

The European Water Framework Directive and its implementation in Bavaria



## River basin management planning for rivers, lakes and groundwater

River basin management plans and programmes of  
measures for the period 2010 – 2015

wasser



# Instruments for management planning: river basin management plans and programmes of measures

*Well under way towards a good ecological status for all water bodies*

The European Water Framework Directive (WFD) takes a comprehensive approach to protecting water bodies while promoting the sustainable use of water resources. The key objective is to reach good status in all waters.

River basin management plans and programmes of measures were first set up in 2009. They are important instruments for achieving the objectives introduced by the Water Framework Directive. The commenced detailed project planning and the implementation of water management, agricultural and policy measures are important steps towards reaching good status.

Good water status can only be achieved when all those responsible for the implementation of measures and all groups of society work together. With this brochure we wish to provide you with some important information on river basin management planning. We would very much appreciate it if you would also take up the opportunities to participate in this process.



*C. Kumutat*

Claus Kumutat  
President

## River basin management plans and programmes of measures point the way forward

Water bodies do not observe political borders. River basin management therefore follows a catchment-based approach. Bavaria shares the international river basins Danube, Rhine and Elbe. In addition, Bavaria has a small share of the Weser river basin.

In Germany, the river basin management plans and programmes of measures are set up by the Länder or by the river basin commissions. Where coordination is required, information is exchanged across the borders and solutions are jointly developed.

The river basin management plans provide in-depth information on the respective river basin, existing pressures, the status of the water and on necessary actions. The programme of measures contains measures for reaching the environmental objectives.

For river basin management planning the waters are divided into water bodies. In Bavaria, 813 river water bodies, 55 lake water bodies with a water surface larger than 0.5 km<sup>2</sup>, as well as 69 groundwater bodies were delineated. To obtain an accurate picture of the status of our waters, Bavaria maintains a dense network of monitoring stations with a comprehensive chemical and biological monitoring programme.



- |   |  |
|---|--|
| <b>River basin districts</b>  | — main watersheds of the Danube, Rhine, Elbe and Weser |
| <span style="display:inline-block; width:15px; height:15px; background-color:lightblue; border:1px solid black;"></span> Danube | — district borders of local water authorities          |
| <span style="display:inline-block; width:15px; height:15px; background-color:lightgreen; border:1px solid black;"></span> Rhine | ■ seats of local water authorities                     |
| <span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span> Elbe      | □ seats of district governments                        |
| <span style="display:inline-block; width:15px; height:15px; background-color:grey; border:1px solid black;"></span> Weser       |  |

*River basin districts and administrative borders for water management in Bavaria*



# Implementation steps and public participation

## Fixed deadlines for the implementation of the WFD facilitate the achievement of the objectives

The Water Framework Directive clearly defines the individual steps for its implementation. The mandatory deadlines are given in the timetable below. The regular planning cycles are also shown therein.

## Active citizen involvement in river basin management planning is important to us

In Bavaria, all citizens and all public interest groups can participate in the WFD implementation process – whether by taking part in round table discussions, meetings or panel discussions on water issues, or, in par-

ticular, by participating in consultations that are held in three stages. The consultations are part of developing and updating the river basin management plans and the programme of measures. They are held

- three years before completing the river basin management plans: these address the time schedule and work programme,
- two years before completing the river basin management plans: these address key water management issues,
- one year before completing the river basin management plans: these address drafts of the river basin management plans.

The drafts of the programmes of measures are consulted with the public within a strategic environmental assessment.

More details on the implementation of the Water Framework Directive and, in particular, all documents and data related to river basin management planning are available on [www.wrrl.bayern.de](http://www.wrrl.bayern.de).

This includes the current river basin management plans and programmes of measures valid in Bavaria.

You can also visit the water management online mapping service (Kartendienst Gewässerbewirtschaftung) at the LfU website [www.lfu.bayern.de](http://www.lfu.bayern.de) > wasser > wrrl > kartendienst. The water management online mapping service provides access to detailed maps as well as facts and figures on river basin management planning. It is possible, for instance, to create a profile and a map of all Bavarian water bodies showing the most important basic information as well as data on status analysis and planning. The map service also provides information on monitoring stations and monitoring results.

