



WATER FRAMEWORK DIRECTIVE

**Results of the review from the view
point of a region – example Bavaria**

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October 2005**



Objectives from long time before the WFD





Objectives of the WFD



Good status

Good ecological potential



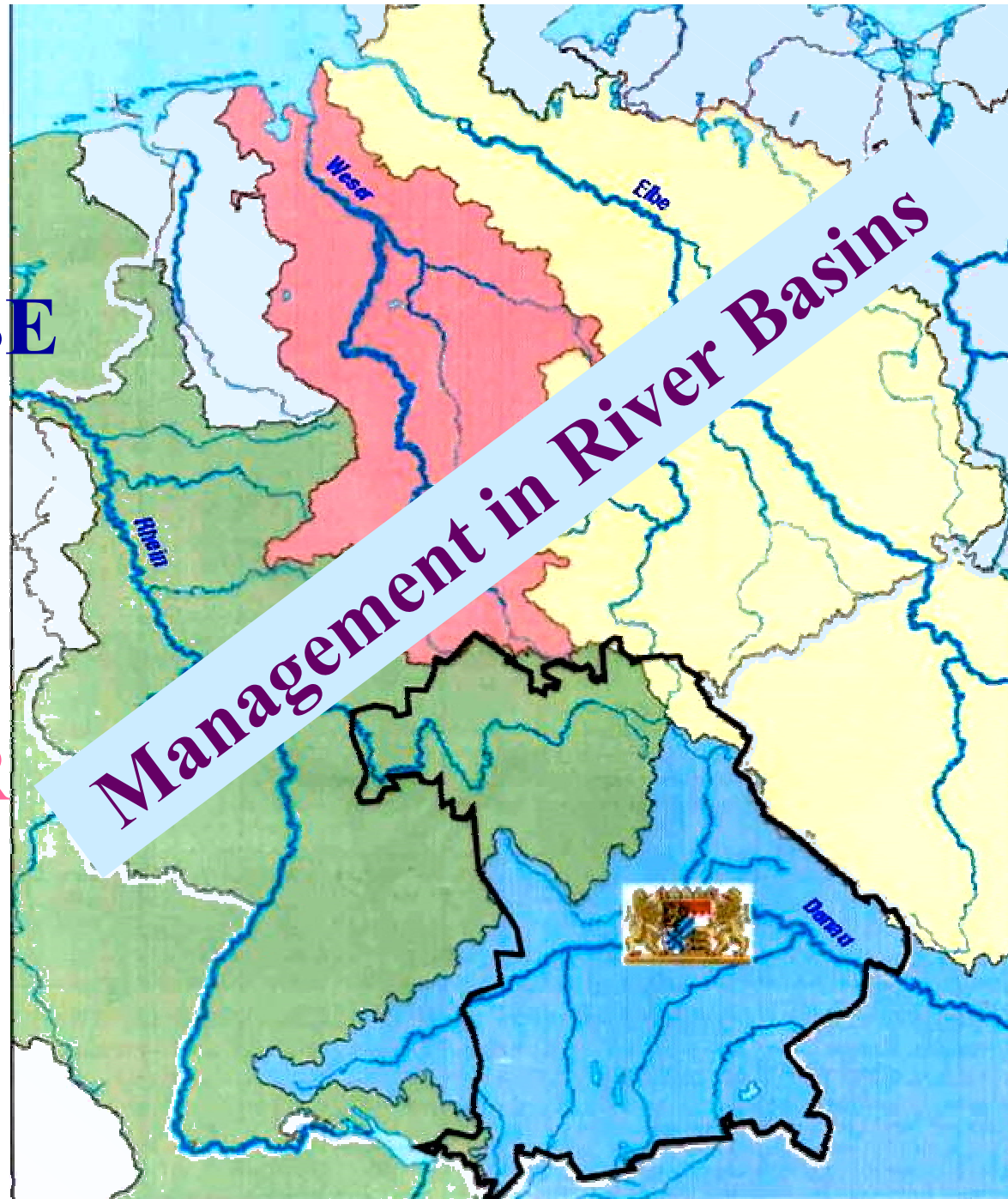


