusively of their eggs, nests and habitats. To achieve this aim protected areas have to be established, habitats must be maintained or restored in the case of disturbance, and new biotopes shall be created.

Fauna Flora Habitat Directive 92/43/EEC

The Habitats Directive decided on 21 May 1992 by the European Council forms the cornerstone of nature conservation in the European Union and aims to preserve or restore natural habitats and species diversity in designated protected areas. It lists over 1000 animal and plant species, hereunder aquatic invertebrates, fish and aquatic macrophytes, and over 200 habitat types such as Alpine rivers, alluvial forest or wetlands that require special protection or which protection is of Community interest. The EU has obliged the Member States to establish a pan-European network of 'Natura 2000' conservation areas that include the areas designated in order of the Birds and the Habitats Directives.

Fish Directive 78/659/EEC (2006/44/EC)

The Fish Directive was first adopted on 18 July 1978 as Directive 78/659/EEC. This version has been amended by Directive 91/692/EEC and Regulation 807/2003, which are now replaced by 2006/44/EC. It is concerned with the protection and improvement of fresh waters in order to support fish life. It sets water quality standards and monitoring requirements for ensuring the protection of coarse and game fisheries. The directive requires the designation of appropriate rivers and lakes into two categories of water: those suitable for salmonids (i.e. mainly salmon and trout but also grayling) and those suitable for cyprinids (including carp, tench, bream, roach, chub and minnows). The directive sets out 14 physical and chemical parameters for which 'imperative' and/or the more rigorous 'guideline' standards are given for the two categories of designation. As the WFD has a much more comprising frame in the protection of fish fauna and habitat the Fish Directive will be abrogated by 2013 acc. Article 20 WFD.

Nitrate Directive 91/676/EEC

The Nitrate Directive from 1991 has the objective to protect the water quality of ground and surface waters across Europe by promoting good agricultural farming practice and limit the nitrate (N) pollution of waters. It forms an integral part of the Water Framework Directive and is one of the key instruments in the protection of waters against agricultural pressures.

In a first step Member States have to identify N polluted or N threatened surface and ground waters ($N_{conc.} > 50 \text{ mg/l}$), in particular those used or intended for the abstraction of drinking water and freshwater, estuaries, coastal waters and marine waters found or endangered to be eutrophic. Areas of land that drain into polluted or threatened waters and thus contribute to N pollution have to be designed as 'vulnerable zones' (NVZs). The code of good agricultural practice should include limits of time and conditions for the application of fertilizers, a minimum storage capacity of livestock manure, and the practice of crop rotations, soil winter cover and catch crops. In NVZs these measures are mandatory and the application of fertilizers has to be limited to 170 kg N organic/hectare/year. Finally monitoring programmes must be started concerning N concentrations, eutrophication, assessment of action programmes and revision of NVZs and action programmes. The outcomes have to be reported every four years.

Literature

Council Directive 79/409/EEC (amended by Council Directive 2009/147/EC) on the conservation of wild birds

Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and wild fauna and flora.

Council Directive 2000/60/EC of 23 October 2000 on the establishment of a framework for Community action in the field of water policy.

Council Directive 2006/44/EC of 6 September on the quality of fresh waters needing protection or improvement in order to support fish life.

Council Directive 2007/60/EC of 26 November 2007 on the assessment and management of flood risks.

Coherences between WFD, Floods, Habitats and Birds Directives

Similarities and differences

A very comprehensive comparison of the implementation and the requirements of the WFD, Floods and Natura 2000 has been done by HABERSACK et al. (2009).

Main objectives

The WFD aims to achieve a melioration of the status of surface waters and the surroundings. Protection from floods were not satisfyingly included, thus the Floods Directive has been established to create a common frame for the management of flood risks. Hereby, the use of alluvial forests and flood plains as natural retention areas plays a major role in the mitigation of floods and positive effects of synergy to the aims of the WFD can develop. The Habitats and Birds Directives have the aim of protection or restoration of wildlife habitats, fauna and flora. In the case of aquatic habitats and inhabiting species of Community interest the aim of Habitats/Birds and WFD is conform.

Time plan and management

The time plans of the WFD and the Habitats Directive were not aligned to each other, even though some implementation steps may be similar. For WFD and Floods management plans have to be elaborated and the time plans have been coordinated. The first flood risk management plan shall be ready by 2015, likewise the second management plan acc. WFD. The management cycles comprise six years and the management focuses on the river basin scale. This offers the possibility of a comprising management of flood risk management within the river basin management plans.

Status objectives and monitoring

The WFD and the Habitats/Birds Directive refer on a specific status objective. According WFD all surface waters have to be in a 'good ecological status' and are assessed in relation to the unimpaired 'reference status'. According to the Habitats and Birds Directive the objected status for the listed habitats and species is the 'favorable conservation status'. Within the Floods Directive no specific status has been objected.

For both Directives WFD and Habitats Directive a biological monitoring is obliged. WFD relevant Natura 2000 areas have to be included into the WFD monitoring programme if they are at risk of missing the 'good ecological status', or the Habitats/Birds objective of a 'favorable conservation status' cannot be achieved due to poor water quality or quantity. Overlapping occurs also when the biological quality elements or waterbodies are part of the species or habitat inventory of the Habitats or Birds Directives. A common monitoring programme for the WFD and the Habitats Directive, however, is constrained by the different objectives and the different monitoring methods and parameters in use. The monitoring and assessment of the WFD follows a five class system, while that of the Habitats is done in three classes. Also Habitats and Birds Directive dictate necessary measures of conservation or restoration but these measures are in general determined in individual management plans. Conflicts can develop due to the different objectives of WFD and Habitats and the measures undertaken to achieve the aims in overlapping areas. The Commission reacted by making valid the 'farther-reaching' aim (the stricter aim) in the case that more than one environmental objective have to be applied on a waterbody. For the Floods Directive only the progress of achieving the objective must be monitored and assessed.

