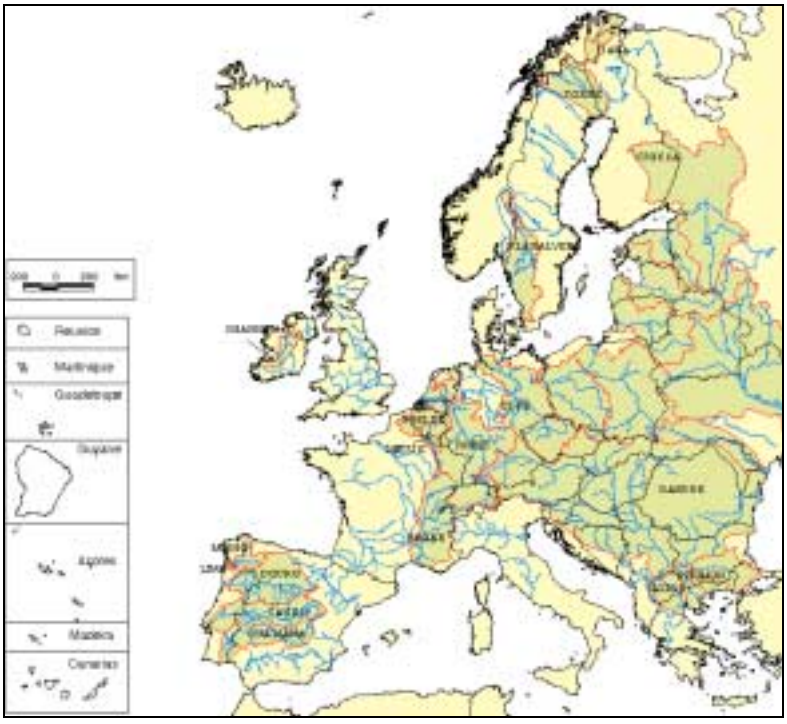
Common Strategy on the Implementation of the Water Framework Directive

Project 2.9

Best Practices in River Basin Management Planning



Work Package 1

Identification of River Basin Districts in Member States Overview, criteria and current state of play

Version:1.1 **Date: August 2002**

Common texts for the guidance documents under the WFD Common Implementation Strategy

Foreword

The EU Member States, Norway and the European Commission have jointly developed a common strategy for supporting the implementation of the Directive 2000/60/EC establishing a framework for Community action in the field of water policy (the Water Framework Directive). The main aim of this strategy is to allow a coherent and harmonious implementation of this Directive. Focus is on methodological questions related to a common understanding of the technical and scientific implications of the Water Framework Directive.
One of the main short-term objectives of the strategy is the development of non-legally binding and practical guidance documents on various technical issues of the Directive. These guidance documents are targeted to those experts who are directly or indirectly implementing the Water Framework Directive in river basins. The structure, presentation and terminology is therefore adapted to the needs of these experts and formal, legalistic language is avoided wherever possible.

In the context of the above-mentioned strategy, an informal working group dedicated to develop guidance on Best Practices in River Basin Planning has been set up in December 2000. Spain had responsibility for secretariat and animation of the group, being composed of experts from governmental and non-governmental organisations. The group has the responsibility to develop guidance documents in four work packages: the first on identification of river basin districts, the second on the planning process, the third on public participation and the fourth and last one on integrated river basin planning.

The present document is the first deliverable of this working group relevant for the first work package. It contains the synthesis of the output of the group activities and discussions that have taken place since July 2001 regarding this first work package. It builds on the input and feedback from a wide range of experts and stakeholders that have been involved throughout the process of guidance development through meetings, workshops, conferences or electronic communication media, without binding them in any way to its content.

"We, the Water Directors of the European Union, Norway, Switzerland and the countries applying for accession to the European Union, have **examined** and **endorsed** this guidance during our informal meeting under the Spanish Presidency in Valencia (June 2002). We would like to **thank** the participants of the Working Group and, in particular, the leader of the Group, Spain for preparing this high quality document.
We **strongly believe** that this and other guidance documents developed under the Common Implementation Strategy will **play a key role** in the process of implementing the Water Framework Directive.
For all experts involved in its implementation, this guidance document is a *living document* that will need continuous input and improvements as application and experience build up in all countries of the European Union and beyond. However, we **agree** that this document will be made publicly available in its current form in order to present it to a wider public as a basis for carrying forward ongoing implementation work.

We also **commit ourselves** to **assess** and **decide upon** the necessity for reviewing this document trough practical experience, following the pilot testing exercises in 2003 and the first results of 2004 initial status."

Main objectives of this guidance

Identification of River Basin Districts (RBDs) is an important issue in the Water Framework Directive (WFD) and the first one Member States will have to deliver. The document focuses on the following key elements:

- Definition of RBDs,
- Assignment of groundwaters shared by different RBDs,
- Assignment of coastal waters "to the nearest and most appropriate RBD",
- Definition of international and cross-border river basin districts, and
- Identification of competent authorities in water management and planning.

Common understanding

Common understanding of the key issues listed above is mainly developed in section 4 and has been obtained mainly through the following criteria:

- Collecting information from Member States in order to base guidance upon experiences, existing practices and current achievements,
- Limiting guidance on technical issues,
- Providing open and flexible recommendations,
- Providing examples of designations already done by Member States.

SECTION 3 - APPROACH FOR THE IDENTIFICATION OF RIVER BASIN DISTRICTS

Activity	Main data required	Recommended methodology as described in Section 4	Key issues	Further related WFD CIS groups
1. Preliminary delimitation. Definition of borders of main elements.				
1.1. Definition of river basin limits except coastal waters	Digital terrain elevations.	Geographical Information Systems Tools	-	WG 3.1 GIS
1.2. Definition of main aquifers	Geological and soil data. Field tests.	As defined in classical hydrogeology.	-	WG 2.8 Ground-water
2. Rationalising the topographic and geological delimitation. Consideration of other than only physical information				
2.1 Joining of small basins	Climatic Environmental Socio-economic Administrative	GIS Analysis	Common understanding of what is a small river basin district	WG 2.9 and WG 4.1
2.2 Assignment of shared aquifers between RBDs	Environmental Pressures and impacts Ground Water resources Topographical	Water resources and demands assessment.	Co-ordination measures for groundwater management	WG 2.8 Ground-water and EAF Ground-water.
2.3 Definition and assignment of coastal waters	Environmental Pressures and impacts Hydrodynamic	GIS Analysis	Problems arisen in the definition of coastal waters from the baseline.	WG 2.4 Typology and Classification for Coastal Waters.
2.3 Specific case: Designation of Internat. RBDs	Administrative background.	Political and administration procedures.		-
2.4 Designation of competent authorities	Administrative background	National legal framework.	_	-

SECTION 4 – COMMON UNDERSTANDING OF THE DESIGNATION REQUIREMENTS AND RELATED ISSUES AND CRITERIA

4.1. Preliminary delimitation.

4.1.1 Definitions of river basin limits except coastal waters

The hydrographical concept of a river basin, as defined in article 2 of the WFD, depends only on topographical conditions: *"the area of land from which all surface run-off flows through a sequence of streams and, possibly, lakes into the sea at a single river mouth, estuary or delta"*

The problem of identifying river catchment boundaries and the actual extent of drainage networks from digital elevation data is only a technical problem that has been studied for many years. Feasible and consistent approaches are now available, mainly based in the use of Geographical Information System tools.

Examples on surface river basin delimitation at European level

An example of surface river basin delimitation is the Euro-Landscape Project carried out by the Joint Research Centre of the European Commission (map produced by EUROSTAT based on GIS tools).

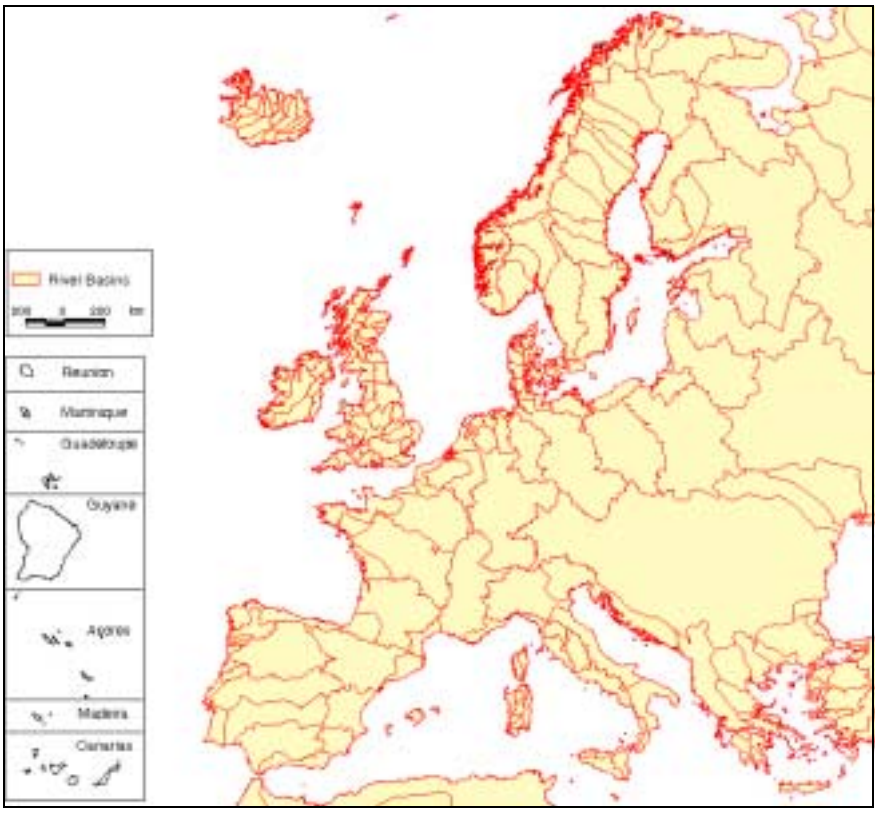


Figure: Main river basins in Europe (Source: EUROSTAT GISCO Watersheds in Europe. File: WSEU3M).

4.1.2 Identification and designation of groundwaters.

Article 2.2 of the WFD states that "groundwater means all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil".

Natural groundwater resources are stocked in aquifers, which are permeable rock formations or unconsolidated deposits, mainly formed by gravel, sands and silts. The boundaries of these formations are not always clear, but can be obtained from geological maps and field tests. Specific local studies are needed in all cases.

Nevertheless, it is necessary to consider that the definition and assignment of groundwaters is a real minimum requirement in order to define RBDs that has been faced in very few cases by Member States. Even though precise topological criteria are difficult, clear boundaries should be established in a similar way to those of the surface waters, i.e. using polygonal lines defined by co-ordinates. Time constraints in difficult cases may lead to a simplified approach at the beginning, followed by a later revision. However, full implementation of the WFD requires adequate groundwater delimitation.

Examples on the typology of aquifers in Europe

Dobřiš Assessment (1985) on general typology of aquifers in Europe.