•DANUBE

•RHINE

•ELBE

•WESER



Flussgebietseinheiten in Deutschland nach der Wasserrahmenrichtlinie





WFD



CIS Guidance Papers – EU



LAWA Guidelines – Germany



Bavarian Specifications



**Implementation of the WFD
in Bavaria**

ICPDR

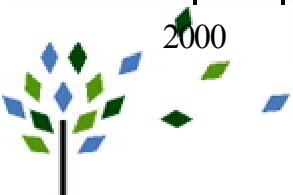
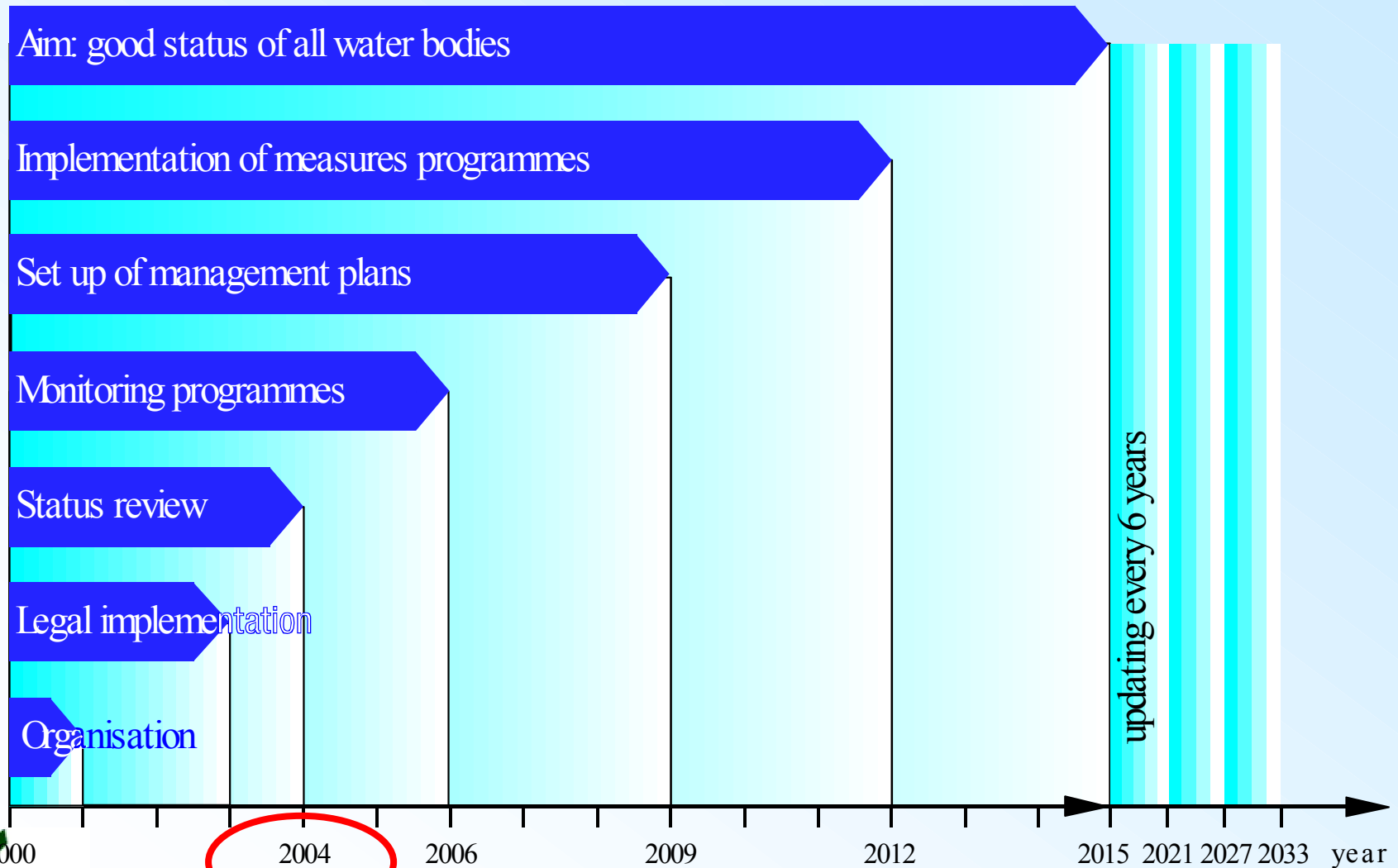
IKSR