The WFD refers to the Habitats and Birds Directives in following Articles:

- Article 4: Environmental objectives
- Article 6: Register of protected areas (Natura 2000)
- Article 8: Monitoring of surface water status, groundwater status and protected areas

- Annex VI Part A: List of Measures to be included within the programmes of measures. Hereunder the measures from Habitats - and Birds Directives

The Flood Directive refers to the WFD in following Articles:

- Article 3: Identification of river basin districts and nomination of competent authorities
- Article 6 (5c): Flood hazard and risk maps shall show the potential flood consequences in protected areas according to the WFD. (This is also an indirect reference to the Habitats and Birds Directives)
- Article 7(3): Flood risk management plans shall consider environmental objectives of the WFD
- Article 9: Coordination of applications with the WFD
- Article 12(1): Assistance of the committee established under Article 21 WFD

Literature

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and wild fauna and flora.

Council Directive 2000/60/EC of 23 October 2000 on the establishment of a framework for Community action in the field of water policy.

Council Directive 2007/60/EC of 26 November 2007 on the assessment and management of flood risks.

HABERSACK H., BÜRCEL J., KANONIER A. (2009): Synthesebericht „Floodrisk II Vertiefung und Vernetzung zukunftsweisender Umsetzungsstrategien zum integrierten Hochwasserschutz“. Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft. Wien.

Austria

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WFD implementation, strategies and policies

Transposition into national law:

In Austria Directive 2000/60/EC was implemented into the national water law (Wasserrechtsgesetz WRG 1959) with the novella no. 82/2003 in 2003. The Austrian water law mainly considers the three aspects water usage, conservation and purification of waters and protection from water risks. The water law, its novelties and further decrees relating to the WFD requirements can be downloaded from the homepage of the Federal Ministry of Agriculture, Forestry, Environment and Water Management (Table 2).

Table 2 Laws and decrees relating to the WFD (Hyperlinks).

LEGISLATIONS AND DECREES (HYPERLINKS)

[Wasserrechtsgesetz WRG 1959 idF BGBl. I Nr. 123/2006 und Novellen](#)

[Gewässerzustandsüberwachungsverordnung – GZÜV, BGBl. II Nr. 479/2006](#)

[Nationale Gewässerbewirtschaftungsplanverordnung \(NGPV 2009\)](#)

[Qualitätszielverordnung Ökologie Oberflächenwasser – QZV Ökologie OG](#)

[Qualitätszielverordnung Chemie Oberflächenwasser – QZV Chemie OG](#)

Identification of river basin districts and competent authorities:

Article 3 WFD claims the identification of river basin districts and the designation of competent authorities. Austria shares in three river basin districts Danube, Rhine and Elbe. A description of these districts on international and national scale and the determinate competent authorities has been reported to the EU in 2004 (Österreichischer Bericht über die Zuständigen Behörden).

To refer to the type specific characteristics of surface waters the rivers of Austria were designated on an abiotic typology (WIMMER & CHOVAŇEK, 2000a&b) according to system B annex II (1.2) using ILLIES (1978) ecoregion-concept as basis, river landscape types (FINK et al., 2000) and further factors of geoecology. An adjacent verification with analysis of benthic macroinvertebrate fauna led to the designation of 15 running water bioregions and a 16th classification type for nine large rivers (MOOG et al., 2001). A DVD can be ordered from the Federal Ministry of Agriculture, Forestry, Environment and Water Management which presents detailed portraits of all river typologies in a catalogue with photographs and statistical evaluations.

Characterization of river basin pressures, impacts and economic analysis:

In the analysis of the status-quo (Ist-Bestandsanalyse) the risk of not achieving the environmental objectives was estimated for all Austrian waterbodies. The first estimation was done in 2004 on basis of available datasets and with the knowledge of the relation between abiotic parameter and ecology. The first status-quo analysis has been published in maps and reports defining river basin districts, risks, human activity and water management/usage in March 2005. The risk estimation for chemical pollutants in surface waters was elaborated by the working group 'Chemie – Überwachung und Ziele' and published as a working document in 2005.

Establishment of monitoring network:

According to Article 8 WFD the Federal Ministry of Agriculture, Forestry, Environment and Water Management has reported the information about the planning and the establishment of monitoring programmes of surface water status.

The decree of monitoring the status of waters (Gewässerzustandsüberwachungsverordnung - GZÜV) concretises individual paragraphs of the WRG-Novelle 2003 concerning the establishment of monitoring programmes, sites, time and frequencies. The associated report of monitoring the status of waters (Gewässerzustandsüberwachung 2007 – 2009) describes the adaptation of the Austrian monitoring programme to the requirements of the GZÜV.

For each quality element monitoring standards were elaborated. The relating handbooks and methodical guidelines are now in their actual versions the official working instruction of the Federal Ministry of Agriculture, Forestry, Environment and Water Management (Table 3). The proper

transposition from parameters, index values, limit values and guideline values of the monitoring methods to status classes is enacted by two decrees. In the decree of quality aims of chemistry of surface waters of 2006 (Qualitätszielverordnung Chemie Oberflächengewässer - QZV Chemie OG) the environmental objectives (limit and guideline values) are determined for the chemical status. The decree of quality aims of ecology of surface waters (Qualitätszielverordnung Ökologie – QZV Ökologie OG), in force since 2010, defines the objectives for the biological, hydro-morphological and general physico-chemical quality components giving index boundaries, limit or guideline values for the different status classes.

Table 3 Official methodical guidelines for assessing the status of waterbodies according to the WFD in Austria.

GUIDELINES (HYPERLINKS)
Biological quality elements
<u>Introduction with short descriptions to each quality element</u>
Part A Running Waters / Part B Standing Waters
<u>A1 Guideline quality element Fish</u>
<u>A2 Guideline quality element Benthic Macroinvertebrates</u>
<u>A3 Guideline quality element Phytobenthos</u>
<u>A4 Guideline quality element Macrophytes</u>
<u>B1 Guideline quality element Fish</u>
<u>B2 Guideline quality element Phytoplankton</u>
<u>B3 Guideline quality element Macrophytes</u>
Part C Operational safety
Physico-chemical quality elements
<u>Guideline quality element general chemical/physical parameter</u>
Hydromorphological quality elements
<u>Guideline for Hydromorphological quality elements Running waters</u>
Heavily modified waterbodies
<u>Guideline for the assessment of heavily modified waterbodies</u>

River basin management plan:

The decree of the national water management plan prescribes the binding environmental aims, the intended measures for water management and the designation of heavily modified or artificial waterbodies (Nationale GewässerbewirtschaftungsplanVO 2009 – NGPV 2009). The first management plan including also a descriptions and analyses of river basin district characteristics, estimations of anthropogenic impacts, monitoring programmes and environmental objectives and measures.