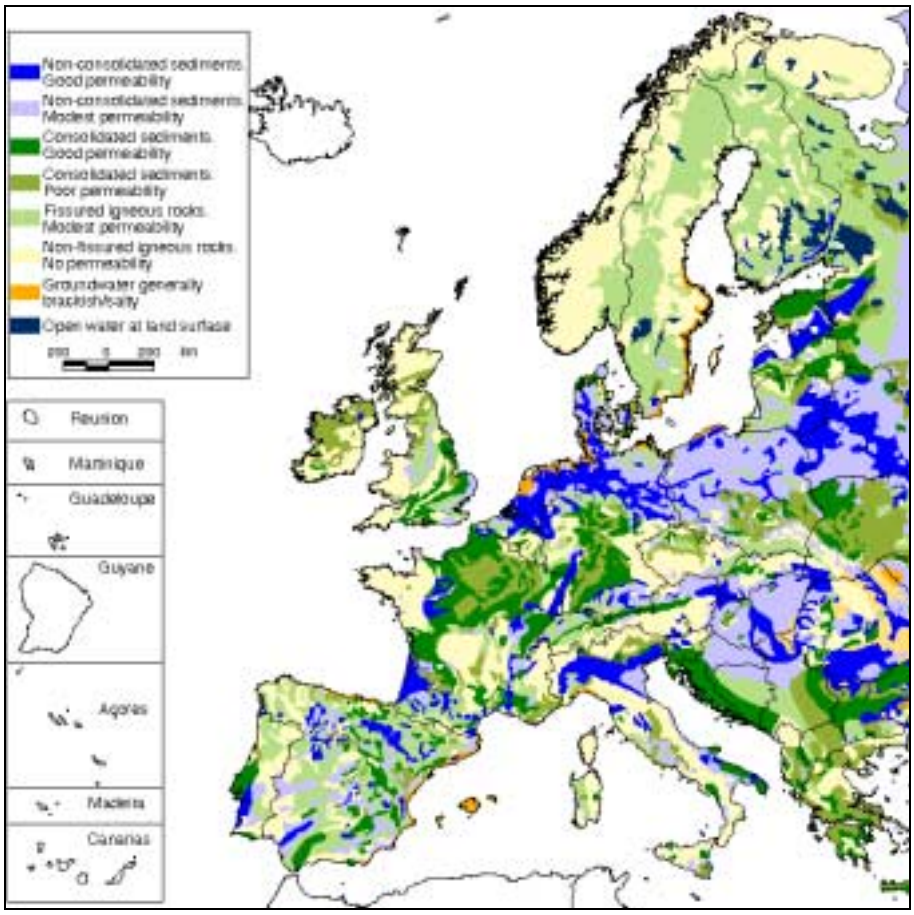


Figure: General typology of aquifers in Europe.

4.2. Rationalising the topographic and geological delimitation.

4.2.1 Combining/Joining of small basins

If a river basin is sufficiently large and adjacent to other similarly large river basins, it is likely to be designated as a stand-alone individual river basin district, even whether there may exist different physical conditions within its own catchment area. The principles of natural unity of the hydrologic cycle and integrated water management do apply for this approach.

In case of small river basins, adjacent to larger ones, or of several neighbouring small basins, it will be worth considering combining or joining them to form river basin districts, provided that their geographical size and functional characteristics do not hinder the development of efficient water management.

Such a combination can be considered based on the following criteria:

- climatic aspects,
- environmental aspects,
- socio-economic aspects,
- administrative aspects.

All the criteria work in the same way. Similar climatic, environmental, socio-economic and administrative conditions favour the combination of small river basins to larger ones, thus creating synergies emerging from existing similar problems/solutions.

Depending on the particular case, one of the criteria may be more important than others. In general terms and according to local circumstances, each factor should be weighted differently in order to arrive at the best possible solution.

Additional elements/sub-criteria- like those listed below may be considered:

- climatic aspects: degree of humidity, evapo-transpiration, sunshine hours, temperature, etc,
- environmental aspects: bio-geographical regions, limits of fauna populations, geological conditions, etc,
- socio-economic aspects: population density, importance of the primary, secondary or tertiary economic sectors, linguistic differences, cultural differences, etc,
- administrative: regional, provincial or local boundaries, established and consolidated structures, etc.

The following boxes provide some examples for considering some of these factors in Europe.

Climatic information in Europe: Moisture index

In general, Europe provides for a diversity of meteorological and climatic conditions, from the Arctic cycle to the Mediterranean. Examples are:

One indicator extensively used when making a climatic definition of a region is the UNESCO moisture index (Ih), representing the relation between the mean annual rainfall of a zone and its respective potential evapo-transpiration. Homogeneous zones from the point of view of this indicator are:

Ih < 0.020	arid
0.021 < Ih < 0,49	semi-arid
0,50 < Ih < 0,74	sub-humid
0,75 < Ih < 1	humid.

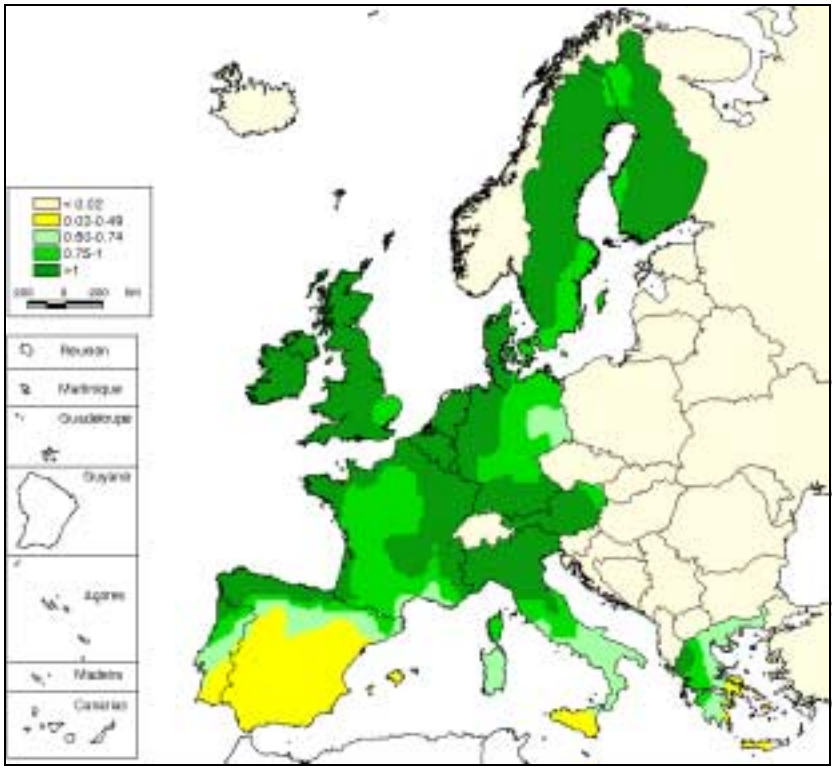


Figure: UNESCO moisture index in countries of the EU

Environmental information in Europe: Bio-geographical regions

The bio-geographical regions map has been developed as an instrument to evaluate the NATURA 2000 network, based on the map of natural vegetation. There are six initial regions: Alpine, Atlantic, Continental, Macaronesian, Mediterranean and Boreal The enlargement of the European Union will add five new regions to the map: the Steppic, the Pannonian, the Black Sea, the Arctic and the Anatolian.

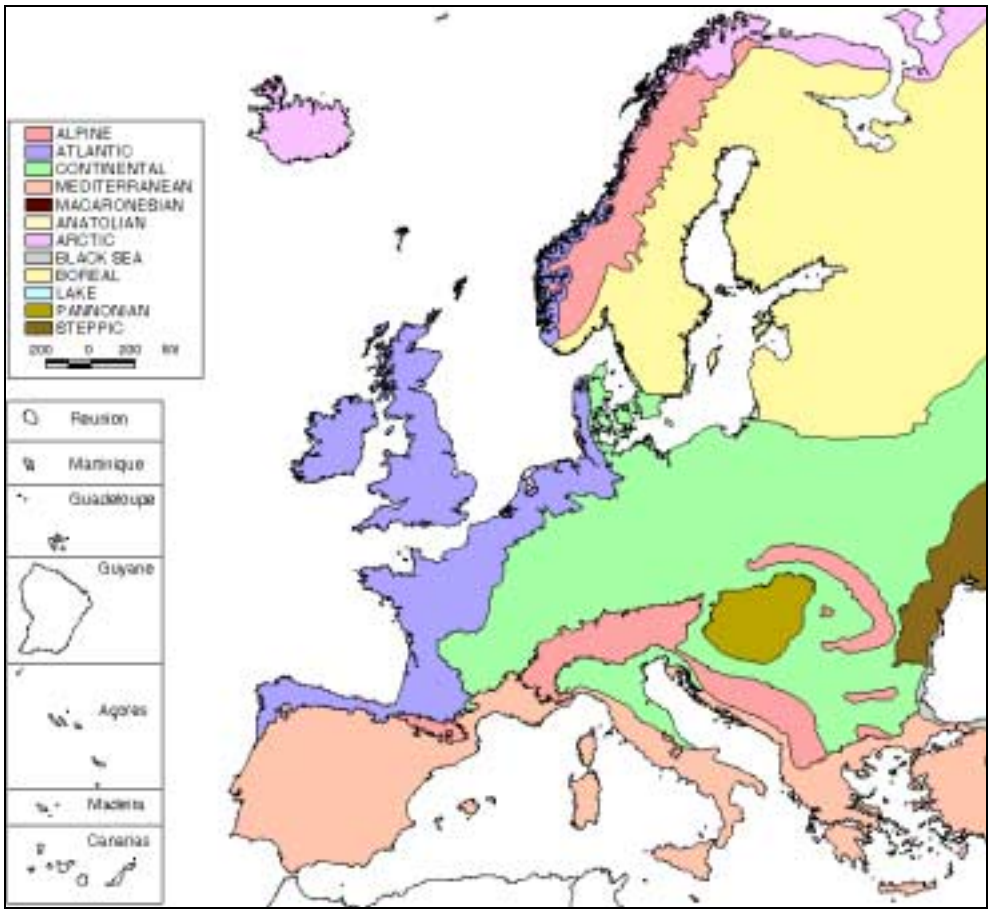


Figure: Bio-geographical regions

Socio-economic information in Europe

Socio-economic data is a type of *soft information* i.e. its significance does not depend only on the figures themselves but on the methodology used as well. Nonetheless, further information is required in order to describe information sources used and evaluation methods adopted. Consequently, it is helpful to use data from initiatives developed at European scale. Useful examples of this type of data sources are the New Cronos database of EUROSTAT or the CORINE LAND COVER (EEA) land use map. These data, using GIS (Geographical Information System) tools, provide reliable and homogeneous socio-economic information for EU countries as shown in the figure below.

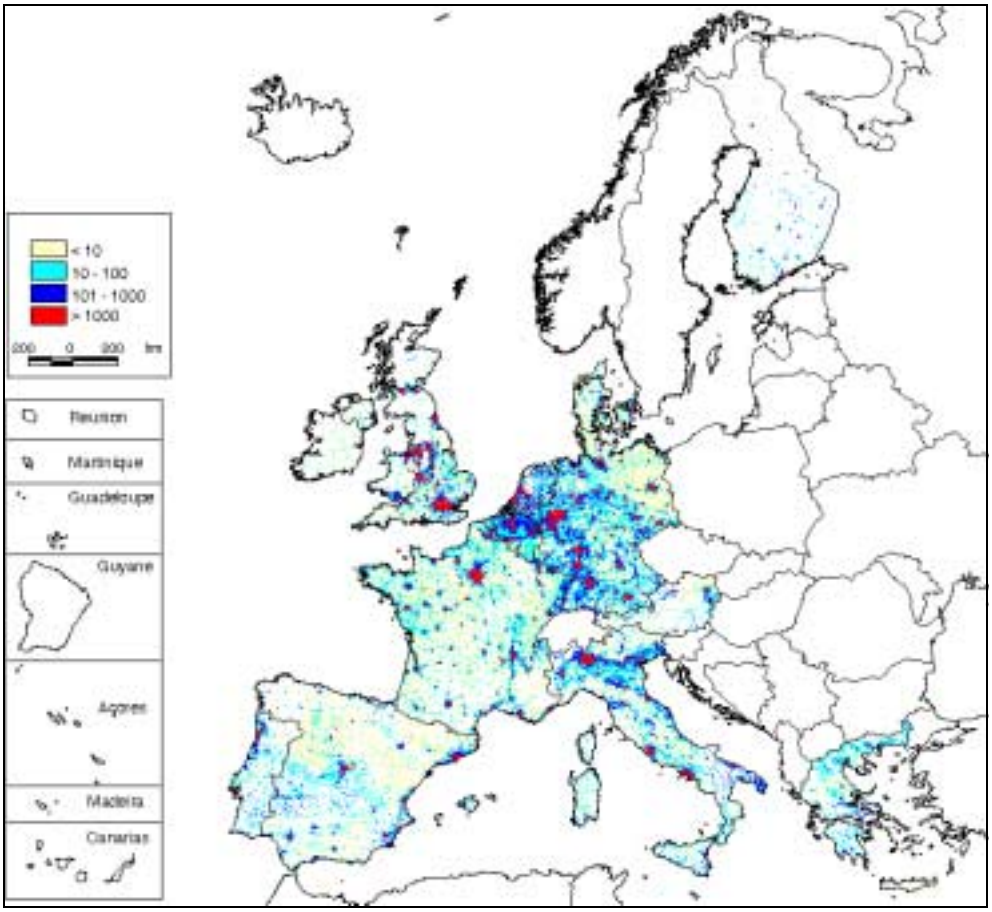


Figure: Spatial distribution of the population (inhab/km2) with a resolution of 5 km x 5 km This map has been obtained by CEDEX (Spanish Environment Ministry) from CORINE LAND COVER (EEA) land use map, urban development map from EUROSTAT and population data per basin (New Cronos, 2001).