IKSE





Planning and deadlines for the WFD

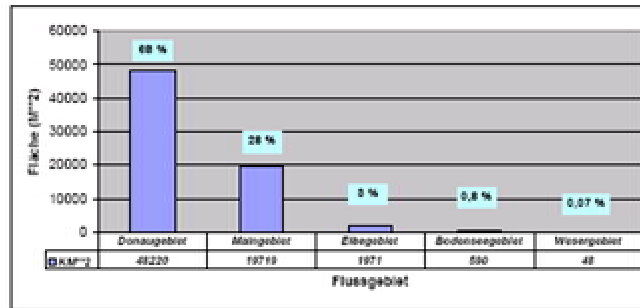




Organisation - in Bavaria

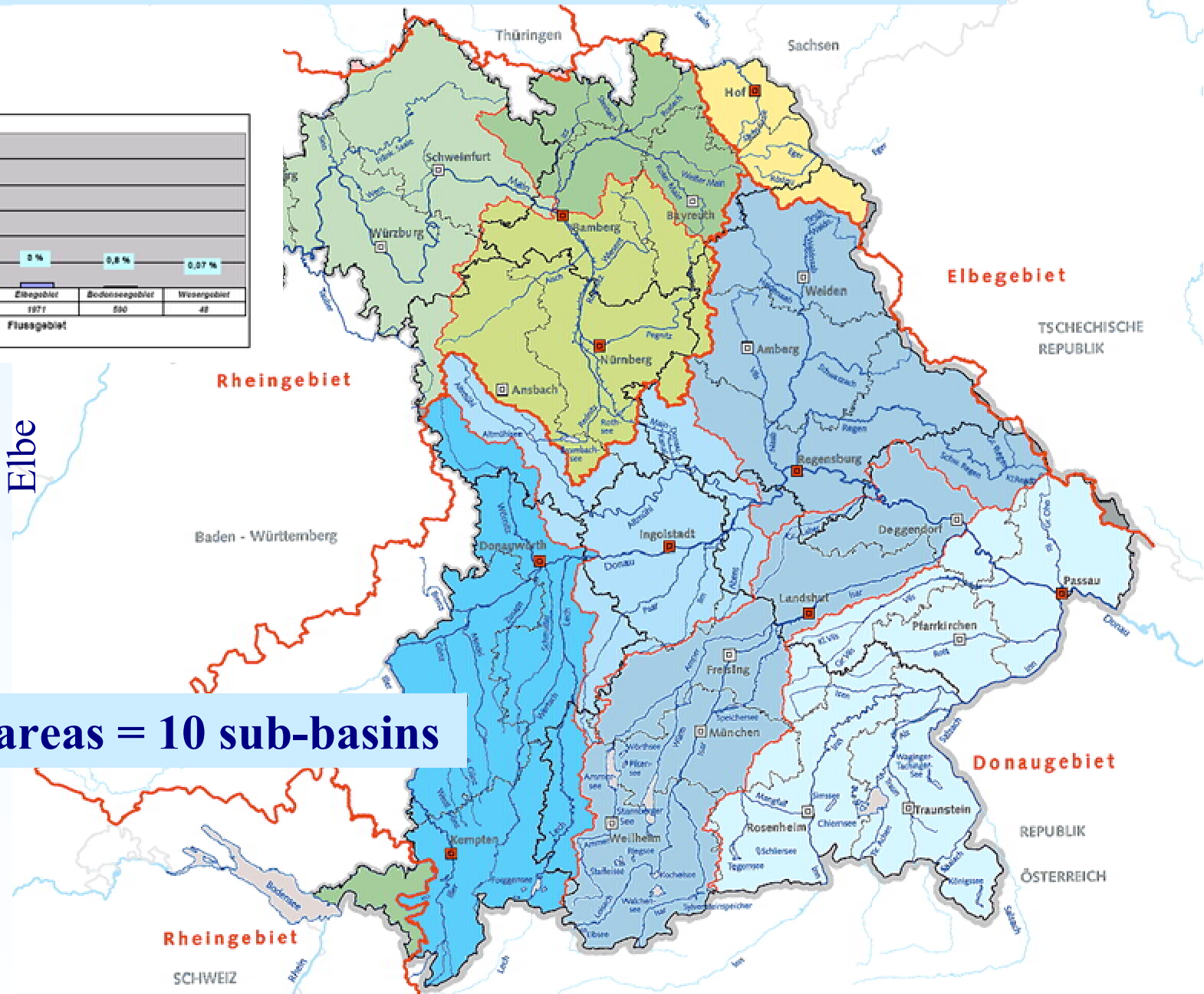


Flussgebiet	KM ²	%-Anteil
Donauegebiet	48220	68,35
Maingebiet	19719	27,95
Elbegebiet	1971	2,79
Bodenseegebiet	590	0,84
Wesergebiet	48	0,07
	70648	100,00



Danube
Rhine
Elbe

10 working areas = 10 sub-basins





Legal implementation of the WFD

- **Federal Framework Law -
Adaptation of the Federal Water Law: 16.06.2002**
- **State Water Laws -
Adaptation of the Bavarian Water Law: 01.08.2003**
- **Decree to implement annexes II und V WFD –
Bayer. Gewässerzustandsverordnung: 01.03.2004**