Public consultation:

According to Article 14 (Involvement of the public) the homepage of the Federal Ministry of Agriculture, Forestry, Environment and Water Management offers explanations to the WFD implementation and strategies and provide download links to the above mentioned documents.

Homepage Federal Ministry of Agriculture, Forestry, Environment and Water Management: www.lebensministerium.at

Publication database of the Water Information System Austria (WISA): www.wisa.lebensministerium.at

Literature

Bericht über die österreichischen Überwachungsprogramme gem. Artikel 8 WRRL, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, 2007, Wien.

EBERSTALLER J., KÖCK J., HAUNSCHMID R., JAGSCH A., RATSCHAN C., ZAUNER G. (2009): Leitfaden zur Bewertung erheblich veränderter Gewässer – Biologische Definition des guten ökologischen Potentials. Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien.

DEUTSCH K., HAUNSCHMID R., KREUZINGER N., PRINZ H. (2010): Leitfaden zur typspezifischen Bewertung der allgemein physikalisch-chemischen Parameter in Fließgewässern gemäß WRRL, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien.

FINK, M., MOOG, O. & WIMMER, R. (2000): Fließgewässer – Naturräume Österreichs. – UBA Monographien Nr. 128, Wien: 110 pp.

GASSNER H., ACHLEITNER D., BRUSCHEK G., MAYRHOFER K., FREY I. (2010): Leitfaden zur Erhebung der biologischen Qualitätselemente, Teil B1 – Fische, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien.

Gewässerzustandsüberwachungsverordnung – GZÜV (2006) – 479. Verordnung des Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft über die Überwachung des Zustandes von Gewässern. BGBl. II Nr. 479/2006.

GZÜV – Oberflächengewässer (Gewässerzustandsüberwachungsverordnung) Umsetzung 2007 – 2009, Bericht über das Überwachungsprogramm für die Oberflächengewässer in Österreich nach den Vorgaben der EU-Wasserrahmenrichtlinie und des Österreichischen Wasserrechtsgesetzes, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, 2008, Wien.

MOOG, O., NESEMANN, H. & OFENBÖCK, T. (2001a): Österreichs Anteil an den österreichischen Ökoregionen gemäß EU-Wasserrahmenrichtlinie – eine deduktive Analyse landschaftsprägender Milieufaktoren.- *Österr. Wasser- und Abfallwirtschaft* 52:204-209.

MOOG O., SCHMIDT-KLOIBER A., OFENBÖCK T., GERRITSEN J. (2001b): Aquatische Ökoregionen und Fließgewässer-Bioregionen Österreichs – Eine Gliederung nach geoökologischen Milieufaktoren und Makrozoobenthos-Zönosen. Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wasserwirtschaftskataster, Wien.

MÜHLMANN H. (2010): Leitfaden zur Zustandserhebung in Fließgewässern Hydromorphologie, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien.

Nationale GewässerbewirtschaftungsplanVO – NGPV (2009) – 103. Verordnung Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft mit der einerseits die Veröffentlichung des Planungsdokumentes zum Nationalen Gewässerbewirtschaftungsplan bekannt gegeben wird und andererseits ein Maßnahmenprogramm sowie Prioritätensetzungen und die Ausweisung von Gewässerabschnitten als erheblich veränderte oder künstliche Oberflächenwasserkörper im Zusammenhang mit dem Nationalen Gewässerbewirtschaftungsplan erlassen werden. BGBl. II Nr. 103/2009.

OFENBÖCK T., MOOG O., HARTMANN A., STUBAUER I. (2009): Leitfaden zur Erhebung der biologischen Qualitätselemente, Teil A2 - Fließgewässer/Makrozoobenthos, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien.

Österreichischer Bericht über die Zuständigen Behörden – Informationen die gem. Artikel 3/8 und Anhang I der EU Wasserrahmenrichtlinie 2000/60/EG erforderlich sind, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, 2004, Wien.

PALL K., MAYERHOFER V. (2010a): Leitfaden zur Erhebung der biologischen Qualitätselemente, Teil A4 – Fließgewässer/Makrophyten, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien.

PALL K., MAYERHOFER V. (2010b): Leitfaden zur Erhebung der biologischen Qualitätselemente, Teil B3 – Fließgewässer/Makrophyten, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien.

PFISTER P. & PIPP E. (2009): Leitfaden zur Erhebung der biologischen Qualitätselemente, Teil A3 - Fließgewässer/Phytobenthos, Bundesministerium für Land-, und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien.

QZV Chemie OG (2006) - 96. Verordnung des Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft über die Festlegung des Zielzustandes für Oberflächengewässer. BGBl. II Nr. 96/2006.

QZV Ökologie OG (2010) - 99. Verordnung des Bundesministers für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft über die Festlegung des ökologischen Zustandes für Oberflächengewässer. BGBl. II Nr. 99/2010.

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France

by Alcayaga Hernán & Belleudy Philippe

WFD implementation, strategies and policies

Transposition into national law:

In France the Water Law (« Loi sur l'Eau ») defined in 1992 the means for planning and management at different spatial scales of waterbodies (lakes, rivers, wetlands) and water resources. The principal tool is the **SDAGEs** 'Schémas Directeur d'Aménagement et Gestion des Eaux' which are xxx defined at the scale of the 6 rivers bassins/regions in France.

The definition of SDAGEs has been modified in 2004 (loi n°338 21/04/2004) to take account of WFD and for its transposition into the French legislation (International Office for Water, 2009. Bouleau and Richard 2009). Later, the law on Water and aquatic environment ('Loi sur l'Eau et les Milieux Aquatiques –LEMA', 30/12/2006) renovated the whole water policy.

Objectives of LEMA are:

- to provide the means for archiving the goals of the WFD,
- to improve the condition of access to water,
- to give more transparency to the operation of water utilities,
- to renew the organization of fishing in freshwater.

This law, reformed the financing the system of the National Agencies and created the National Office for Water and Aquatic Environments (ONEMA).