Administrative information in Europe: Territorial boundaries

To facilitate the relationship between the competent authority under the Water Framework Directive and other relevant authorities, information on administrative territorial boundaries (municipality, province, region, etc) is indispensable:

The next figure shows the NUTS 3.

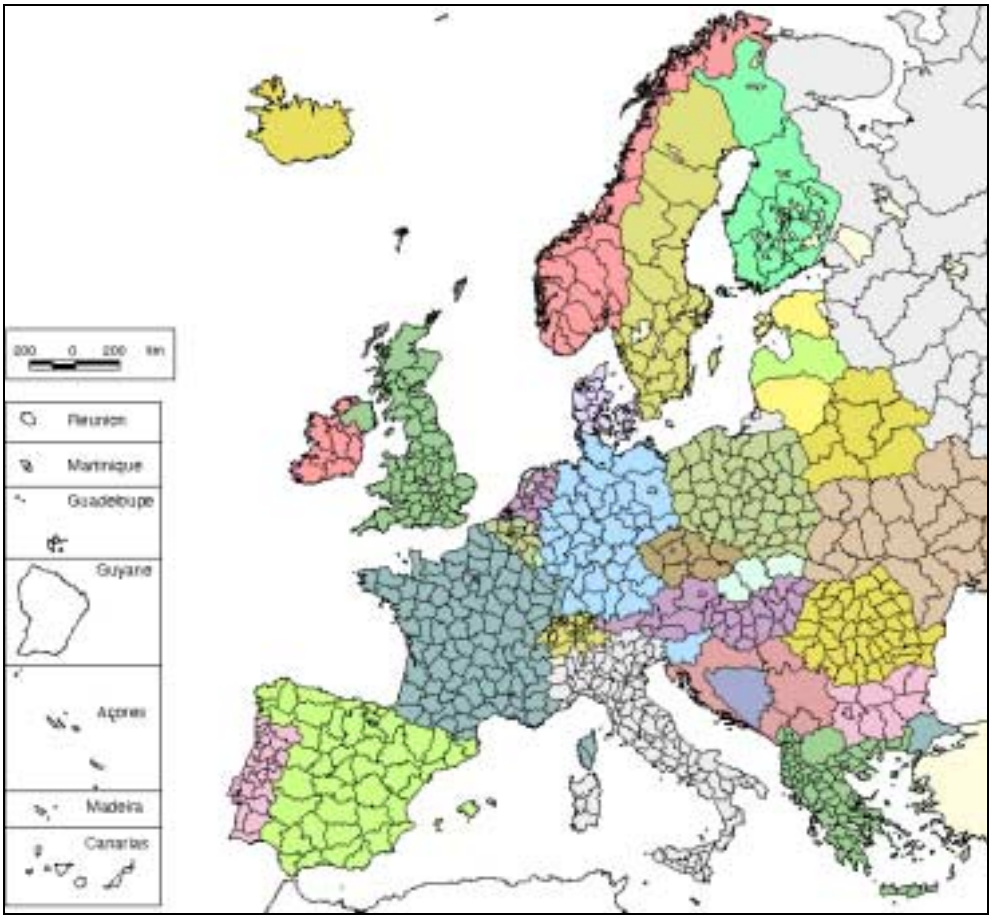


Figure: Administrative borders in Europe - NUTS 3

Key issue: What is a small river basin district?

In order to join basins properly, bear in mind some surface area reference values for RBDs. In section 5, several maps are shown corresponding to a possible definition of RBDs in Member States. To elaborate these maps, different information has been considered, in particular responses by Members States to the questionnaires produced by Work Group 2.9. Based on these data, the following information on RBD areas can be provided:

Minimum area: 95 km² (Seine, Belgium)

10% percentile: 1.516 km²

25% percentile: 6.223 km²

Median value: 12.265 km²

Maximum value: 810.131 km² (Danube)

Small islands have not been considered in the histogram. None of these values should be considered as an optimum for an efficient water management because they are only the result of a statistical analysis of existing information; nevertheless they could provide a basic reference of river basin sizes.

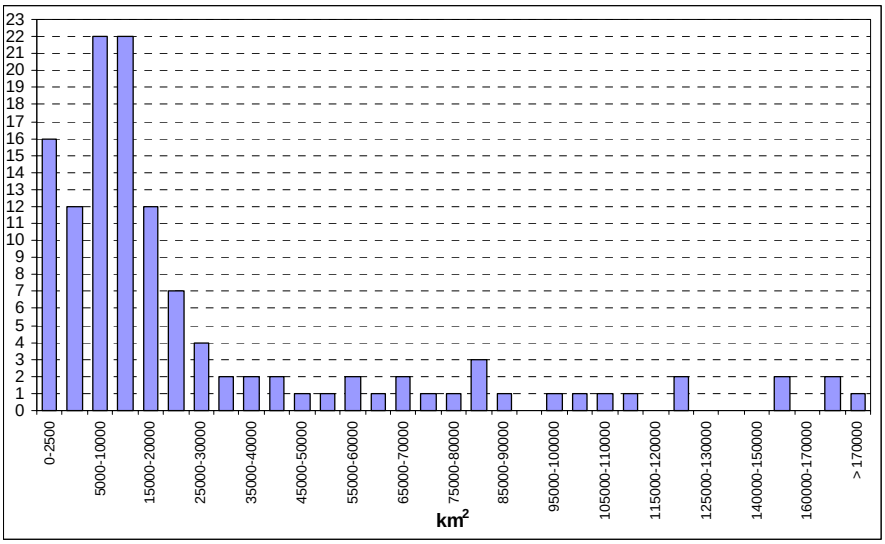


Figure. Histogram RBDs surface areas in Member States (source: information from MS presented in Section V of this document).

Table of Contents

Introduction - A document on identification of river basin districts: What for?

This document aims at guiding authorities, experts and stakeholders in the implementation of Directive 2000/60/EC establishing a framework for Community action in the field of water policy (Water Framework Directive – "the Directive"). It focuses on the identification of river basin districts in the broader context of development of integrated river basin management plans as required by the Directive. Within the framework of the implementation of the Directive, most EU Member States have more or less completed the identification of river basin districts. In most Candidate Countries the identification process is also in a final stage. As a result, this document should be used mainly as a reference on the issue, as a guidance to finalise the process in remaining cases or to provide criteria for assigning coastal waters and groundwaters to river basin districts. Moreover, the document provides a broad overview on the identification of river basin districts.

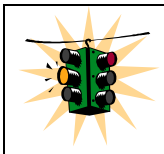
To whom is this document addressed?

The document aims at providing guidance to a range of actors in the process, inter alia

- those undertaking, reviewing or finalising the identification or river basin districts yourself;
- those leading and managing experts undertaking the identification;
- those using the outcome of the identification and definition for taking part to the policy making process;
- those reporting on the identification of river basin districts to the European Commission as required by the Directive.

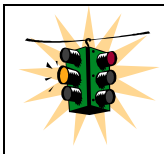
What can you find in this document?

- Criteria to combine/join small basins in a unique river basin district.
- Tentative reference area values for river basin districts.
- Criteria for the assignment of groundwaters shared by two different river basin districts.
- Ways of defining and assigning coastal waters.
- Information about international river basin districts in Europe.
- Requirements and information about competent authorities and information about water management planning practices in Europe.
- An overview of the river basins already identified by Member States.



Look out! The methodology set out in this document must be adapted to regional and national circumstances

The document proposes an overall methodological approach. Because of the diversity of circumstances within the European Union, logical approach and answer to questions may vary from one river basin to the next. The proposed methodology will therefore need to be tailored to specific circumstances.



Look out! What you will <u>not</u> find in this guidance document

The document focuses on the delimitation and definition of river basin districts required for supporting the development of River Basin Management Plans, with specific attention to the 2003 requirements of the Directive. The guidance does not focus on:

- techniques to define river basins from Digital Terrain Models,
- techniques to define aquifers from hydro-geological data,
- recommendations for the co-ordination of different water administrations,
- recommendations for the public participation in the process (specific guidance document to follow).

… And Where?

Implementing the Water Framework Directive: Setting the scene

Section 1 *– Key elements of the Water Framework Directive and those related to the Common Implementation Strategy.*
Section 2 *– Presents the specific requirements relevant for identification of river basin districts.*

Implementation and common understanding of identification of river basin districts

Section 3 *– Summarises the main tasks to be addressed.*
Section 4 *– Provides a detailed description of these tasks: tools and general examples regarding the main issues for the designation of river basin districts. This section represents the core part of the document.*

State of play in identifying river basin districts

Section 5 *– Provides an overview of the state of play art of identification of river basin districts in Member States and Norway.*

Summary and annexes

Summary
Annexes *- References in the WFD, glossary, selected references, coordinates of experts involved in Working Group 2.9.*

Section 1 – Implementing the Directive: setting the scene

This section introduces you to the overall context for the implementation of the Water Framework Directive and informs you about the initiatives that led to the production of this document.

December 2000: A milestone for Water Policy

A long negotiation process

22 December 2000 will remain a milestone in the history of water policy in Europe. On that day the Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy) was published in the Official Journal of the European Communities and entered into force.

This Directive is the result of a process of more than five years of discussions and negotiations between a wide range of experts, stakeholders and policy makers. This process has stressed the widespread agreement on key principles of modern water management that form today the foundation of the Water Framework Directive.

The Water Framework Directive: new challenges in EU water policy

What is the purpose of the Directive?

The Directive establishes a framework for the protection of all waters (including inland surface waters, transitional waters, coastal waters and groundwater) which:

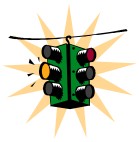
- Prevents further deterioration of, protect and enhance the status of water resources;
- Promotes sustainable water use based on long-term protection of water resources;
- Aims at enhancing protection and improvement of the aquatic environment through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances;
- Ensures the progressive reduction of pollution of groundwater and prevents its further pollution; and
- Contributes to mitigating the effects of floods and droughts.

…and what is the key objective?

Overall, the Directive aims at achieving *good water status* for all waters by 2015.

What are the key actions that Member States need to take?

- To identify the individual river basins lying within their national territory and assign them to individual River Basin Districts (RBDs) and identify competent authorities by 2003 (*article 3*, *article 24*);
- To characterise river basin districts in terms of pressures, impacts and economics of water uses, including a register of protected areas lying within the river basin district, by 2004 (*article 5*, *article 6*, *annex II*, *annex III*);
- To carry out, jointly and together with the European Commission, the intercalibration of the ecological status classification systems by 2006 (Article 2 (22), *annex V*);
- To make operational the monitoring networks by 2006 (*article 8*)
- Based on sound monitoring and the analysis of the characteristics of the river basin, to identify by 2009 a programme of measures for achieving the environmental objectives of the Water Framework Directive cost-effectively (*article 11*, *annex III*);
- To produce and publish River Basin Management Plans (RBMPs) for each RBDm including the designation of heavily modified water bodies, by 2009 (*article 13*, *article 4.3*);
- To implement water pricing policies that enhance the sustainability of water resources by 2010 (*article 9*);
- To make the measures of the programme operational by 2012 (*article 11*);
- To implement the programmes of measures and achieve the environmental objectives by 2015 (*article 4*)



Look Out!
Member States may not always reach good water status for all water bodies of a river basin district by 2015, for reasons of technical feasibility, disproportionate costs or natural conditions. Under such conditions that will be specifically explained in the River Basin Management Plans (RBMPs), the Water Framework Directive offers the possibility to Member States to engage into two further six-year cycles of planning and implementation of measures.