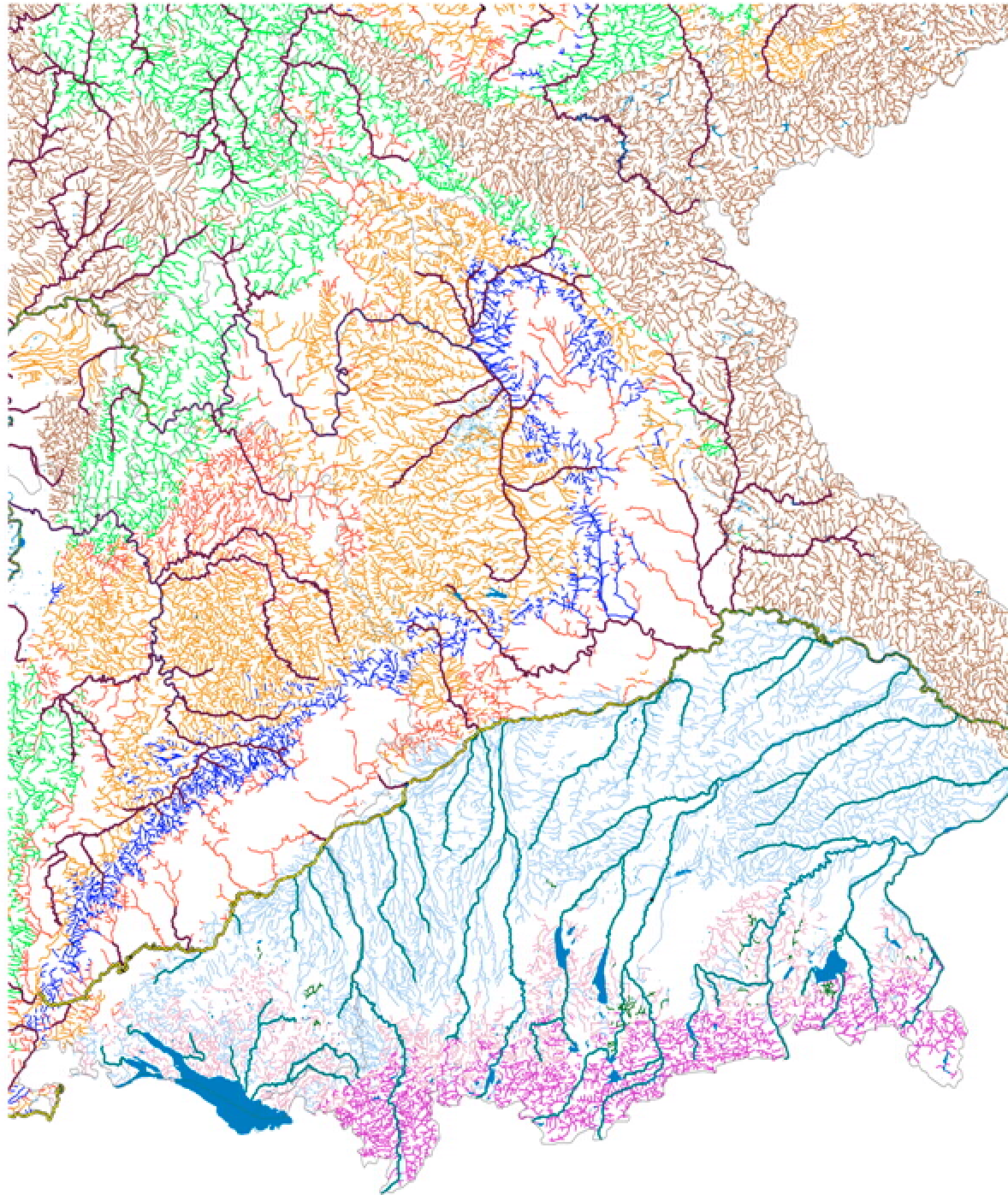


Status review 2004

(Art. 5 WFD, Annex II and III)

- **Description of water characteristics:**
 - water types and their reference conditions
- **Assessment of the impact of human activities on the status of waters:**
 - Determination of significant pollution
 - Evaluation of impacts
 - Risk assessment
- **Economic analysis of water use.**