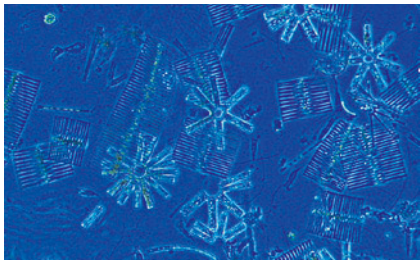
	2000	Entry into force of the WFD
	2003	Transposition of EU law into national law
	2004	Publication of the river basin analysis
	2006	Setting up of the monitoring programmes
	2009	First river basin management plans and programmes of measures
1 <sup>st</sup> planning cycle	2012	Progress report on the implementation of the programme of measures
	2013	Update of the river basin analysis
	by 2015	Review of the river basin management plans and programmes of measures
	2015	Publication of the updated river basin management plans and programmes of measures
2 <sup>nd</sup> planning cycle	2018	Progress report on the implementation of the programme of measures
	2019	Update of river basin analysis
	by 2021	Review of the river basin management plans and programmes of measures
	2021	Publication of the updated river basin management plans and programmes of measures
3 <sup>rd</sup> planning cycle	2024	Progress report on implementation of the current programme of measures
	2025	Update of river basin analysis
	by 2027	Review and, if necessary, update of the river basin management plans and programmes of measures
	after 2027	Update in a 6-year cycle, if necessary



The river Isar near Mittenwald

# Overview of key water body monitoring results

Examples of typical flora and fauna as indicators of the ecological status (biological quality components in brackets)



Diatoms (phytoplankton)



Water lily (macrophytes and phytobenthos)



Stone fly larva (macrozoobenthos)



Whitefish (fish fauna)

The first analysis carried out in 2004 and the subsequent continuous monitoring of water bodies according to the new standards defined in the Water Framework Directive show that the investments made in the protection of water bodies over the past years have paid off. The pressures on inland waters from discharge of sewage works and industrial plants are low, many pollutants are no longer detectable in the water. Furthermore, many straightened and dammed rivers have undergone near-natural restructuring and river continuity has partially been restored, i.e. for fish and other water dependent fauna.

However, 200 years of intensive use and development of waterways can not be undone in just a few years. Important water use of rivers are navigation or energy production, river structures are also needed and wanted by society for flood protection. According to the WFD, water bodies whose desired natural status cannot be restored due to uses and modifications of this kind, can be designated as "heavily modified water bodies" in the river basin management plan. The target objective is then adjusted to the respective situation.

Changes in the natural water body structure and flow patterns are subsumed under the term "hydromorphological modifications". These modifications along with the nutrient pressure from agricultural land, for example, are frequently the cause of water bodies not attaining a good status.

The common task is to further reduce these pressures and to plan and implement measures for water protection and water revitalisation.

## Status of surface water bodies

The status of a surface water body is a function of its ecological and chemical status. For heavily modified and artificial water bodies the ecological potential is determined instead of the ecological status.

The ecological status (or the ecological potential) is primarily assessed and monitored using biological quality components. In doing so, the frequency and diversity of "typical life forms" are considered (e.g. certain algae or fish fauna), as are any deviations from a natural reference condition.

Surface waters	Ecological status
4 (0,5 %)	high
193 (22,2 %)	good
393 (45,3 %)	moderate
228 (26,2 %)	poor
44 (5,1 %)	bad
6 (0,7 %)	cannot be assessed

*In approximately one quarter of the surface water bodies the ecological status / ecological potential is good or better.*

To determine the chemical status the surface waters are tested for relevant priority water pollutants, for example, pesticides and heavy metals such as cadmium and mercury. The environmental quality standards (threshold values) to be observed have been uniformly defined for the whole of Europe.

Surface waters	Chemical status
852 (98,2 %)	good
10 (1,1 %)	not good
6 (0,7 %)	cannot be assessed

*The chemical status of almost all surface waters in Bavaria is good.*

# Status of rivers, streams and lakes



## Ecological status/potential

### - rivers

- high
- good
- moderate
- poor
- bad
- not classified

### - lakes

- ▲ high
- ▲ good
- ▲ moderate
- ▲ poor
- ▲ cannot be classified as yet

- main watersheds of Danube, Rhine, Elbe, Weser
- seat of district authority
- self-governed towns
- settlement area
- national border
- state border

Surface water bodies that have not reached the environmental objective of good ecological status or potential can be found throughout Bavaria.