Changing the management process – information, consultation and participation

Article 14 of the Directive specifies that Member States shall encourage the active involvement of all interested parties in the implementation of the Directive and development of river basin management plans. Also, Member States will inform and consult the public, including users, in particular for:

- The timetable and work programme for the production of river basin management plans and the role of consultation at the latest by 2006;
- The overview of the significant water management issues in the river basin at the latest by 2007;
- The draft river basin management plan, at the latest by 2008.

Integration: a key concept underlying the Water Framework Directive

The central concept to the Water Framework Directive is the concept of *integration* that is seen as key to the management of water protection within the river basin district:

- **Integration of environmental objectives**, combining quality, ecological and quantity objectives for protecting highly valuable aquatic ecosystems and ensuring a general good status of other waters;
- **Integration of all water resources**, combining fresh surface water and groundwater bodies, wetlands, coastal water resources **at the river basin scale**;
- **Integration of all water uses, functions and values** into a common policy framework, i.e. investigating water for the environment, water for health and human consumption, water for economic sectors, transport, leisure, water as a social good;
- **Integration of disciplines, analyses and expertise,** combining hydrology, hydraulics, ecology, chemistry, soil sciences, technology engineering and economics to assess current pressures and impacts on water resources and identify measures for achieving the environmental objectives of the Directive in the most cost-effective manner;
- **Integration of water legislation into a common and coherent framework.** The requirements of some old water legislation (e.g. the Fishwater Directive) have been reformulated in the Water Framework Directive to meet modern ecological thinking. After a transitional period, these old Directives will be repealed. Other pieces of legislation (e.g. the Nitrates Directive and the Urban Wastewater Treatment Directive) must be co-ordinated in river basin management plans where they form the basis of the programmes of measures;
- **Integration of a wide range of measures, including pricing and economic and financial instruments, in a common management approach** for achieving the environmental objectives of the Directive. Programmes of measures are defined in **River Basin Management Plans** developed for each river basin district;
- **Integration of stakeholders and the civil society in decision making,** by promoting transparency and information to the public, and by offering an unique opportunity for involving stakeholders in the development of river basin management plans;
- **Integration of different decision-making levels that influence water resources and water status,** be local, regional or national, for an effective management of all waters;
- **Integration of water management from different Member States,** for river basins shared by several countries, existing and/or future Member States of the European Union.

WHAT IS BEING DONE TO SUPPORT IMPLEMENTATION?

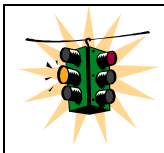
Activities to support the implementation of the Water Framework Directive are under way in both Member States and in countries candidate for accession to the European Union. Examples of activities include consultation of the public, development of national guidance, pilot activities for testing specific elements of the Directive or the overall planning process, discussions on the institutional framework or launching of research programmes dedicated to the Water Framework Directive.

May 2001 – Member States, Norway and the European Commission agreed a Common Implementation Strategy

The main objective of this strategy is to provide support to the implementation of the Water Framework Directive by developing coherent and common understanding and guidance on key elements of this Directive. Key principles in this common strategy include sharing information and experiences, developing common methodologies and

approaches, involving experts from candidate countries and involving stakeholders from the water community.

In the context of this common implementation strategy, a series of working groups and joint activities have been launched for the development and testing of non-legally binding guidance (see *annex I*). A strategic co-ordination group oversees these working groups and reports directly to the water directors of the European Union and Commission that play the role of overall decision body for the Common Implementation Strategy.



Look out! You can contact the experts involved in the "Best practices in river basin planning"

The list of the Working Group members with full contact details is provided in annex IV. If you need input into your own activities, contact a member of the group in your country. If you need more information on specific scoping and testing pilot studies, you can also contact directly the persons in charge of carrying out these studies.

SECTION 1 - IDENTIFICATION OF RIVER BASIN DISTRICTS IN THE WATER FRAMEWORK DIRECTIVE

This section identifies the requirements and issues in the Water Framework Directive related to the identification and definition of river basin districts in the context of developing river basin management plans.

Introduction

Issues related to the development of **river basin management plans** in the Water Framework Directive:

- Identification and designation of river basins and districts and establishment of appropriate administrative arrangements, including identification of competent authorities (article 3 and annex I)
- Preparation of river basin plans (article 13 and annex VII)
- Preparation of programmes of measures at basin level (article 11 and annex VI)
- Issues related to information, consultation and public participation (article 14).

In order to meet suitably these legal requirements and also the concerns expressed by the Member States, an informal working group dedicated to best practices in river basin planning issues of the Directive has been set up. The main work packages in which the activities of the group have been structured are, as mentioned above: Identification of river basin districts, planning process, public participation and integrated river basin management planning.

The present document is the deliverable on the first work package.

Background

Basic requirements for the identification of river basin districts are mainly set in articles 2, 3 and 24 of the Water Framework Directive (WFD);

- River basins and river basin districts:

  " Member States shall identify the individual river basins lying within their national territory and [...] shall assign them to individual river basin districts. Small river basins may be combined with larger river basins or joined with neighbouring small basins to form individual river basin districts where appropriate."

  "River means a body of inland water flowing for the most part on the surface of the land but which may flow underground for part of its course"

  "River basin district means the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under article 3(1) as the main unit for management of river basins"

- Groundwaters:

  "Means all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil"

  "Where groundwaters do not fully follow a particular river basin, they shall be identified and assigned to the nearest or most appropriate river basin district."

  "Aquifer means a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater"

- Coastal waters:

  "Coastal waters shall be identified and assigned to the nearest or most appropriate river basin district or districts."

- Administrative arrangements:
- *"Member States shall ensure the appropriate administrative arrangements, including the identification of the appropriate competent authority [...] within each river basin district lying in its territory."*
- International river basins:

  "Member States shall ensure that a river basin covering the territory of more than one Member State is assigned to an international river basin district. [...] Each Member State shall ensure the appropriate administrative arrangements, including the identification of the appropriate competent authority [...] within the portion of river basin district lying in its territory."

  "Where a river basin district extends beyond the territory of the Community, the Member State or Members States concerned shall endeavour to establish appropriate coordination with the relevant non-Member States, with the aim of achieving the objectives of this Directive throughout the river basin district. Member states shall ensure the application of the rules of this Directive within their territory."

- Arrangements for co-ordination:

  "Member States shall ensure that the requirements [...] for the achievement of the environmental objectives [...] and, in particular, all programmes of measures are co-ordinated for the whole river basin district. For international river basin districts the Member States concerned shall together ensure this co-ordination [...]."

- Deadline:

  "Member States shall identify the competent authority by [...] 22 December 2003" and *"shall provide the Commission with a list of their competent authorities and of their competent authorities of all the international bodies in which they participate by [...] 22 June 2004."*

Beyond the requirements set out in the Directive, the identification of river basin districts is expected to involve a number of political issues and, as a consequence, the designation of river basin district boundaries is likely to require considerable flexibility.

4.2.2. *Assignment of shared groundwaters between RBDs*

Article 3.1 of WFD states that …*Where groundwaters do not fully follow a particular river basin, they shall be identified and assigned to the nearest or most appropriate river basin district.*

According to this definition, shared groundwaters must be assigned only to one RBD. The assignation of groundwaters has to be done to the nearest or most appropriate river basin district while coastal waters could be assigned to one or several districts.

The assignment of groundwaters to a RBD might be difficult in certain cases, e.g. relatively important aquifers shared by two or more RBDs.

Identification, characterisation and description of relevant shared groundwaters are steps prior to assignment to a RBD. Recharge and discharge areas need to be determined and activities that might affect the quantity and quality of groundwater need to be analysed. Knowledge of the groundwater flow systems means in particular the location of groundwater recharge and discharge zones, and the way groundwater flows through aquifers from zone to zone (RBD to RBD). In addition, it is necessary to determine the recharge and discharge conditions in some areas and assess the interaction between surface and groundwaters.

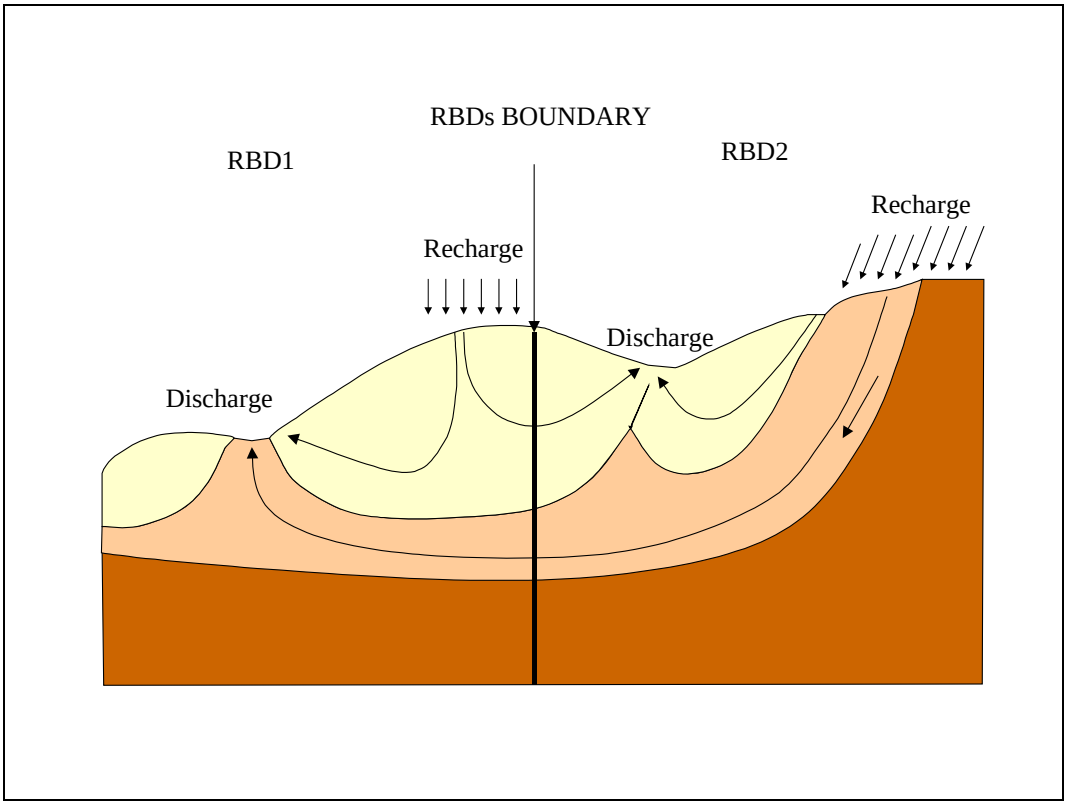


Figure. Example of groundwater flows between two RBDs (named RBD 1 and RBD 2).

Different criteria can be used to assign shared groundwaters to one of the RBD involved:

- environmental aspects, as the existence of ecosystems dependent on water (as wetlands, etc.) connected to aquifers, etc
- pressures and impacts in each portion of aquifer (water use, groundwater quality, etc);

- water resources (recharge and discharge areas);
- surface area of the aquifer in each portion of RBDs;

Some difficulties of different types could arise to assign a shared groundwater to only one RBD. In those cases the management of shared aquifers could be carried out in its respective portion of territory by the different RBD authorities involved but establishing the appropriate co-ordination between them in order to reach an adequate groundwater management.

A special case is shared groundwaters assigned to an International River Basin District. In this case and in accordance with article 3(3) WFD, *each Member State shall ensure the appropriate administrative arrangements for the application of the rules of WFD within the portion of any international RBD lying within its territory*. This would apply as well to groundwaters located within those RBDs.

Example: Co-ordination measures for groundwater management in France

In France, a first assignment of groundwaters to RBDs is being carried out. 500 groundwater bodies have already been roughly identified, 34 of them are shared by two or several of the 12 French RBDs. In order to assign them In order to assign them to the most appropriate district, different criteria are used: area of the groundwater body situated below each RBD and direction of flow. If these criteria are not sufficient, the location of major pressures is assessed. For example, if groundwaters are mainly used for production of good quality drinking water, they will be assigned to the RBD where the majority of drinking water wells are located.

For the very large size shared aquifer, a particular assessment will take place to co-ordinate measures for the entire aquifer between the respective administrations and water agencies of the different administrative regions concerned.

4.2.3 Definition and assignment of coastal waters

Article 2 of WFD defines coastal waters as "*surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters*".

The use of this concept requires a previous definition of the baseline. Some difficulties have been encountered in certain countries such as it is shown in the following example.