Surface Water Types

14 types rivers

7 types lakes



Isar



Typ 4 Kies und steingeprägte Flüsse Voralpenland



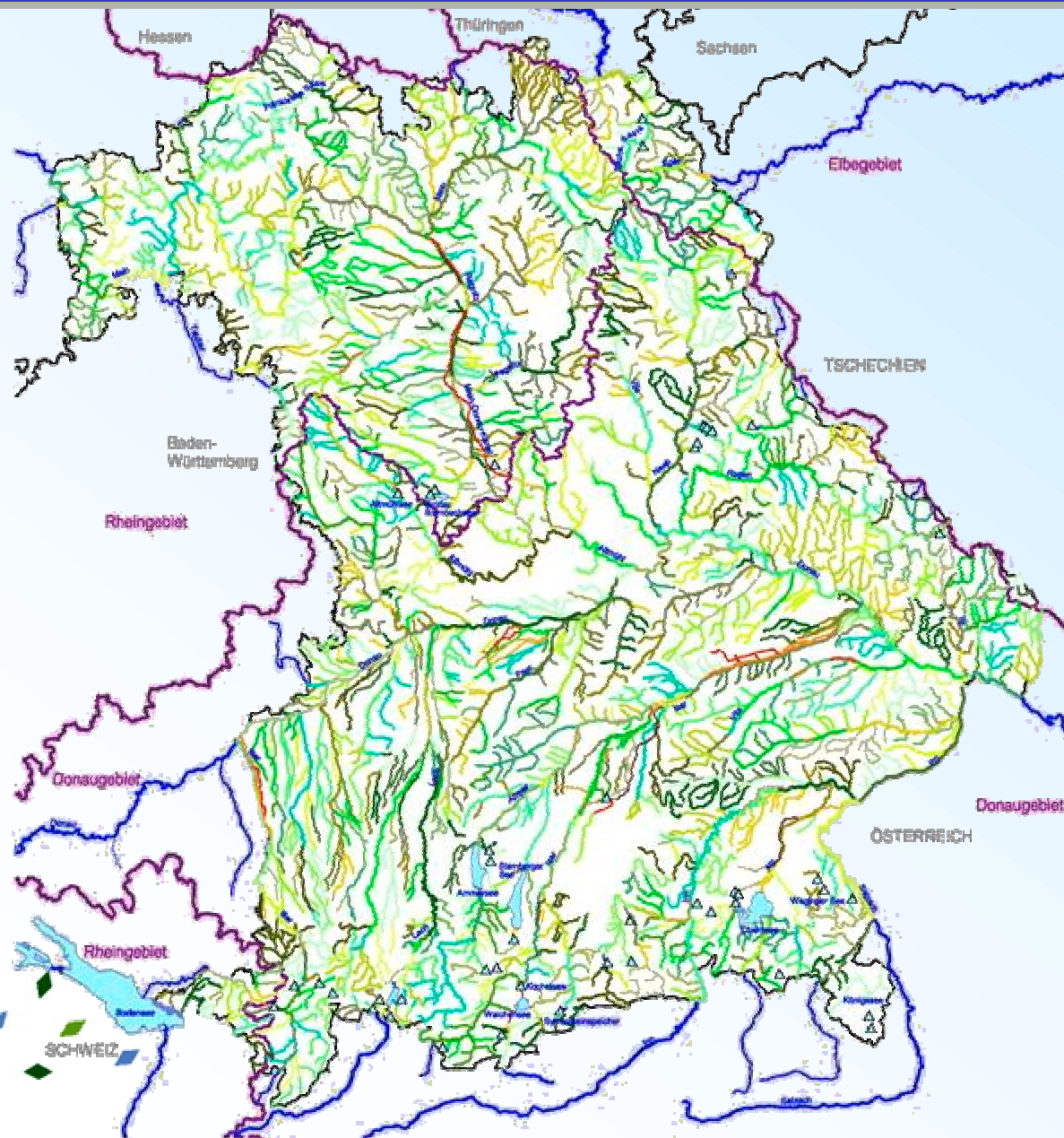
Regen

Typ 9.1 silikatische Mittelgebirge (Jura)





Surface Water Bodies



900 SWB

Ø 26 km

**23 435 km total
length**

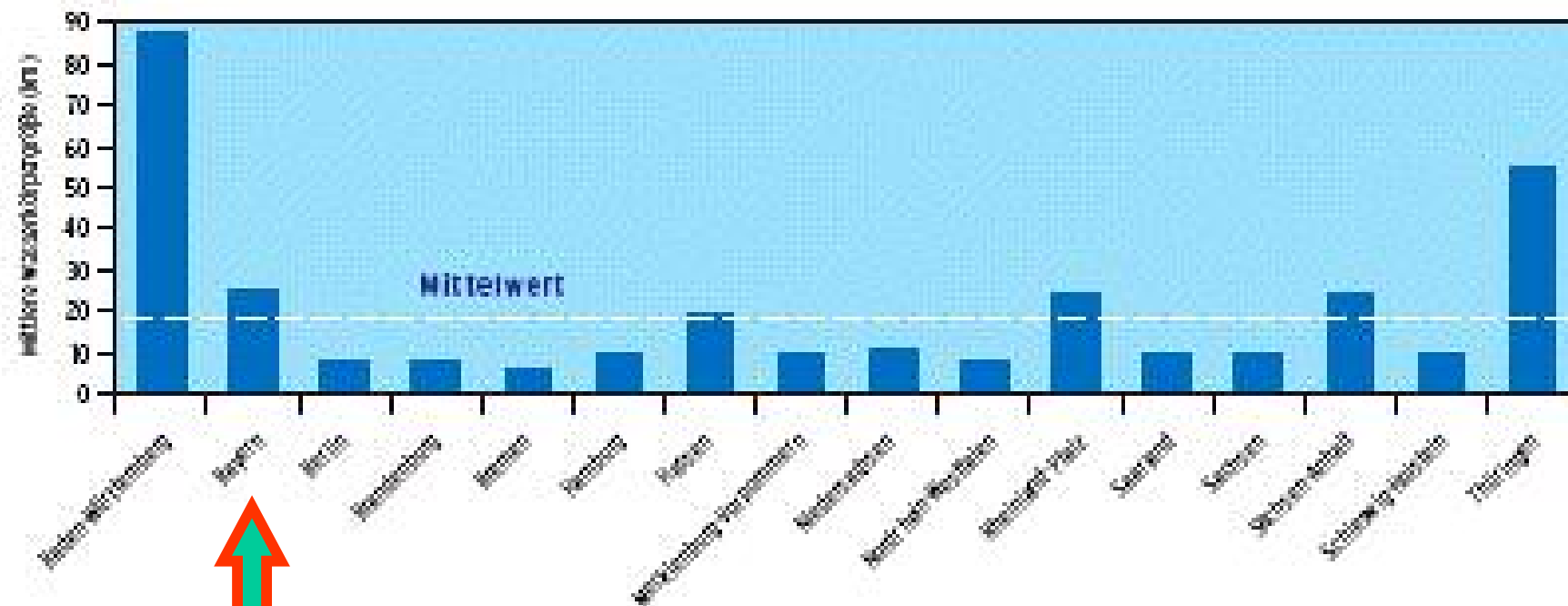
**54 lake bodies
from 0,5 km²**





Surface Water Bodies in Germany

Abb. 12: Mittlere Wasserkörpergröße der Fließgewässer in den Bundesländern



BY



Artificial or heavily modified water bodies



Europe ☒ long tradition in the use of waters

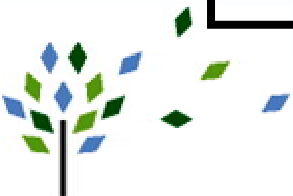
Hydropower, navigation ways, water reservoirs, flood protection, settlements, agriculture

Preliminary !!