Identification of River Basin Districts and Authorities:

In river basins, distribution of territory space into homogeneous units of management is a key objective of SDAGE established by the Water Law. There are 6 administrative entities named 'River Basin Committees' (Comités de Bassin) and 6 executive entities 'Water Agencies' (Agences de l'Eau) in metropolitan France. In the case of the basin of Isère, is included in the Water Agency Rhône-Méditerranée-Corse.

The surface waters in France were classified to typologies according to System B ANNEX II (1.2) WFD. Technical support for implementation of this classification is carried out by CEMAGREF (« Institut de recherche pour l'ingénierie de l'agriculture et de l'environnement » / National institute for research and engineering in agriculture and forestry) under the governance of Ministry for Ecology and Sustainable Development (Ministère de l'Écologie et du Développement Durable).

The choice of the 'system B' was analyzed by CEMAGREF (Wasson et al., 2001), proposing an approach by hydro-ecoregions (HER) on the basis of experience gained in the Loire Basin. On this principle, 22 hydro-ecoregions have been defined for metropolitan France (Wasson et al., 2002a), constituting the first phase of the development of the river water typology. In second phase (HER-2) there are 112 hydro-ecoregions across the metropolitan French territory (Wasson et al., 2002b).

Many legislative texts have been enacted, including most recently of 25 January 2010, concerning the methods and criteria for assessing the ecological status, chemical status and ecological potential of surface water. It formalizes a technical guide, called 'Assessment of the status of surface freshwater in metropolitan France, published in March 2009, which aims to put the principles of assessing the ecological and chemical status of waters surfaces and the standards to which should tend various types of waterbodies, defined by the WFD. Below in Table 5, we present main methodical guidelines, standards norms and legislations for Assessing the Ecological Status of water bodies according to the WFD

As the pilot site Isère is located within the hydrographical basin called Rhône-Méditerranée, then we will refer to the Rhône-Méditerranée SDAGE (referred here as SDAGE). Two successive versions were edited (1996 and 2009) and we shall precise the one we refer to.

Characterization of river basin pressures, impacts and economic analysis:

Different types of impacts and pressures on the water bodies, including industrial and domestic discharges, non point pollution from agriculture and morphological pressures were indentified and in 1996 version and presented in form thematic maps. Those pressures and their impacts have been updated in the SDAGE 2009 according to WFD. [<http://www.rhone-mediterranee.eaufrance.fr/gestion/dce/sdage2009.php>].

An economic analysis of the estimated costs to achieve the objectives of SDAGE 2009 can be found in the report « Coût de l'atteinte des objectifs du SDAGE, 2009 » [http://www.rhone-mediterranee.eaufrance.fr/docs/dce/sdage/docs-complementaires/cout-PDM2009_V4.pdf].

Establishment of monitoring network:

The monitoring network of the aquatic ecosystems, which started between the 60's and 70's, has been reorganized as part of the implementation of the WFD and according to the WFD guidelines. In the monitoring programs, there are specific activities for measurement of the water's quality and quantity and the hydromorphological characteristics of water bodies. The decree of the Basin's coordinator Prefect n°2006/517 from December 22th of 2006 ordered the development of these monitoring networks. Those include:

1) Quantitative monitoring of running water and non running water bodies (« suivi quantitatif des cours d'eau et des plans d'eau »)

The objective is the determination of water volumes and fluxes in relation to the evaluation or interpretation of the potential ecological and chemical status. This monitoring is combined with the surveillance monitoring and operational monitoring of surface waters and is used for calculating the flux of pollutants.

2) Surveillance monitoring (« contrôle de surveillance »). Its objectives are:

- the quality status of surface waters (rivers, lakes, coastal waters and transitional waters bodies)
- the quantitative status of groundwater
- the chemical status of groundwater

The duration of surveillance monitoring is related to a 6-years management plan before eventual revision.

3) Operational monitoring ('contrôle opérationnel'). It concerns:

- the qualitative status of surface water bodies (rivers, lakes, coastal waters and transitional waters bodies),
- the chemical status of groundwater.

The objective is the achievement of good status and good potential (ecological and chemical) in 2015, then only parameters that are problematic are monitored. This monitoring is intended to be interrupted when the water body will recover the good status condition.

4) Investigative monitoring (« contrôle d'enquêtes »)

Will be determined in 2011

5) Additional monitoring (« contrôle additionnel »)

- executed in protected areas,
- for the drinking water intakes

In addition to this monitoring network program, other monitorings are also made in the context of studies or complementary networks

River basin management plan:

As has been mentioned, the fundamental tool for the water resources management in France are SDAGE. In the SDAGE 2009 for Rhone-Mediterranean hydrographic unit, 8 large fundamental orientations have been defined

- Focus on prevention and intervention at the source for a better efficiency.
- Realising the implementation of the principle of non-degradation of aquatic ecosystems
- Integrate social and economic dimensions in the implementation of environmental goals
- Reinforce the local management of water and ensure consistency between territory planning and water resources management
- Prevention of pollution, with priority on pollution by dangerous substances and health protection.
- Preserve and re-develop the natural features of watersheds and aquatic ecosystems.
- Achieving balance quantitatively for improving the water distribution and anticipating the future.
- Managing flood risk taking into account the natural functioning of rivers.

These 8 fundamental orientations directly related to important issues identified during the overview or from other water questions, appear in the following table (Table 4):

Table 4 Fundamental orientation defined in the SDAGE Rhône-Mediterrannée

FUNDAMENTAL ORIENTATION		OF 1	OF 2	OF 3	OF 4	OF 5	OF 6	OF 7	OF 8
		PREVENTION	NON DÉGRADATION	SOCIO ECONOMY AND GOALS	LOCAL MANAGEMENT & TERRITORY PLANNING	COMBATING AGAINST THE POLLUTION	PHYSIC RESTAURATION OF THE AQUATIC ECOSYSTEMS	BALANCE QUANTITATIVE	FLOOD MANAGING
IQ 1	Local management								
IQ 2	Planning of territory								
IQ 3	Water monitoring								
IQ 4	Hydroelectricity								
IQ 5	Physic restoration								
IQ 6	Flood and risk								
IQ 7	Toxic substances								
IQ 8	Pesticides								
IQ 9	Water and held								
IQ 10	Socio economy								
IQ 11	Effectiveness of strategy								
IQ 12	Sustainability of water policies								
IQ 13	Mediterranean context								
Not an IQ	Combating against the pollution								
Not an IQ	Eutrophisation								
Not an IQ	Wetlands								
Not an IQ	Species and biodiversity								

Source: Comité du Bassin Rhône-Mediterrannée, 2009

Public consultation:

Public participation of the WDF is consistent with decree No. 2002-1187 of 12 September, 2002. Two consultations were performed: the first one about the synthesis of important question and the work program, from May 2 to November 2, 2005, the second one about the SDAGE project and monitoring network program from April 15 to October 15, 2008. The implementation of theses consultations was designated to the Basin Committee, in referral to the administrative authority, the basin's Prefect Coordinator.