Problems arising from defining coastal waters via the baseline: Spain

In Spain, the baseline has been defined by pairs of geo-referenced points that fit to geographic points (capes, islands, etc). However, the segments that define the baseline cover only non-convex coastal stretches being the coastline, which define the baseline in the convex ones. From this situation some problems arise:

a) There is not an exact geometrical solution to extend 1 mile seaward when the coastline is the baseline. In those cases a baseline should be defined. A possible solution could consist on making a translation 1 mile seaward of segments involving the geographic points above mentioned.

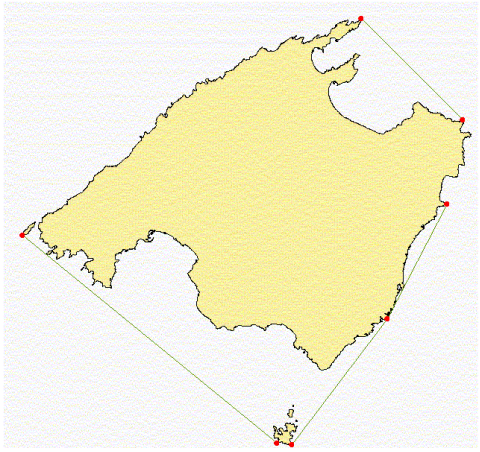


Figure. Baseline on Majorca island

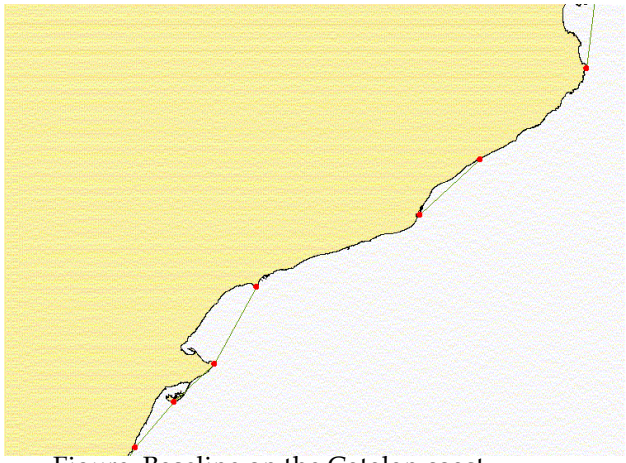


Figure. Baseline on the Catalan coast

b) On the other hand two coastal lines have been defined in Spain: the corresponding to the mean sea water level referenced to Alicante (altitude 0 landward side) and the corresponding to the equinoctial maximum tide (depth 0 seaward side). Important horizontal differences have been observed in estuaries, coastal wetland, etc, particularly in large tidal areas.

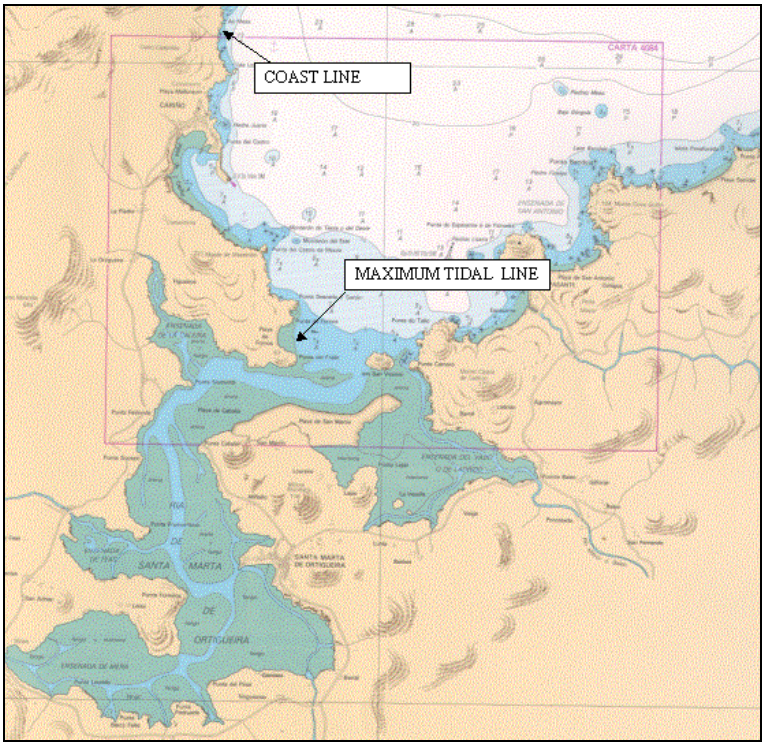


Figure. Differences between coast lines in Spain

The United Nations Convention on the Law of the Seas defines the "normal baseline for measuring the breadth of the territorial sea" as the low-water line along the coast as marked on large-scale charts officially recognised by the coastal state.

Article 3.1 of WFD requires that *coastal waters shall be identified and assigned to the nearest or most appropriate river basin district or districts*.

Like all other water body categories, coastal waters must be assigned to a River Basin District. This may involve the splitting of a stretch of coastal water, which would otherwise be considered as a single water body.

When assigning a stretch of coastal water to a River Basin District the objective should be to ensure that coastal waters are assigned to the closest natural management unit possible and to minimise any unnecessary splitting of coastal stretches. To ensure consistency of approach, the following principles should be applied:

- Where possible, existing administrative boundaries could be used, for example, ecoregions as defined by the Directive and regions as defined in the Marine Conventions;
- The boundaries between two adjacent types should be used wherever possible to minimise unnecessary splitting of the coastline;
- Where possible, the coastline should be split at open coast areas rather than through natural management units such as bays or sea loughs.

When managing coastal water bodies it should be recognised that an adjacent coastal water body belonging to a different river basin district may affect the quality of water within a neighbouring water body. If this is an issue, the management plans of both river basins should acknowledge the problem and work together to solve any issues.

Once coastal waters have been identified, there is no doubt that their inclusion into a specific RBD is affected by the effect of river discharges on the coastal aquatic environment. The WFD states that coastal waters are assigned to the nearest or most appropriate district or districts. With this definition, it is taken into account that the plumes of pollution produced by river discharges can be driven by the coastal currents and/or the wind and they can affect to RBD different from the nearest one.

The importance of these effects will certainly determine whether or not the limits defined by perpendicular lines drawn at the continental boundaries of the RBD (what could be called as a simple "geometrical" assignment) are appropriated. Basically two main criteria could be applied:

- To maintain the simple “geometrical” assignment and to consider any pollution that could have influence on changing the status of the coastal water caused by the collateral district by establishing the arrangements needed to co-ordinate measures between the RBD concerned.

- Or, a coastal water stretch could be assigned to another RBD different to that derived from the application of the simple geometrical criterion, or even to more than one RBD. This solution can be adequate when the influence of the pollution plume is determining on the status of the coastal waters concerned, although the first solution can continue to be valid if one take into account the influence in question through co-ordination agreements to be established.

In this latter case, the length of the coastal water stretches should be defined. The application of hydrodynamic models to simulate movement of marine waters flows can be a useful tool to define the length of the stretches and to establish the assignments. However, using such models requires a careful consideration of local conditions as well.

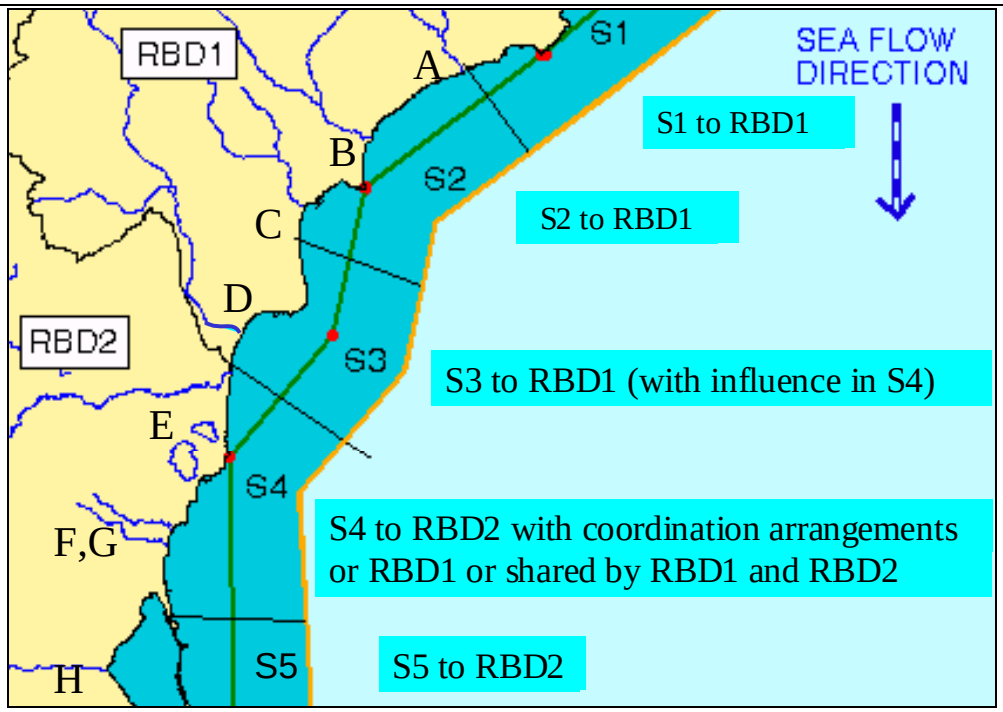


Figure. Example of assignment of coastal water stretches to RBDs. Rivers A, B, C and D belongs to river basin RBD1, rivers E, F, G and H belong to RBD2. Due to sea flow direction, polluted plume of river D influences S4. Thus S4 could be assigned to RBD2 with co-ordination arrangements (first criterion) or to RBD1 or shared by RBD1 and RBD2 (second criterion).

Discussion about this topic is now ongoing in Member States, and most countries consider a reasonable approach the simple geometrical assignment. Germany is working on a detailed designation of coastal waters, as shown in the following figure. In the Netherlands, RBD boundaries will be extended by a perpendicular line (Scheldt-Meuse-Rhine-Ems) with a 1 nautical mile seaward extent. In Norway a hierarchical division of the coastal zone has been done, which may be used as the basis for the assignment of coastal waters to RBDs.

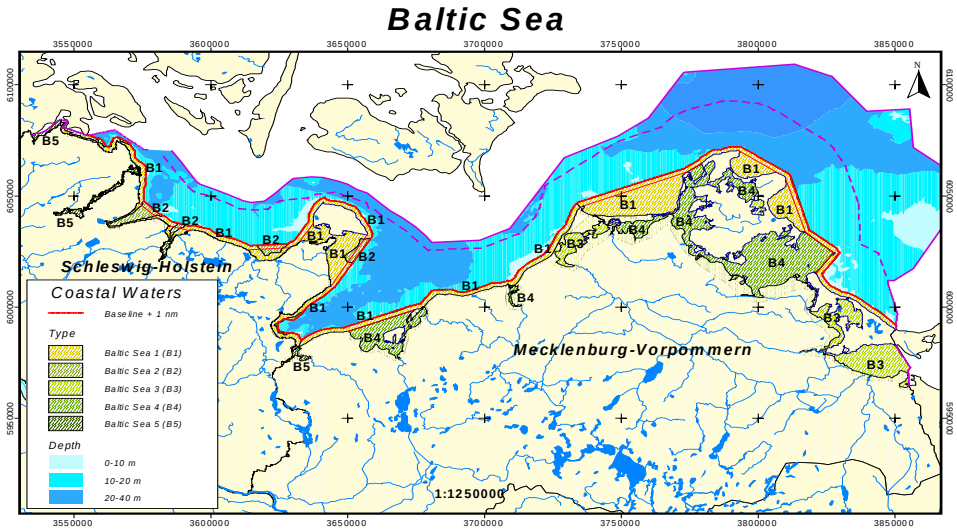


Figure: Detailed assignment of coastal water in Baltic Sea by Germany

4.3. Designation of International River Basin District (RBDs)

According to WFD article 3 (3), *Member States shall ensure that a river basin covering the territory of more than one Member State is assigned to an international river basin district. At the request of the Member States involved, the Commission shall act to facilitate the assigning to such international river basin districts. Each Member State shall ensure the appropriate administrative arrangements, including the identification of the appropriate competent authority, for the application of the rules of this Directive within the portion of any international river basin district lying within its territory.*

Further, in accordance with article 3(1), the assignation of groundwaters and coastal waters to the national portions of these international RBDs remains as a rule the responsibility of the Member State. At the same time, all the Member States within an international RBD have together to ensure the necessary co-ordination for the whole RBD (article 4(3)).