→ Article 4 (3) WFD

Criteria:

- Appearance (structure) modified**
- One of the above uses of water**
- From 2006 biological monitoring data!**





Artificial or heavily modified Water Bodies

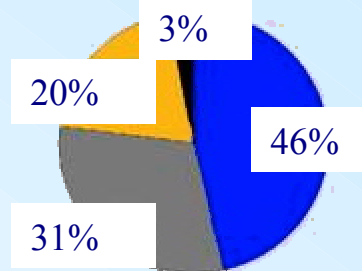


Bayerisches Landesamt
für Wasserwirtschaft

Karte 3: Künstliche oder erheblich veränderte Gewässer

Vorläufige Einstufung der Oberflächengewässer

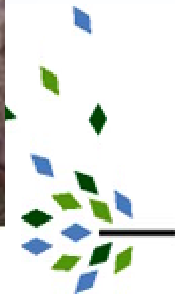
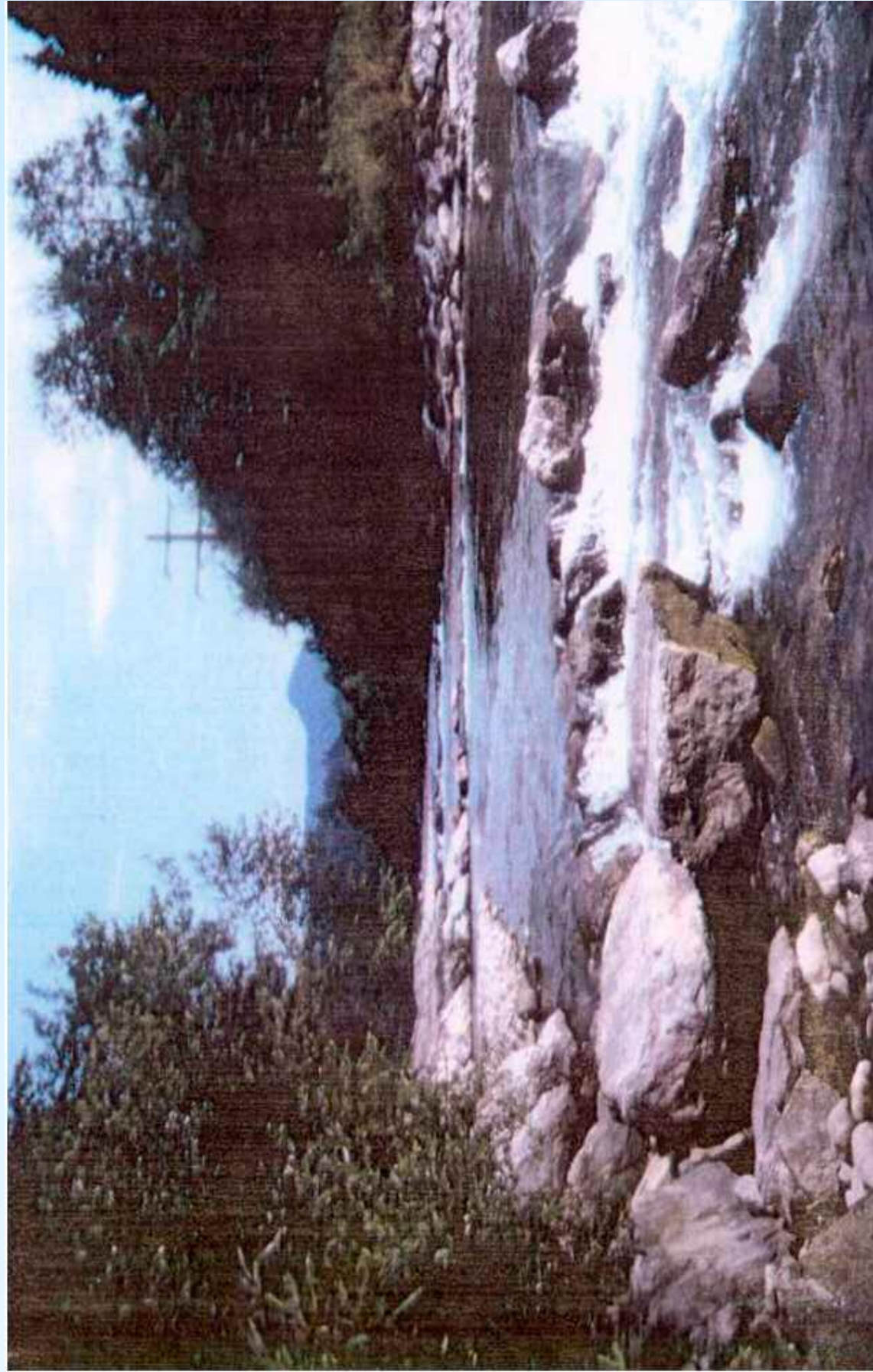
- nicht erheblich verändert
- Möglicher Kandidat für
erheblich veränderte
Wasserkörper
- erheblich verändert
- künstlich