For more information look at: http://www.eaurmc.fr/fileadmin/documentation/brochures_d_information/programme_inter_et_sdage/sdage/SyntheseConsultationnationale.pdf

Table 5 lists the legislative documents and official guidelines to the monitoring methods of France.

Table 5 Official methodical guidelines, norms and legislations for assessing the ecological status of waterbodies according to the WFD in France.

GUIDELINES/NORMS/LEGISLATIONS	URL OR CODE + DATE
Biological quality elements	
Macrophytes in running waters	
Water Quality – Determination of macrophytes biological Index in streams (IBMR)	NF T90-395 (2003-10-01)
Water Quality – Guide for studies of aquatic macrophytes in running waters	NF EN 14184 (2004-04-01)
Macrophytes in non running waters:	
National norm for macrophytes sampling in non running waters (in elaboration process)	(due end 2010)
Water Quality - Guide for studies of macrophytes in lakes	NF EN 15460 (2008-02-01)
Diatoms in running waters:	
Water Quality – Determination for the Biological Diatoms Index (IBD)	NF T90-354 (2007-12-01)
Water Quality - Guide for routine sampling and pretreatment of benthic diatoms from streams	NF EN 13946 (2003-07-01)
Water Quality - Guide for identification and denomination the benthic diatoms sample in rivers, and his interpretation	NF EN 14407 (2004-10-01)
Phytoplankton:	
National norm for phytoplankton sampling (in progress)	(due end 2010)
Water Quality - Guide for census of phytoplankton through inverted microscopy (Utermöhl method)	NF EN 15204 (2006-12-01)
Invertebrates in running waters:	
Water Quality – Application guide for the norm NF T90-350:2004, IBGN (Normalized Biological Global Index)	GA T90-374 (2006-12-01)
Sampling of aquatic macro-invertebrate in shallow streams.	XP T90-333 (2009-09-01)
Water Quality – Laboratory analysis of samples containing macro-invertebrates in streams.	XP T90-388 (2010-06-01)
Water Quality – Biological sampling methods - Guide for sampling for benthic macro-invertebrates with landing net	NF EN 27828 (1994-04-01)
Water Quality – Sampling of macro-invertebrates in deepwater - User Guide samplers colonization, qualitative and quantitative	NF EN ISO 9391 (1995-04-01)
Water Quality – Design and use of samplers for benthic macroinvertebrates on stony substrata in shallow freshwaters	NF EN 28265 (1994-04-01)
Water Quality – Biological Classification of streams – Part 1: guidelines for interpreting the data on the biological quality from studies of benthic macroinvertebrates.	NF EN ISO 8689-1 (2000-05-01)
Water Quality – Biological Classification of streams – Part 2 guidelines concerning the presentation of data on the biological quality from studies of benthic macroinvertebrates.	NF EN ISO 8689-2 (2000-05-01)
Invertébrés non running waters (plans d'eau):	Méthode nationale en cours de développement.
Rivers fish:	
Water Quality - Determination of Fish Index in Rivers (IPR).	NF T90-344 (2004-05-01).
Water Quality- Sampling of fish with electricity as part of networks for monitoring fish populations in	XP T90-383 (2008-05-01).

relation to the quality of river water	
Water Quality- Sampling with electro fishing.	NF EN 14011 (2003-07-01).
Water Quality- Guide of application and selection of fish sampling methods.	NF EN 14962 (2006-09-01).
Lakes fish:	
Water Quality – Sampling of fish with support of gill nets	NF EN 14757 (2005-11-01) - T90-366.
Estuarine fish:	
National norm sampling of fish with beam trawl (in preparation)	(available in 2011)
Physico-chemical quality elements	
Decree (25/01/2010) on the methods and criteria for assessing the ecological status, chemical status and ecological potential of surface water according to Articles R. 212-10, R. 212-11 and R. 212-18 of the Environmental Code.	http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000021865356&dateTexte=&categorieLien=id
Generals documents	
Technical Guide: Evaluation of fresh surface water status in metropolitan French	Mars 2009
Circular 2004/08 on the establishment and implementation of the network of reference sites for fresh surface water (running rivers and non running rivers) for implementation of WFD 2000/60/DCE	http://www.rapportage.eaufrance.fr/annexes/dce/2010/FR/4%20Evaluation%20etats%20des%20masses%20d%20eau/Circulaire%20DCE%202004-08/Circulaire%20DCE%202004-08.pdf

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Germany

by Kopecki Ianina & Wieprecht Silke

WFD implementation, strategies and policies

Transposition into national law:

The legal implementation of the Water Framework Directive has been carried out in Germany by amending the Federal Water Act (Wasserhaushaltsgesetz - WHG) and the water laws of the Federal States and by adopting ordinances (Knopp, 2005; Holzwarth, 2005). The draft of a seventh Act for the amendment of the Federal Water Act entered into force on 25 June 2002. The whole WHG was promulgated anew (Federal Law Gazette I p.3245, available under 'Downloads' at the German Federal Environment Ministry's website). Essentially, the following elements of the Water Framework Directive have been included in the WHG:

- new definitions of terms (e.g. 'river basin district'),
- the principle of water management by river basin area and the obligation to coordinate transboundary management of waters between different Federal States,
- the objectives set by the Directive (good water status) for surface waters and groundwater,
- the scope for extensions and exemptions and
- the instruments of the Water Framework Directive (programme of measures and management plan).