The following table and map provides a list of the main International River Basin Districts (IRBD) and transboundary river basins. Information provided in these tables and maps is largely based on responses to questionnaires. They do at this stage not address yet river basins shared between the regions of England and Scotland in the UNITED KINGDOM, as this issue is currently under elaboration.

Transboundary rivers	Countries sharing the river basin
Miño-Lima	Spain, Portugal
Duero	Spain, Portugal
Guadiana	Spain, Portugal
Tagus	Spain, Portugal
Schelde/Escaut	France, Belgium, The Netherlands
Maas/Meuse	France, Belgium, The Netherlands, Luxembourg, Germany
Rhone	Switzerland, France, Italy
Ems	Germany, The Netherlands
Elbe	Austria, Germany, Czech Republic.
Oder	Germany, Czech Republic, Poland
Rhine	Switzerland, Italy, Austria, Germany, France, Luxembourg, Belgium, The Netherlands
Danube	Germany, Switzerland, Austria, Czech Republic, Slovakia, Hungary, Italy, Slovenia, Croatia, Bosnia-Herzegovina, Serbia-Montenegro, FYROM, Bulgaria, Romania, Ukraine, Poland, Moldova
Po	Switzerland, Italy
Foyle/Erne/Melvin	United Kingdom, Ireland
Neagh/Bann/Dundalk	United Kingdom, Ireland
Torne	Sweden, Norway, Finland
Klaralven	Sweden, Norway
Tana-Paatsjoki	Finland, Norway, (Russia)
Vuoksi-Volkhov-Ladoga-Onega	Finland, (Russia)
Aoos (Epirous)	Albania, Greece
Vardar/Axios (Central Macedonia)	FYROM, Greece
Strimon (Eastern Macedonia)	Bulgaria, Greece
Maritsa/Evros (Thrace)	Turkey, Bulgaria, Greece
Prespa	Greece, Albania, FYROM

Figure: Main transboundary River Basin Districts

There is a considerable number of coordination arrangements on shared river basin, both bilateral and multilateral, covering practically all cross-border river basins. These are likely to become the starting point of the future co-ordination arrangements required in the WFD. The large river basin commissions (Danube, Elbe, Oder, and Rhine) involve also non-MS countries (several candidate countries as well as Switzerland and Liechtenstein). In the basin of Danube, Elbe and Oder, riparian countries have already taken decision at ministerial level to use those Commissions as a platform for the necessary co-ordination under the WFD. There are no formal agreements yet for cross-border river cooperation between Greece and its neighbours Albania, FYROM and Turkey.

Example: Danube river basin

The Danube basin is the largest river basin within an enlarged European Union, covering 817.000 km² and territory in 18 countries (Albania, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, FYROM, Germany, Hungary, Italy, Moldova, Serbia-Montenegro, Poland, Romania, Slovakia, Slovenia, Switzerland, and Ukraine).

Building on earlier cooperation, Danube riparian counties signed in 1994 the International Convention on Cooperation for the Protection and Sustainable Use of the River Danube; it came into force in 1998. Signatory Parties of the Convention have, at Ministerial level, committed themselves to use the International Commission under the Convention as the coordination platform for the implementation of the Water Framework Directive.

In making operational this Ministerial Decision, a Working Group has been established, chaired by the European Commission and developing a work programme for the implementation of the Directive. All riparian countries have already identified the borders of the river basin district within their territory. Basin-wide as well as regional/bilateral cooperation in on track, including identification and assignation of groundwater bodies. A concept for the development of the River Basin Management Plan for the entire Danube basin is on track, with coordination at the lowest possible level as the key principle, thus making best use of available experience and resources and optimising coordination for the whole river basin.

Map: World Bank

Example: Rhine river basin

The Rhine basin is one of the large river basins of Western Europe, covering

252.000 km² and territories in 9 countries (Austria, Belgium, France, Germany, Italy, Liechtenstein, Luxembourg, Netherlands, and Switzerland).

Cooperation on jointly protecting the river Rhine commenced in the 1950s when Rhine riparian counties signed an International Convention, covering the main stream of the Rhine between the outlet of Lake Constance and the North Sea. Cooperation further developed, in scope of protection and of geography. Separate agreements/conventions came into force for Lake Constance, for Moselle and Sarre and for the alpine part of the Rhine river upstream of Lake Constance.

Cooperation between riparian countries developed, now including for the main stream of the Rhine as well flood protection and protection of water-related ecosystems. Great public attention has been attracted by the ambitious "Salmon 2000" programme of the International Commission for the Protection of the Rhine River. Achievements in water quality of the Rhine river can duly be regarded as a European success story, the river developing from being nicknamed the "sewer of Europe" in the 1960s and 1970s to now being home again to the salmon.

All riparian countries in the Rhine basin, beyond the existing agreements, committed themselves at Ministerial level to jointly develop a coordinated river basin management plan for the whole Rhine basin for the implementation of the Water Framework Directive.

A Working Group has been established, chaired by the European Commission and developing a work programme for the implementation of the Directive. All riparian countries have already identified the borders of the river basin district within their territory. Work programme areas (sub-basins) have been identified. Basin-wide as well as regional/bilateral cooperation in on track, including identification and assignation of groundwater bodies. A concept for the development of the River Basin Management Plan for the entire Rhine basin is thus on track, with coordination at the appropriate level as the key principle, thus making best use of available experience and resources, integrating existing institutions including the International Commissions, administrations and bodies into the work and optimising coordination for the whole river basin.

4.3.1 Main transboundary agreements

This information is based on questionnaires prepared by working group 2.9 and replies from involved countries:

a) Bilateral agreements

- PT-ES: Albufeira Convention (1998) for all transboundary rivers: framework agreement for water protection and sustainable water use; there have been also earlier conventions for particular rivers and issues regarding water management.
- ES-FR: Several mixed commissions for cross-border rivers in the Pyrenees.
- GR-BG: Agreements on the Nestos and Ardas rivers.

- UK – IRL: (Northern Ireland – Republic of Ireland) Under the Belfast Agreement Ministers and, officials meet routinely to co-operate in environmental management in general aspects.
- Scandinavia: Finnish-Russian, Finnish-Swedish and Finnish-Norwegian Transboundary Water Commissions; legislative cooperation agreements between Norway and Sweden.
- DE-NL: agreement for the Ems river basin.

b) Multi-lateral agreements

- Rhine: International Commission for the Protection of the Rhine; Commission of Hydrology of the Rhine; Commission of Navigation on the Rhine, Coordinating Committee of Rhine Water Directors (see box);
- Maas: International Commission for the Protection of the Meuse/Maas (B and involved regions, F, NL; accession of D and L foreseen);
- Scheldt: International Commission for the Protection of the Schelde/Escaut (F, NL, B and its regions);
- Danube: International Commission for the Protection of the Danube (see box);
- Oder: International Commission for the Protection of the Oder River (CZ, D, EU, PL);
- Elbe: International Commission for the Protection of the Elbe River (CZ, DE, EU); informal Steering Committee for the WFD (AT, CZ, D, PL and EU);
- Prespa: Agreement between Greece, Albania and FYROM.

4.4 Designation of competent authorities

Identification of a competent authority or competent authorities is the responsibility of the individual Member State. According to article 3 (8) and (9), identification shall take place by December 2003, with a list of authorities to be provided to the Commission by June 2004.

Information presented provides a summary of the functions and fields of activity that these authorities need to cover in order to ensure that the objectives are met. Key functions are:

- Planning and implementing (article 13 and related articles)
- Monitoring (article 8)
- Ensuring public participation processes (article 14)
- Reporting (article 15)

Member States may choose to identify one single authority per basin with responsibilities for all functions and ecosystems or several authorities. If more than one authority is involved, appropriate co-ordination arrangements need to be established.

Existing structures, in particular those that have demonstrated their effectiveness, should be involved where appropriate, to make best use of experience creating synergies and, avoiding unnecessary costs.

The following table summarises the current institutional arrangements and planning practices in different countries. The information is based on responses received by involved countries to the questionnaire prepared by Working Group 2.9.

Existing Competent Authorities in Member States and Norway:

Country	Competent Authority on Water Management	Other levels of administration	Comments
Austria	Ministry of Agriculture, Forestry, Environment and Water Management	3 levels of administration: state, ('Länder') and districts	In 1995 the Federal Agency of Water Management was created, reporting to the Ministry.
Belgium	Flemish region: Flemish environment Agency, Administration of Environment, Nature, Land and water management, Administration of waterways and seaways.	In Flanders there are other levels of administration: (provinces and municipalities) partly responsible for water management	Coastal waters are the responsibility of the Federal Government.
Denmark	Ministry of Environment and Energy	Environmental administration decentralised at County and Municipal Councils level.	Scientific advice provided by the National Environment Research Institute
Finland	Ministry of the Environment Ministry of Agriculture and Forestry	13 regional environment centres reporting to the Ministry of Environment	Finnish Environment Institute is a national centre for research and development
France	Ministry of Environment and land planning	Basin Co-ordinating Prefect represents the State Regional Departments of the environment are State services implementing water legislation Water agencies are public bodies reporting to the Ministry of environment and Land Planning and responsible for the implementation of economic instruments for integration of sector water policies	
Germany	Länder (Federal states)	Federal government can enact water management frame laws (at federal level only framework legislation may be adopted)	Great diversity in water management organisation between the Federal States.
Greece	Inter-ministerial committee for water	Territory organised in	

Country	Competent Authority on Water Management	Other levels of administration	Comments
	resources and ministry for Development Environmental protection is responsibility of Ministry for the Environment, Physical Planning and Public Works	14 Water Districts, consistent with river basins	
Ireland	Mainly in local authorities. Department of Environment and Local Government has the responsibility of environment protection	Environmental Protection Agency is an independent body	
Italy	Ministry of Public Works Ministry of Environment has jurisdiction over water quality and treatment of effluents	Land protection act bestows powers on the regions with respect to define their river basins, drawing up regional basin plans and so on	Italian Hydraulic Services are organised on the basis of territorial scope
Luxembourg	Ministry of Environment	Administration within the Ministry, includes the water Division	-
The Netherlands	Ministry of Transport, Public works and water Management	Provinces responsible for regional water management plans, supervision of local water and wastewater management. Water Boards are responsible of operational water management including sewage	-
Norway	Ministry of the Environment, Ministry of Petroleum and Energy, Ministry of Health, Ministry of Fisheries	Different regional /local management under each ministry. 18 county offices, 434 municipalities	
Portugal	Ministry of Environment and Natural resources through the Instituto da Agua (INAG) is responsible for water resources development and water management planning at national level	Regional Directorates for the Environment and Natural Resources are territorial services of the Ministry	Territorial approaches of Directorates do not fit with river basins.
Spain	Ministry of Environment if rivers flow through more than one Autonomous Region (inter-regional basins). Autonomous regions if catchment areas lie entirely within one single of them (intra-regional basins).	In Inter.-regional basins, water management is responsibility of Water Authorities that depend on the Ministry	Coastal zone management depends on the Environment Ministry (central Government) Water quality and wastewater management in the coastal zone depends on the Autonomous

Country	Competent Authority on Water Management	Other levels of administration	Comments
			Regions
Sweden	At national level, 12 different authorities with different responsibilities.	21 County Administration Boards.	
United Kingdom	Department of Environment, Food and Rural Affairs, Scottish Executive and Department of Environment Northern Ireland are the Competent Authorities responsible for water management in England & Wales, Scotland and Northern Ireland respectively. Operational responsibility is expected to be delegated to the following bodies: Environment Agency in England & Wales Scottish Environment Protection Agency in Scotland Environment and Heritage Service in Northern Ireland.	Water supply and regulation and environmental conservation are the responsibility of other government bodies.	