in Prozent der Fließlänge









Assessment whether the objective will be achieved or not

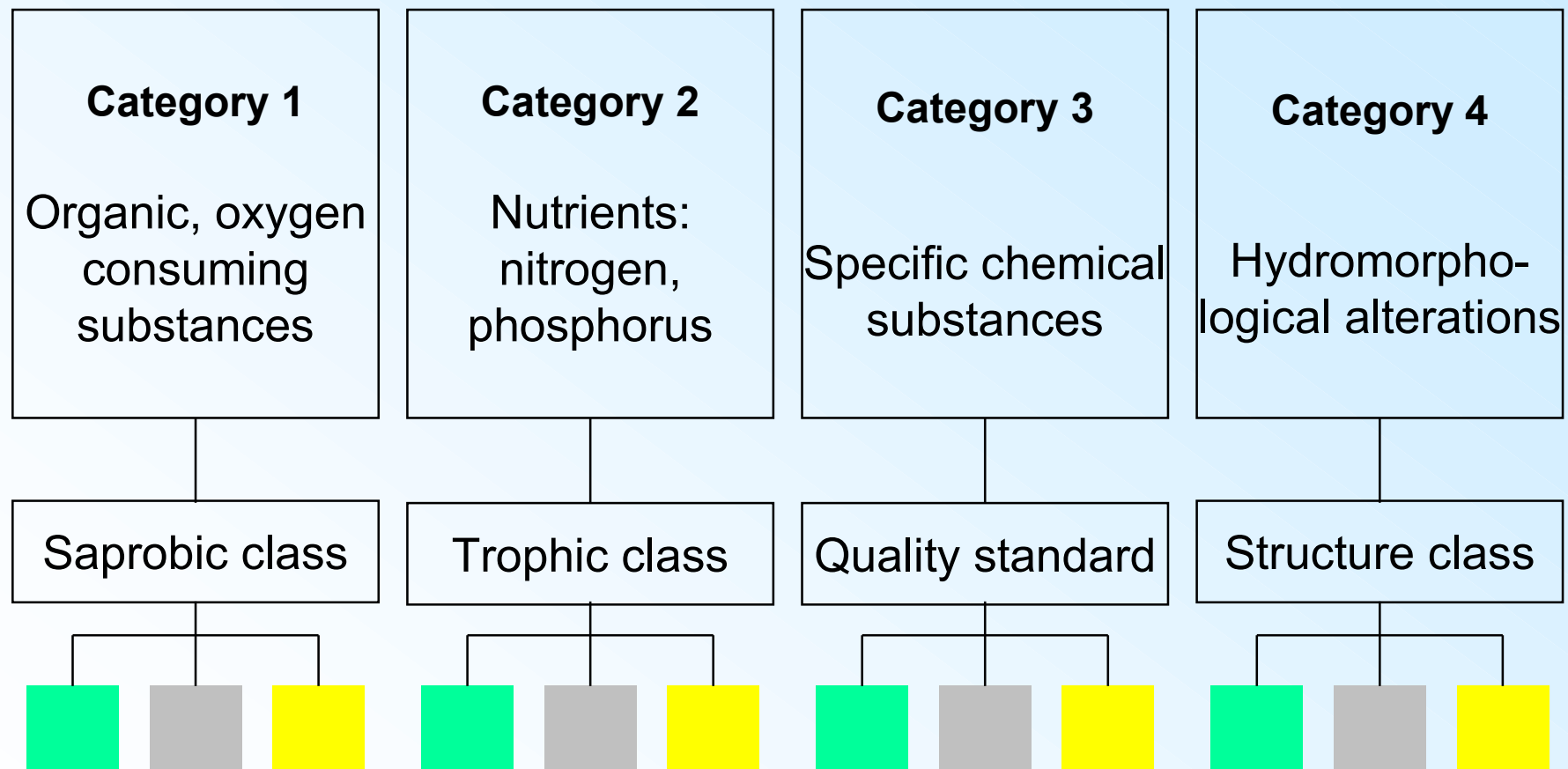


- **Characterisation of the water bodies**
 - **Estimation of the effects of human activities on the waters**
 - **Monitoring data**
 - Risk assessment is not the determination of the status! !
 - It is the basis for the monitoring from 2006!
 - “At risk” does not mean to do nothing!
- Amelioration is necessary!**





Categories of risk assessment – Bavaria (predominantly based on monitoring data)



→ risk assessment in three classes :   





Why four separate assessment categories?



The assessment of rivers deliberately has been **separated into four risk categories** to make clear different problems of water quality and their specific causes.

Another reason for a multiple assessment is a fundamental **difference in the importance** of these categories for a good ecological status. For achieving a good status of a water body the biological and chemical criteria are decisive whereas **hydromorphological criteria are only supporting elements** and have more importance for the allocation of possible measures.