Since, under the German constitution (Art. 75 GG, Basic Law), the Federation is only able to enact skeleton provisions in this field, it was only possible to amend the WHG to incorporate the general intent of the Water Framework Directive while the regulatory tasks in particular were assigned due to constitutional reasons to the Federal States for implementation. The provisions of the water legislation of the Federal States have been brought into line with the skeleton provisions contained in the WHG. The Federal States also adopted all those provisions required to implement the Water Framework Directive. In particular, this concerns not only the procedural requirements, e.g. arrangements to set up the programmes of measures and the management plans, and especially the conducting of comprehensive public consultation as called for under the Directive, but also the standards for inventory assessment and monitoring the status of waters. Moreover, there are specific tasks, e.g. concerning transitional or coastal waters, which the respective Federal States have to regulate.

Identification of River Basin Districts and Authorities:

As it follows from description of legal implementation of WFD in Germany, the practical WFD implementation underlies the specifics of the Federal Republic. In the first German report to the European Commission (available at the German Federal Environment Ministry's website) the 10 River Basins (2 national and 8 international basins) were characterized and the designated responsible authorities on the national level have been named. This report outlines also the approach for the WFD implementation on the transnational river basin level.

Characterization of river basin pressures, impacts and economic analysis:

The implementation process of the WFD started with the development of harmonized criteria for the assessment of the Status-Quo that have been developed by the German Working Group of the Federal States on water issues (LAWA, 2003). However, as the practical realisation of water management issues lies in the responsibility of Federal States, these criteria have been modified in almost every State by different reasons (Borchardt et al., 2006). The overall German report to the European Commission on the Status-Quo assessment has been supplied on 22.03.2005 (Regierung der Bundesrepublik Deutschland, 2005). Related basin-wide overviews can be downloaded from the platform WasserBLICK.

Establishment of monitoring network:

Monitoring programmes encompass surface- and ground waterbodies and water-dependent protection areas. Monitoring results serve as a basis for the quality status assessment and are indispensable for the setup of management plans and measures. Monitoring results confirm the first assessment of Status-Quo, that large part of surface waterbodies in Germany will not achieve the goals of WFD without undertaking respective measures (BMU, 2010). Information on basin-wide monitoring programmes can be found on the platform WasserBLICK.

The development of a consistent methodology for the monitoring of waterbodies was the necessary step to insure more reliable conclusions regarding the status and achievement of the WFD objectives on the national and transnational levels. Large deficits especially in monitoring of the biological quality components stimulated the development of new standardized monitoring methods like [PERLODES](#) (macro- and phytobenthos), [FIBS](#) (fish) and [PHYLIB](#) (macrophytes). Some new methodologies have been already intercalibrated (see the website of German monitoring methodologies and intercalibration).

River basin management plan:

Water management plans including programmes of measures have been elaborated at the Federal State level as well as on the transnational river basin level. The local management plans for the river basin parts belonging to Alpine Space can be consulted on the websites to WFD and its implementation of the States Baden-Württemberg and Bayern. The integral river basin management plans are available on the platform WasserBLICK.

Public consultation:

Public participation plays a key role in the WFD implementation in Germany. A three-stage public consultation procedure involved an announcement of (a) the river basin management planning timeline and work programme; followed by (b) the key water management issues for each river basin district; and finally (c) the draft river basin management plans (BMU, 2010). The interested members of public had to indicate a feedback to these issues which was used later on as a basis for reworking the river management plans. There was a tremendous interest from municipalities, environmental organisations as well as affected user groups in the consultation process.

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Website of the German Federal Environment Ministry: <http://www.bmu.de>

Website of German monitoring methodologies and intercalibration: <http://www.interkalibrierung.de/index.html>

Website of the Information- and Communication Platform WasserBLiCK: <http://www.wasserblick.net>

Website of the Ministerium für Umwelt, Naturschutz und Verkehr Baden-Württemberg:
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Italy

by Bozzo Maria, Clemente Floriana, Elia Emanuela & Pavan Sara

WFD implementation, strategies and policies

Transposition into national law:

The Directive 2000/60/EC was implemented in the Italian national legislation within the frame of the Legislative decree 03/04/2006 n°152 (S.O. n°96/L of GU n° 88, 14/04/2006), which constitutes a comprehensive set of rules for environmental regulation in Italy. The first transposition at the Italian level was incomplete and further integrating provisions, with regard especially to the technical annexes, were therefore issued.

The Decree of the Environment Minister n. 131/2008 (S.O. n°189/L of GU n° 187, 11/08/2008) defined with a better detail the geographical part of the directive implementation, giving the technical specifications to identify on the Italian territory the hydro-ecoregions (HER) and the waterbody typologies.

The decree 56/2009 (S.O. n°83/L of GU n° 125, 30/05 /2009) defined the procedure to be used in order to build a monitoring net and establish a sampling programme.

The last document completing the normative integration of the Directive annexes in Italy was approved at the end of 2010 (Decree of the Environment Minister n. 260/2010 - S.O. n°31 of GU n°30, 07/02/2011) and describes the methodologies to define biological communities, hydro-morphological features and general chemical and physico-chemical parameters to evaluate the good ecological status. The methods at present under approval are new for Italy and it is therefore necessary to start a procedure to update the technicians working for the Regional Agencies for Environmental Protection, which are operatively involved in sampling activities. This could cause a delay in the application of the monitoring activities and could impact the reliability of the data to be used for land planning activities. The official publication of a manual including the methods is foreseen in the medium term by ISPRA (Institute for Environmental Protection and Research).

Concerning the classification of the chemical status in accordance to the WFD, the Legislative Decree 219/2010 for the transposition at the Italian level of the Directive 2008/105/EC about environmental quality standards in the area of water policies, and of the Directive 2009/90/EC, establishing technical specifications for the analysis and monitoring of pollutants, was approved.

Identification of River Basin Districts and Authorities:

At the national level, the Legislative Decree 152/2006 divides the national territory into Hydrographic Districts managed by District Authorities. The hydrographic district of the Po river includes the majority of the Italian alpine areas, the others being included in the Eastern Alps River Basins. In Italy, before the WFD was approved, Basin Authorities were in charge of managing conservation issues related to the hydro-geological setup (Law 183/1989). They now have the task to draft the River District Management Plan (according to law 13/2009), thus acting as District Authorities.