Water management planning practices

Country	Plan	Legally binding status	Authority responsible	Period of time	State
Austria	-	-	-	-	-
Belgium	Water Action Programme Five Year Environment Policy Plan Regional Water Plan	-	-Walloon Region - Flemish Region - Brussels Region		For the Flanders region work on 11 sub-basin management plans has started. 11 sub-basin surface water quality plans under preparation, 4 of them (Dender, Ijzer, Demer and Nete) finalised.
Denmark	Second Action Plan for the Aquatic Environment	-	-	-	-
Finland	The target programme for water pollution control up to year 2005 Water protection plans for sub-catchments	-	Ministry of Environment Regional Environmental Centres	-	-
France	SDAGE (basin)	Yes	Basin committee. Local Water Committee	15 years reviewed every 5 years	6 large river basins approved. In 1997 2 overseas plans (Réunion and Guyana) approved. To further plans to be approved soon (Guadeloupe and Martinique) . Work on

Country	Plan	Legally binding status	Authority responsible	Period of time	State
	SDAGE (sub-basin)	No			90 sub-basin management plans commenced in 2002, 8 approved.
Germany	Water Management Framework Plans/ Water Management Plans	Yes	Länder		
Greece	Regional Plans of Water Resource Management		Water Districts		Proposed by 10 of the 14 water districts
Ireland	National Strategy to Combat Eutrophication				
Italy	River Basin Plan (*piano di bacino*).	Yes			
Luxembourg	Water Management General Plan				To be developed
The Netherlands	Strategic Policy Document/ Operational Plan/ The Provincial Strategic/ Operational Management Plans	Yes			
Norway	Water Resources Master Plan (National level) Protection Plan for Watercourses (National level) Spatial plans at regional and local level				
Portugal	National water master plan 15 river basin plans	Yes	DRAN/INAG	10 years 8 years	Approved
Spain	National Basin Plans	Yes	Ministry of Environment Basin authorities	10 and 20 year horizons Reviewed every 8 years	National Plan Approved in 2001; 13 Basin Management Plans approved in 1981; 8 Island Hydrological Plans on the Canaries approved recently; 2 more Plans elaborated but not approved yet (Galicia-Coast, Balearics)
Sweden	Spatial plans at regional and local level	No			
UK England & Wales	There are several frameworks for planning the management of water in England and Wales e.g. Catchment Abstraction Management Strategies (CAMS), Asset Management Planning (AMP) and Catchment	Mixed	EA	Review period: CAMS, AMP and CFMP every 6, 5 and 5 years, resp.	AMP is operational; CAMS and CFMPs are at initial stages of implementation.

Country	Plan	Legally binding status	Authority responsible	Period of time	State
	Flood Management Planning (CFMPs).				
Scotland	There are some developed Catchment Management Plans (Loch Lomond, River Almond). Scottish Executive has proposed Water Resources Management Strategies to consider abstractions on a catchment scale.				

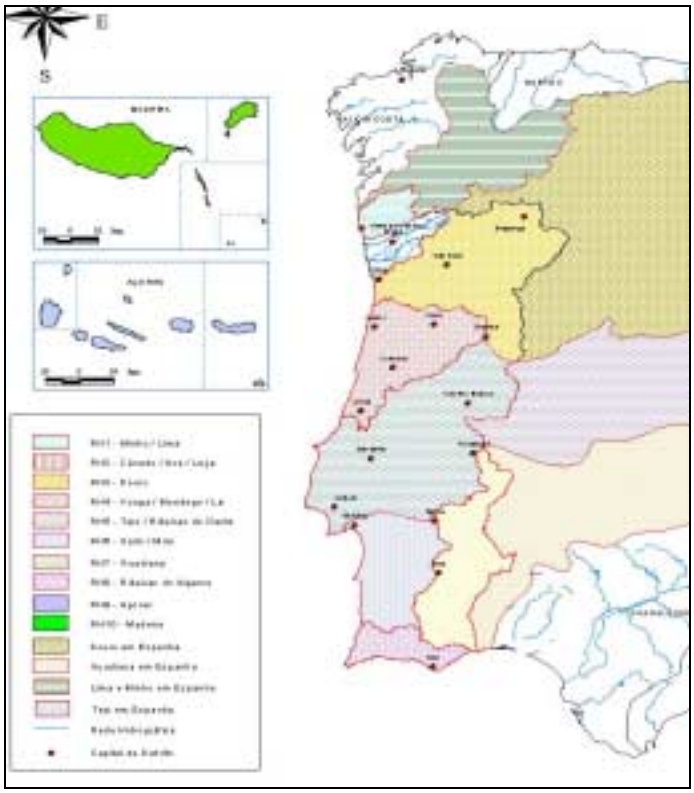
One of the conclusions from the information above is that the only Member States with elements of competent water management and planning authorities at river basin level are France and Spain. Nevertheless in the Spanish case some functions required in the WFD are the responsibility of other authorities (e.g. quality of coastal waters). These two countries have carried out legally binding river basin management plans developed by the river basin authorities themselves (SDAGE in FR and River Basin Hydrologic Plans in Spain). The Portuguese national water authority has also produced legally binding river basin water management plans.

In other Member Sates water management and planning is generally carried out along administrative boundaries, either at national level or by government bodies established at the regional or provincial level or by regional authorities (as in Germany) or Belgium. In these Member States, existing water management plans were developed either at national or catchment level or in some cases following the administrative boundaries (e.g. Federal States in Germany, provinces in the Netherlands, etc.). Not all of these plans are legally binding and enforceable.

SECTION 5 – OVERVIEW OF STATE OF PLAY IN IDENTIFYING RIVER BASIN DISTRICTS

This section addresses the present state of identifying river basin districts in Member States and Norway. In general terms it is based on graphic information (defined by EUROSTAT from topographic information source) and information provided by Member States. International RBDs have not been defined as such here. Nevertheless, the summary table presents an overview of all river basin districts, national and international. Detailed definition and assignment of coastal waters and aquifers at European scale is not addressed in this document.

- ***Portugal***: 10 proposed River Basin Districts including 8 continental and 2 island RBDs (Azores and Madeira). Source: Instituto da Água.



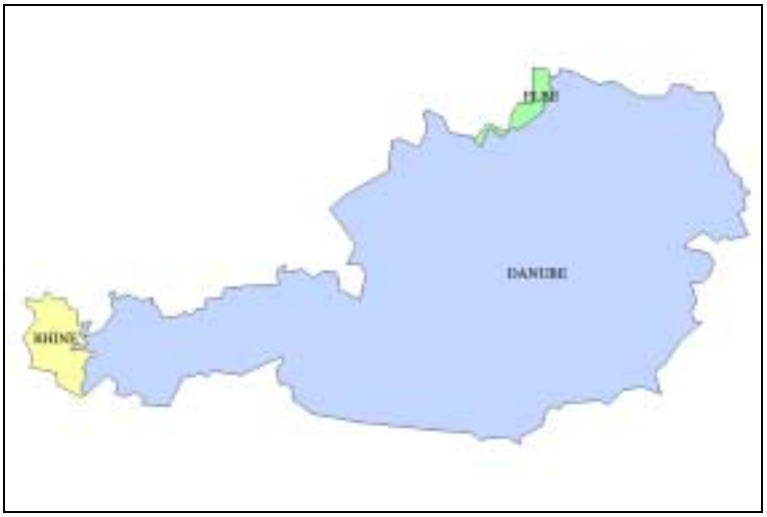
- ***Spain***: 14 River Basin Districts, including 12 continental RBDs and 2 archipelagos (Balearic islands and Canaries). Source: Ministerio de Medio Ambiente.

- ***France***: 12 proposed River Basin Districts, including 8 RBDs in Metropolitan France, 3 islands (Guadalupe, Martinique and Réunion) and 1 overseas department (Guyana). Source: Ministère de l'Environnement (Direction de l'Eau 2002).

- ***Italy:*** No official proposal on the Italian competent authorities is available yet. The enclosed map is taken from GISCO-EUROSTAT in order to provide a first idea. However the river basin districts will look differently.

- ***Greece:*** 14 River Basin Districts. Source: Survey made within the Working Group.

- ***Austria***: 3 River Basin Districts based on three major rivers (Danube, Rhine and Elbe). Source: *Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft*. Source: Survey made within the Working Group.



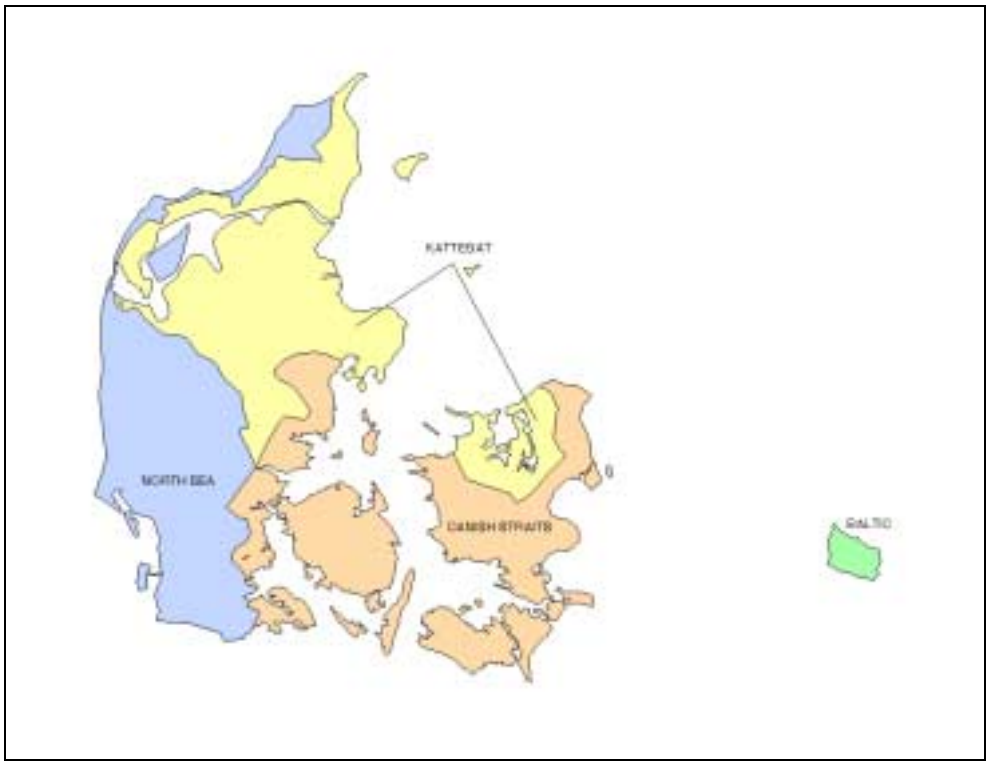
- ***Germany:*** 10 River Basin Districts have been proposed, 7 of them for major rivers (*Danube*, *Elbe*, *Ems*, *Meuse*, *Oder*, *Rhine and Weser*), 6 of which are the German parts of international RBDs, and 3 of them are smaller tributaries to the Baltic and the North Sea. Source: Umweltbundesamt, February 2000. Source: Survey made within the Working Group.

- ***Belgium:*** 3 major River Basin Districts have been selected corresponding with mayor rivers (Meuse, Schelde and Ijzer), further two correspond to Belgian parts of International River Basin districts (Rhine and Seine). Source: Survey made within the Working Group.

- ***The Netherlands:*** 4 River Basin districts (*Meuse, Scheldt, Rhine and Ems*). Source: Survey made within the Working Group.