# Groundwater status

## Chemical status of groundwater bodies

The European Groundwater Directive governs the assessment of groundwater chemical status. It defines threshold values for nitrate and pesticides as well as their degradation products.

In Bavaria certain deficits in the chemical status have been revealed due to pressures from nitrate and – on a smaller scale – from pesticides.

Groundwater body	Chemical status
47 (68 %)	good
22 (32 %)	poor

The chemical status of two thirds of the groundwater bodies is good.

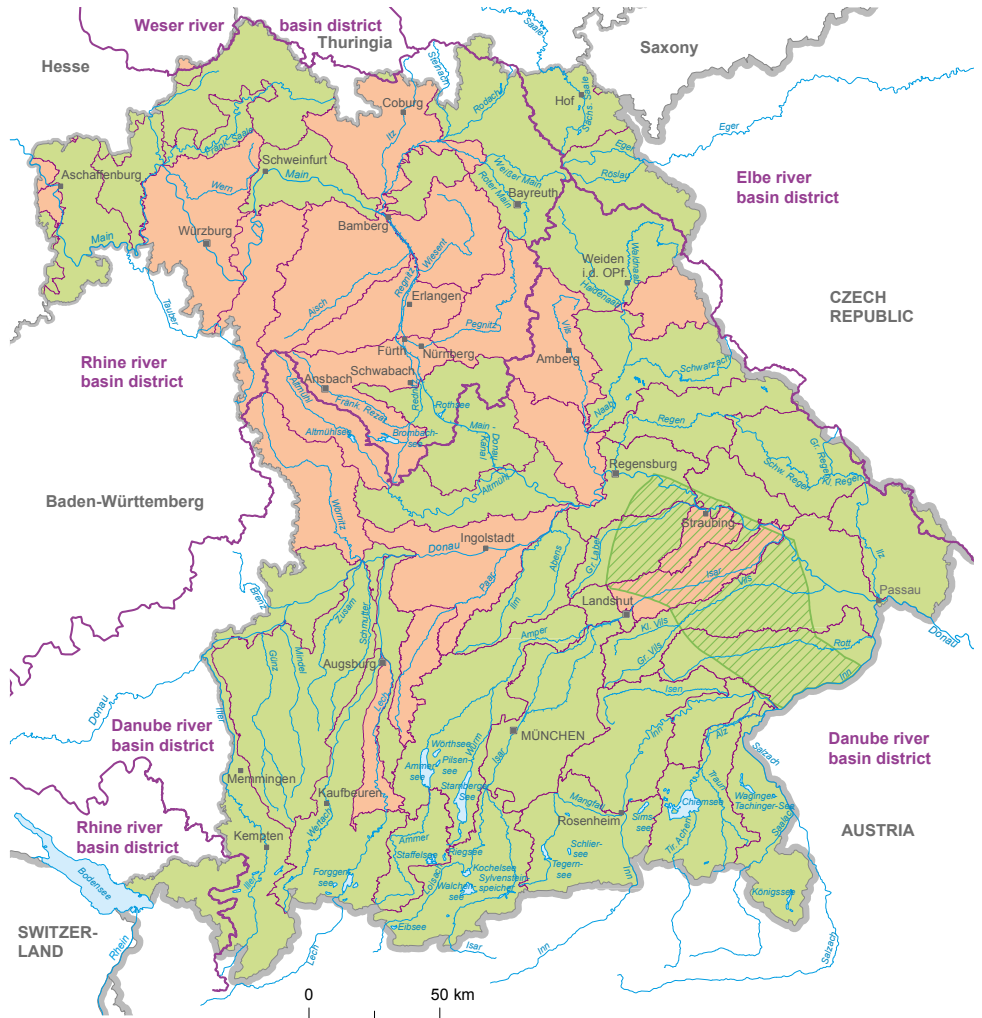
## Quantitative status of groundwater bodies

In addition to the chemical status the quantitative status of groundwater needs to be assessed.

The quantitative status of all groundwater bodies in Bavaria is good. The overall status of groundwater bodies is therefore determined by the chemical status alone.