Characterization of river basin pressures, impacts and economic analysis:

In the analysis of the status-quo, the risk of not achieving the environmental objectives was estimated for all Po basin waterbodies. Every Region carried out its own assessment, which was included in the District Management Plan and was used to identify conservation and restoration measures. In Piedmont, the first assessment was done in 2005-2006, on the basis of available datasets of impacts and pressures and considering their relationship with biological aquatic communities, especially macrobenthos.

As for the 'Heavily Modified Water-Bodies' (HMWB), some Italian Regions still have to define them, and are waiting for the results of the first monitoring campaign in order to identify HMWB were really necessary. Veneto Region already established its HMWB based on the following guideline: generally, a river reach is classified as heavily modified when the longitudinal extension of alterations involves 50% of the total reach length. Different criteria were used for mountain streams and valley rivers. As an example, in mountain streams one of the decisive factors was the presence of check dams, while on valley rivers a reason for HMWB classification were navigation facilities such as navigation locks. The economic analysis of the Po District Management Plan is currently in preparation.

Establishment of monitoring network:

The criteria for the definition of the monitoring network were released from the central government as normative acts.

The definition of the Hydro-ecoregions was based on the methodology published by CEMAGREF (Wasson, 2007). Every Region has then applied the Hydro-ecoregions on the territory, adapting them to local features. Relevant rules were listed above in this document under the paragraph 'Transposition into national law'.

As for the Po river basin, the relevant monitoring network is now available on this [website](#).

River basin management plan:

Eight plans for the management of the Italian hydrographic districts, including those comprising the alpine territories involved in the SHARE project, were adopted in February 2010 and will be approved shortly.

Public consultation:

Information about WFD implementation at the national level is available through the [website](#) of the Italian Minister of the Environment and the Territory.

About the Po River District, public consultation and access to the information is being managed by the Po River District Authority ([see here](#)). Public consultation is possible through the email address parteciPO@adbpo.it.

Table 6 lists the legislative documents of implementation and official guidelines to the monitoring methods.

Table 6 Official methodical guidelines, norms and legislations for assessing the biological and ecological status of waterbodies according to the WFD in Italy

GUIDELINES/NORMS/LEGISLATIONS	URL
Legislations	
Legislative decree 152/2006 (transposition at the Italian level of Directive 2000/60/CE)	http://www.camera.it/parlam/leggi/deleghe/06152dl.htm
Legislative decree 10/12/ 2010, n. 219 (Transposition of Directive 2008/105/CE and Directive 2009/90/CE)	http://www.ram.minambiente.it/documents/Leggi,%20Decreti%20e%20Direttive/Decreti/Dec.%20Lgls%20del%2010%20dicembre%202010,%20n.%20219.pdf
Environment Minister Decree 16/06/2008 n. 131 Technical criteria to characterize waterbodies (typification, characterization, pressure analysis) and modify the technical rules of legislative decree n.152, 03/04/2006.	http://www.normattiva.it
Environment Minister Decree 14/04/2009 n. 56 Regulations including 'Technical criteria to monitor waterbodies and identify reference conditions for the modification of the technical rules of legislative decree n.152, 03/04/2006, about Regulations in the environmental field'.	http://www.normattiva.it
Environment Minister Decree, 8/11/2010, n. 260 Regulation including technical criteria to classify the sate of superficial water bodies, to modify the technical rules of legislative decree 3/04/2006, n. 152, about regulations in the environmental field, (GU n. 30 del 7-2-2011 - Suppl. Ordinario n.31)	http://www.gazzettaufficiale.it/guridb/dispatcher?service=1&datagu=2011-02-07&task=dettaglio&numgu=30&redaz=011G0035&tmstp=1298643479586
Guidelines	

Specific handbooks on macrobenthos (CNR-IRSA 2007-2008), macrophytes (AFNOR, 2003), diatoms, fish fauna (Zerunian, 2004, 2007, 2009)	In phase of preparation
Metodo per la valutazione dello stato ecologico delle acque correnti. Rapporti Istisan 09/19	http://www.iss.it/binary/publ/cont/0919web.pdf
Handbook about IARI (Hydrologic Regime Alteration Index) and IHA (Indicator of Hydrologic Alterations) to be published soon by ISPRA	http://www.isprambiente.it/site/_contentfiles/00004100/4117_sintesi_metodo_idromorfologia.pdf
Handbook about IQM (Morphological Quality Index) to be published soon by ISPRA	http://www.isprambiente.it/site/_contentfiles/00004100/4118_manuale_morfologia.pdf
Veneto Region HMWB are based on the guide lines 'Identification and Designation of Heavily Modified and Artificial Waterbodies' (Guidance document n.4).	http://alpiorientali.it/documenti/list_doc/PdP_d oc.php

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Slovenia

by Erlih Saša & Ferčej Darko

WFD implementation, strategies and policies

Transposition into national law:

In Slovenia, the legal implementation of WFD was carried out by the introduction of the *Water Act* (Official Gazette of the Republic of Slovenia, no. 67/02, 2/04 ZV-1, 110/02-ZGO-1 and ZZdrl-A 2/04) and subsequent related implementing regulations that summed up the provisions of the WFD (Regulation on the methodology for determination of the subsurface water bodies 2003, Regulation on the methodology for determination of surface water bodies 2003, Regulation on the subsurface water bodies 2005, Regulation on the designation and classification of surface water bodies 2005; Rules amending the Regulation on the designation and classification of surface water bodies 2006; Decree on the detailed contents and methodology of preparing water management plan 2006).

Implemented WFD provides a number of innovations in water management, among which stand out: an integrated ecosystem approach, water body/river basin management, introduction of economic instruments and public participation.

Identification of River Basin Districts and Authorities:

Article 3 WFD claims the identification of river basin districts and the designation of competent authorities. Slovenia shares two river basin districts Danube and Adriatic river basin. The surface waters in Slovenia were classified to typologies according to System B Annex II of WFD. Technical support for implementation of this classification is carried out by the Institute for Water of the Republic of Slovenia. The types of watercourses are defined by the mandatory descriptors of system B: a geological basis, the size of the catchment area and the descriptor hydro ecoregion.