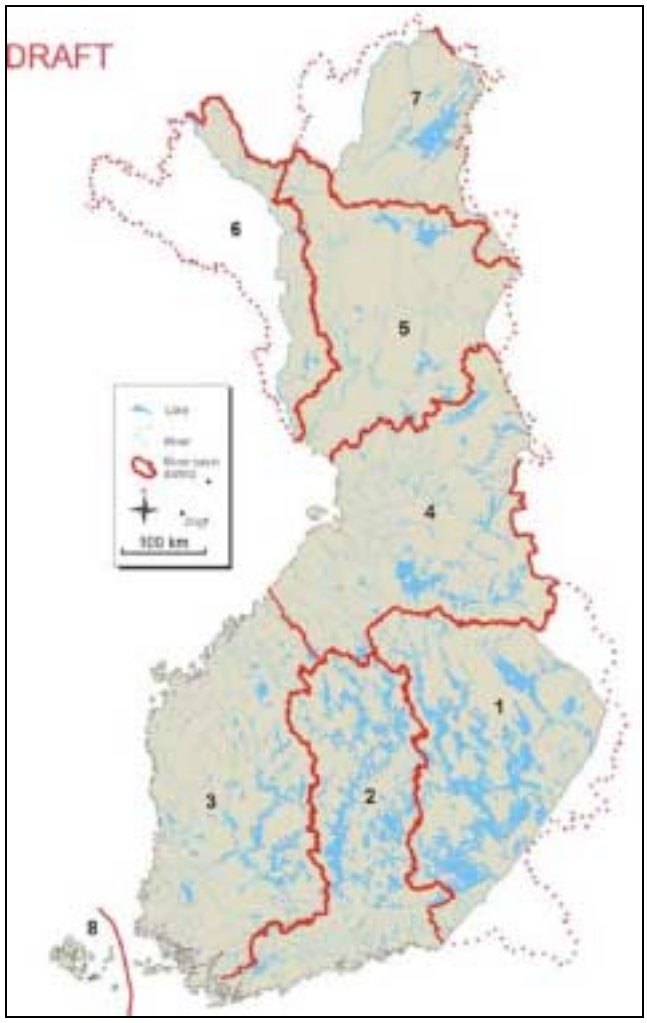
- ***Luxembourg***: Luxembourg parts of International River Basin Districts *Rhine* and *Meuse/Maas*. Source: Survey made within the Working Group.

- ***Denmark***: 12-model for the designation of River Basin Districts. Source: Survey made within the Working Group.

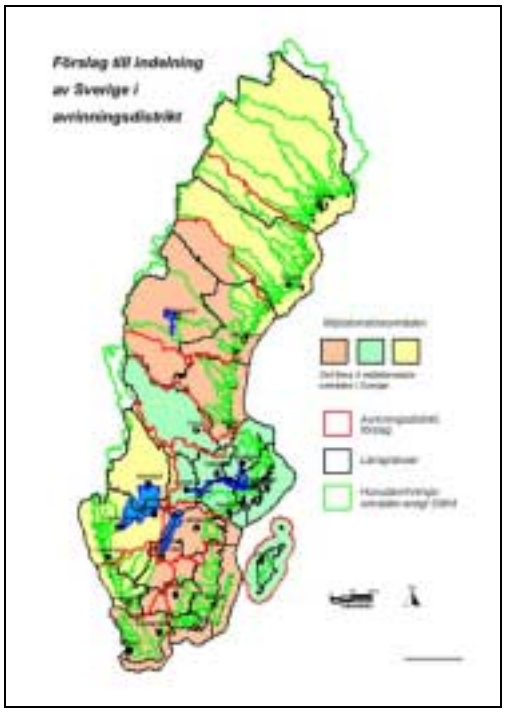


County borders and coastline: red lines
River Basin Districts: coloured

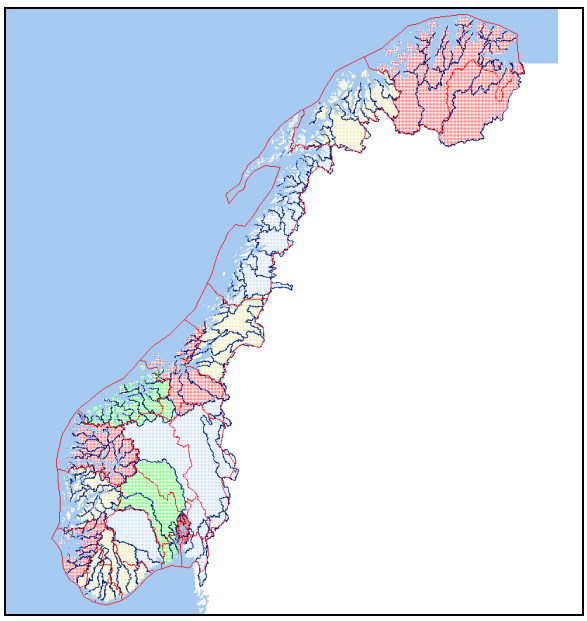
- ***Finland:*** Proposal for 8 River Basin Districts, 5 of them include the Finnish parts of international RBDs. Source: Survey made within the Working Group.



- ***Sweden***: No proposals for RBDs are available yet, discussion is underway in the frame of a government commission. Expected number will be between 4 and 12. The attached map shows the alternative of 12 RBDs (red lines). Source: Swedish Ministry of the Environment. Source: Survey made within the Working Group.



- ***Norway***: The number of future River Basin Districts will probably be between 6 and 14, the latter being the main alternative and illustrated in the figure (shaded colours). Source: Survey made within the Working Group.



- ***Ireland:*** 7 *Water Resources Regions*. Source: Survey made within the Working Group.

- ***United Kingdom:***

  England and Wales: 11 River Basin Districts as proposed in the first consultation paper. Source: Department of Environment, Food and Rural Affairs (DEFRA). The RBDs have yet to be finalised.

  Scotland: RBDs have not yet been defined; however 1 or 3 River Basin Districts, plus cross border arrangements with England are most likely.

  Northern Ireland: One agency covering two International River Basin Districts and one River Basin District.
  Source: Survey made within the Working Group.

SUMMARY

This document addresses the identification of river basin districts as set out in Directive 2000/60/EC establishing a framework for Community action in the field of water policy (the Water Framework Dirctive). It builds on the input and feedback from a wide range of experts and stakeholders from Member States as well as Candidate Countries. Whilst the document proposes an overall methodological approach, the methodology for the specific river basin will need to be tailored to specific regional and river basin circumstances.

Within its sections it provides

- an introduction into the key elements of Water Framework Directive, particularly on river basins
- an overall approach to the identification of river basin districts
- a common understanding of identification of river basin districts, with a view to surface waters, groundwaters and coastal waters
- an overview on current cooperation in transboundary river basins
- an overview on state of play of identification of river basin district throughout Member States and Norway
- legal references to the Water Framework Directive on key items
- a glossary of frequently used terms
- coordinates of experts involved in the Working Group

ANNEXES

Overview

Annex I	Legal references: Elements of identifying of river basin districts in the Water Framework Directive
Annex II	Glossary
Annex III	Selected references
Annex IV	List and contact information of the experts of WG 2.9 on Best Practices in River Basin Management Planning.

Annex I – Legal references: Elements of identifying of river basin districts in the Water Framework Directive

Article 2: Definitions

"River basin district" means the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under Article 3(1) as the main unit for management of river basins.

"Competent Authority" means an authority or authorities identified under Article 3(2) or 3(3).

Article 3: Co-ordination of administrative arrangements within River Basin Districts

1. Member States shall identify the individual river basins lying within their national territory and, for the purposes of this Directive, shall assign them to individual River Basin Districts. Small river basins may be combined with larger river basins or joined with neighbouring small basins to form individual River Basin Districts where appropriate. Where groundwaters do not fully follow a particular river basin, they shall be identified and assigned to the nearest or most appropriate River Basin District. Coastal waters shall be identified and assigned to the nearest or most appropriate River Basin District or Districts.

2. Member States shall ensure the appropriate administrative arrangements, including the identification of the appropriate competent authority, for the application of the rules of this Directive within each River Basin District lying within their territory.

3. Member States shall ensure that a river basin covering the territory of more than one Member State is assigned to an international River Basin District. At the request of the Member States involved, the Commission shall act to facilitate the assigning to such international River Basin Districts.

Each Member State shall ensure the appropriate administrative arrangements, including the identification of the appropriate competent authority, for the application of the rules of this Directive within the portion of any international River Basin District lying within its territory.

4. Member States shall ensure that the requirements of this Directive for the achievement of the environmental objectives established under Article 4, and in particular all programmes of measures are co-ordinated for the whole of the River Basin District. For international River Basin Districts the Member States concerned shall together ensure this co-ordination and may, for this purpose, use existing structures stemming from international agreements. At the request of the Member States involved, the Commission shall act to facilitate the establishment of the programmes of measures.

5. Where a River Basin District extends beyond the territory of the Community, the Member State or Member States concerned shall endeavour to establish appropriate co-ordination with the relevant non-Member States, with the aim of achieving the objectives of this Directive throughout the River Basin District. Member States shall ensure the application of the rules of this Directive within their territory.

6. Member States may identify an existing national or international body as competent authority for the purposes of this Directive.

7. Member States shall identify the competent authority by the date mentioned in Article 24.

8. Member States shall provide the Commission with a list of their competent authorities and of the competent authorities of all the international bodies in which they participate at the latest 6 months after the date mentioned in Article 24. For each competent authority the information set out in Annex I shall be provided.

9. Member States shall inform the Commission of any changes to the information provided according to paragraph 8 within three months of the change coming into effect.

Article 24: Implementation

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive at the latest 22 December 2003. They shall forthwith inform the Commission thereof.

When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such a reference on the occasion of their official publication. Member States shall lay down the methods of making such a reference.

2. Member States shall communicate to the Commission the texts of the main provisions of national law that they adopt in the field governed by this Directive. The Commission shall inform the other Member States thereof.

Annex II - Glossary

Note: All definitions have been extracted from article 2 of the Water Framework Directive (WFD) or from the UNESCO Glossary (UNESCO. International Hydrological Program. Paris, 1994).

Annual runoff: Total volume of water that flows during a year, usually referring to the outflow of a drainage area or river basin. (UN).

Aquifer: Surface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater (WFD).

Climate: Synthesis of weather conditions in a given area, characterised by long-term statistics (mean values, variances, probabilities of extreme values, etc.) of the meteorological elements in that area (UN).

Coastal Water: Surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters (WFD).

Ecosystem: System in which, by the interaction between the different organisms present and their environment, there is a cyclic interchange of materials and energy, (UN)

Estuary: That generally broad portion of a stream near its outlet. (UN)

Evapo-transpiration: Quantity of water transferred from the soil to the atmosphere by evaporation and plant transpiration. (UN)

Fresh Water: Naturally occurring water having a low concentration of salts, or generally accepted as suitable for abstraction and treatment to produce potable water. (UN)

Groundwater: All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil (WFD).

Groundwater recharge: Process by which water is added from outside to the zone of saturation of an aquifer, either directly into a formation, or indirectly by way of another formation. (UN)

Groundwater runoff: That part of the runoff which has passed into the ground, becomes groundwater, and is discharged into a stream channel as spring of percolation water. (UN)

Histogram: Univariate frequency diagram with rectangles proportional in area to the class frequency, erected on a horizontal axis with width equal to the class interval. (UN)

Hydrogeological boundary: Lateral discontinuity in geological material, marking the transition from the permeable material of an aquifer to a material of significantly different hydrogeological properties (UN).

Hydrological regime: Variations in the state and characteristics of a water body which are regularly repeated in time and space and which pass through phases, e.g. seasonal (UN).

Infiltration: Flow of water through the soil surface into a porous medium (UN).

Median: For a continuous frequency distribution, the value of the variant which divides the total frequency into two equal halves. For *n* discrete data, the middle value of the ranked data if *n* is odd, or the mean of the two central values if *n* is even. (UN)

Outflow: Flow of water out of a stream, lake, reservoir, container, basin, aquifer system, etc (UN)

Remote sensing: Measurement or acquisition of information on some property of an object or phenomenon by a recording device that is not in physical or intimate contact with the object or phenomenon under study. (UN)

River basin: Area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly lakes into the sea at a single river mouth, estuary or delta (WFD).

River Basin District: Area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under Article 3 (1) as the main unit for management of river basins (WFD).

Sub-basin: Area of land from which all surface run-off flows through a series of streams, rivers and, possible lakes to a particular point in a water course (normally a lake or a river confluence) (WFD).

Surface Water: Inland waters, except groundwater; transitional waters and coastal waters, except in respect of chemical status for which it shall also include territorial waters (WFD).

Tidal range: Difference in height between high tide and a consecutive low tide (UN).

Transitional waters*:* Bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows (WFD).

Water Management: Planned development, distribution and use of water resources (UN).

Water table: Surface within the zone of saturation of an unconfined aquifer over which the pressure is atmospheric (UN).

Annex III - Selected references

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http://www.wwf.org

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