Taking a groundwater sample from the cave Salzgrabenhöhle in the Berchtesgaden National Park



### Classification of chemical status

- good
- good (deep water body „thermal groundwater“)
- poor

- main watersheds of Danube, Rhine, Elbe, Weser
- boundary of groundwater bodies
- seat of district government
- self-governed towns
- national border
- state border

Most groundwater bodies that have not yet reached good chemical status are in the western part of northern Bavaria

# Measures and achievement of environmental objectives

## Measures for reaching the objectives set out in the management plans

Water bodies that have not yet reached a good status or that are at risk of failing good status classification need targeted assistance: programmes of measures define measures that are designed to specifically and sustainably improve the water body status. Key actions planned in Bavaria are

- restoration (ecological improvements in the water body structure and discharge conditions)
- measures for improving continuity of rivers and streams
- upgrading of sewage treatment plants as well as
- measures for sustainable agriculture to reduce the impact on water bodies.

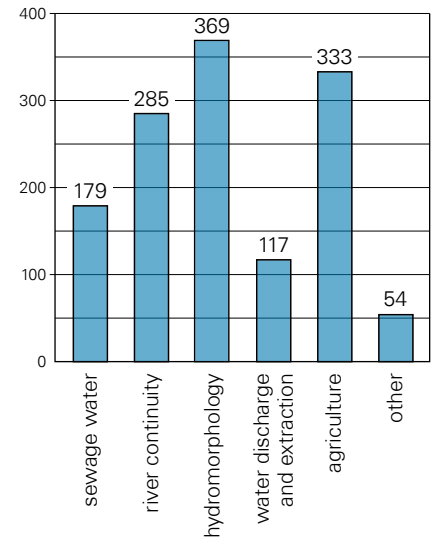
Concrete individual measures on surface waters are planned and implemented by the owners and users of the water bodies or by the parties responsible for water body maintenance, i. e. by the state, local authorities, companies or individuals. The reduction of the pollution load is the responsibility of the plant operator. Farmers can make a substantial contribution by adopting more sustainable land use and agricultural practices. To this end they can benefit from support in form of advisory services provided by specially trained water consultants from the agricultural authorities and from government funding under various programmes, e. g. the Cultural Landscape Programme (KULAP). Municipalities are also entitled to receive state funding for the implementation of appropriate measures on local water bodies, for instance. These supporting tools are aimed to motivate and promote the currently voluntary implementation of measures.

## When will water management objectives be reached?

The river basin management plans estimate, which water bodies could reach the target status by the year 2015. For several water bodies the deadline for reaching the target status will need to be extended due to natural conditions, difficulties in the technical implementation or disproportionately high costs required for the implementation of the measures.

Currently, 21 percent of river water bodies and 51 percent of lake water bodies have already achieved the set objectives. Measures already implemented and additional measures initiated since the publication of the river basin management plans should increase the percentage of the river water bodies attaining the objectives to 39 percent by the year 2015. As the restoration process in lake water bodies is slower, by the year 2015 no significant change is to be expected in the status of these water bodies.

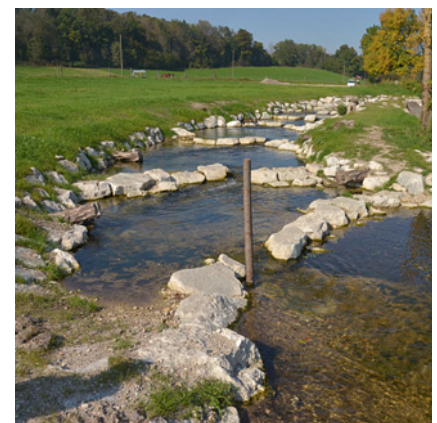
68 percent of all groundwater bodies were in good status in 2009. By the year 2015 no significant increase in the number of groundwater bodies of good status is to be expected as the restoration of groundwater - once it has been contaminated - is difficult and can take several years. Additional efforts will be required in this respect due to the increased production of biofuels and more intense agricultural operations.



Planned measures for achieving the set objectives up until 2015 (analysis based on number of water bodies)



Good agricultural practice that protects water includes the planting of catch crops such as Phacelia. It reduces the input of nitrate into the groundwater.



A new by-pass stream improves biological continuity in the river Attel.

# Key contacts for all matters concerning the Water Framework Directive

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