In defining hydro ecoregions mandatory descriptors were considered: altitude, geographical altitude and length (Regulation on the designation and classification of surface water bodies, Official Gazette of the Republic of Slovenia. 63/2005 and 26/2006). Slovenia is divided into four ecoregions: the Alps, the Po valley, Dinarides and Pannonian basin. These hydroecoregions are divided into individual sub-ecoregions. The hydro ecoregion Alps is also divided into two sub-hydro ecoregions: Alps-Danube River basin and the Alps-Adriatic river basin (Urbanič, 2008).

Characterization of river basin pressures, impacts and economic analysis:

Slovenia prepared the first list of candidates for 'heavily modified water bodies' in the years 2006 to 2008, with 20 water bodies assigned as candidates. A key step at the moment is to formally confirm the water bodies as heavily modified water bodies (HMWB) by 2011.

Establishment of monitoring network:

Ecological status of surface water is regulated by *Regulation on the state of surface waters* (Official Gazette of the Republic of Slovenia, no. 14/09), which regulates also the chemical status of surface waters. Requirements for monitoring of surface water are presented in the *Rules on the monitoring of surface waters* (Official Gazette of the Republic of Slovenia, no. 10/09), which provides a methodology for monitoring the ecological status of surface waters.

Monitoring of the quality of surface water in Slovenia is carried out by Environmental Agency of the Republic of Slovenia, which has contracts with individual institutions.

The methodology for sampling and evaluating the biological quality elements is up to the first verification of a typology and surface waterbodies estimated with respect to the types of surface water to evaluate the ecological status and are determined separately for each type of water and quality element (Table 7).

River basin management plan:

A working programme for the period 2007 to 2009 and an interim river basin management plan (RBMP) for Slovenia has already been prepared. The formal RBMP for Slovenia is still in preparation, with the expected announcement in year 2011 – 2 years delay acc. to the WFD and national legislation.

Public consultation:

The Ministry of the Environment and Spatial Planning of the Republic of Slovenia (MOP) issues reports on the implementation of the WFD in Slovenia since 2003 which are available on their website. The reports are separated on two water areas (basins) to which Slovenia is divided: the Adriatic and the Danube.

The competent institutions of water management in Slovenia have prepared appropriate strategies for communication with the public, aiming at an increasing public awareness. Slovenia acknowledges involvement of NGO's as key element in linking administration and general public.

Table 7 Official methodical guidelines, norms and legislations for assessing the biological and ecological status of waterbodies according to the WFD in Slovenia

GUIDELINES/NORMS/LEGISLATIONS	URL
Biological quality elements	
Introduction: legal foundations and an introduction to the layout with short descriptions to each quality element	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_monitoring_ekoloskega_st_povrsinskih_voda.pdf
Types of surface water for the evaluation of ecological status	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/tipi_povrsinskih_voda_vrednotenje_ekoloskega_stanja.pdf
Part A Running Waters / Part B Standing Waters	
A1 Sampling methodology and laboratory processing of samples to evaluate the ecological status of rivers with fish	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_rek_ribami.pdf
A2 Sampling methodology and laboratory processing of samples to evaluate the ecological status of rivers with benthic invertebrates	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_rek_bentoskimi_nevretencarji.pdf
A3 The methodology of evaluation of ecological status of rivers with benthic invertebrates	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vredn_ekoloskega_st_rek_bentoskimi_nevretencarji.pdf
A4 Sampling methodology and laboratory processing of samples to evaluate the ecological status of rivers with phytobenthos and macrophytes	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_rek_fitobentosom_makrofiti.pdf
A5 The methodology of evaluation of ecological status of rivers with phytobenthos and macrophytes	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vredn_ekoloskega_st_rek_fitobentosom_makrofiti.pdf
B1 Sampling methodology and laboratory processing of samples to evaluate the ecological status of lakes with phytoplankton	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_jezer_fitoplanktonom.pdf
B2 The methodology of evaluation of ecological status of lakes with phytoplankton	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vredn_ekoloskega_st_jezer_fitoplanktonom.pdf
B3 Sampling methodology and laboratory processing of samples to evaluate the ecological status of lakes with phytobenthos and macrophytes	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_jezer_fitobentosom_makrofiti.pdf

B4 The methodology of evaluation of ecological status of lakes with phytobenthos and macrophytes	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vredn_ekoloskega_st_jezer_fitobentosom_makrofiti.pdf
B5 Sampling methodology and laboratory processing of samples to evaluate the ecological status of lakes with benthic invertebrates	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_jezer_bentoskimi_nevretencarji.pdf
B6 The methodology of evaluation of ecological status of lakes with benthic invertebrates	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vredn_ekoloskega_st_jezer_bentoskimi_nevretencarji.pdf
Part C Coastal waters	
C1 Sampling methodology and laboratory processing of samples to evaluate the ecological status of coastal waters by phytoplankton	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_obalnih_voda_fitoplanktonom.pdf
C2 The methodology of evaluation of ecological status of coastal waters by phytoplankton	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vredn_ekoloskega_st_obalnih_voda_fitoplanktonom.pdf
C3 Sampling methodology and laboratory processing of samples to evaluate the ecological status of coastal waters with phytobenthos and macrophytes	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_obalnih_voda_fitobentosom_makrofiti.pdf
C4 The methodology of evaluation of ecological status of coastal waters with phytobenthos and macrophytes	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vredn_ekoloskega_st_obalnih_voda_fitobentosom_makrofiti.pdf
C5 Sampling methodology and laboratory processing of samples to evaluate the ecological status of coastal waters with benthic invertebrates	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vzorc_lab_obd_vzorcev_vredn_ekoloskega_st_obalnih_voda_bentoskimi_nevretencarji.pdf
C6 The methodology of evaluation of ecological status of coastal waters with benthic invertebrates	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/metod_vredn_ekoloskega_st_obalnih_voda_bentoskimi_nevretencarji.pdf
Physico-chemical quality elements	
Guidelines for the assessment of the general chemical/physical parameter	http://www.mop.gov.si/fileadmin/mop.gov.si/pageuploads/podrocja/okolje/pdf/vode/ekolosko_stanje/vredn_ekoloskega_stanja_splosnimi_fizikalno_kemijski_elementi.pdf
Hydromorphological quality elements	
Guidelines for Hydromorphological quality elements Running waters	In preparation by MOP (Ministry of Environment and Spatial planning)
Heavily modified waterbodies	
Guidelines for the assessment of heavily modified waterbodies	In preparation by MOP

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