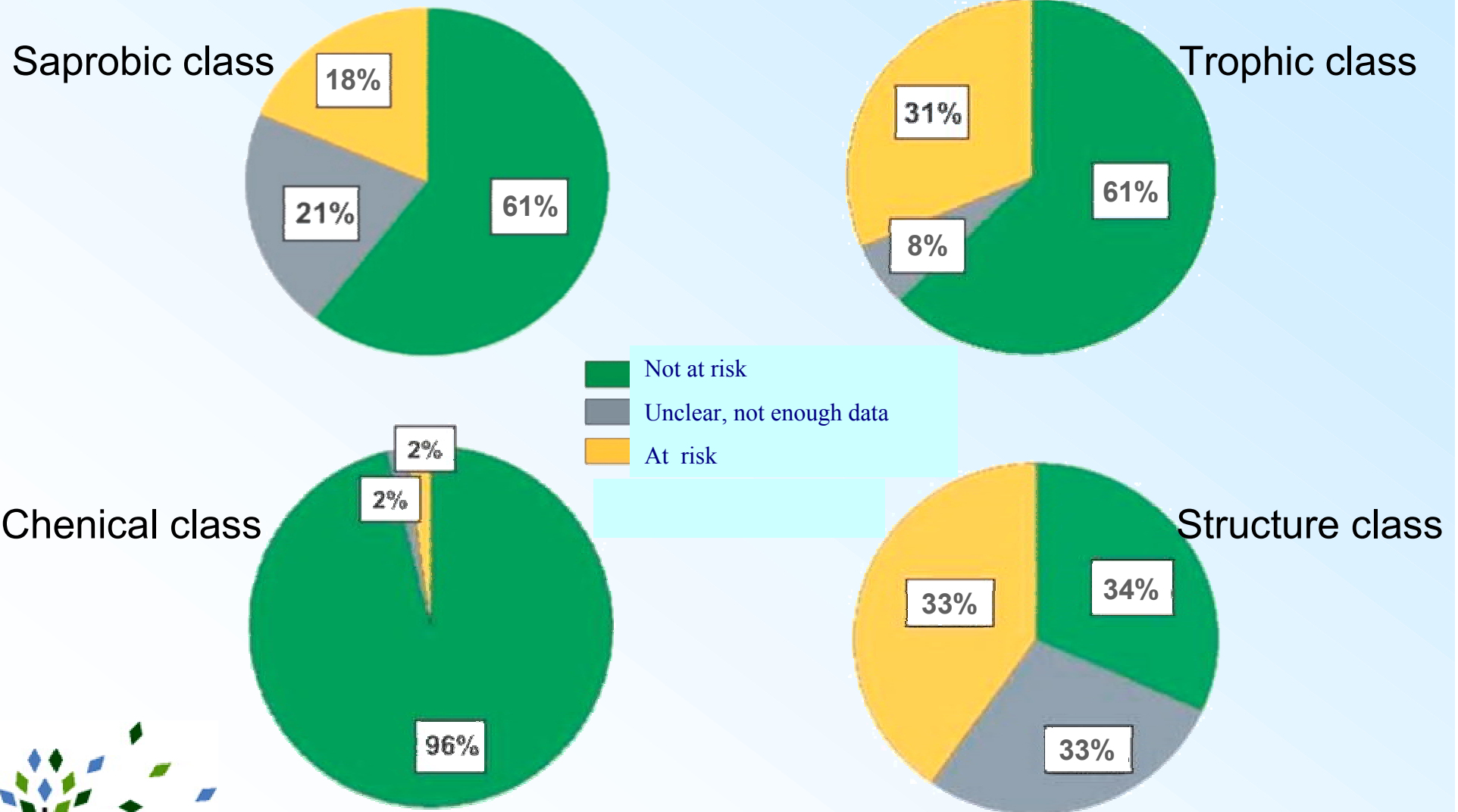
Eventually, it would be difficult to find comprehension in Bavaria



Why did we spend more than 30 milliards € for water protection in Bavaria??



At risk or not at risk in the 4 categories Surface water bodies





Risk analysis for groundwater bodies in Bavaria



Delineation of GWBs	Nearly exclusively hydrologic
Numbers / size range	56 GWBs + 1 deep GWB average 1200 km²
Risk classes	2 classes ☒ No risk - At risk
Assessment of quality At risk	30% of values more than 40 mg/l NO₃ or > 20% more than 40 mg/l NO₃ + > 10% more than 50 mg/l NO₃ → then at risk 20 % of area
Assessment of quantity	No quantitative problems
Assessment of agricultural chemicals	Only atrazine and desethylatrazine



Risk assessment of the groundwater bodies in Bavaria



Bayerisches Landesamt
für Wasserwirtschaft

Karte 2: Grundwasserkörper und ihre Zielerreichung

Anzahl: 56

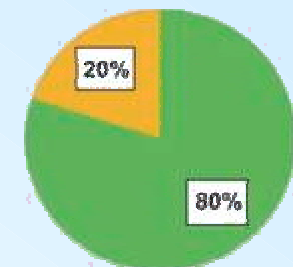
Zielerreichung zu erwarten: 41

Zielerreichung unwahrscheinlich: 15

plus 1 Tiefengrundwasserkörper

Zielerreichung der Grundwasserkörper

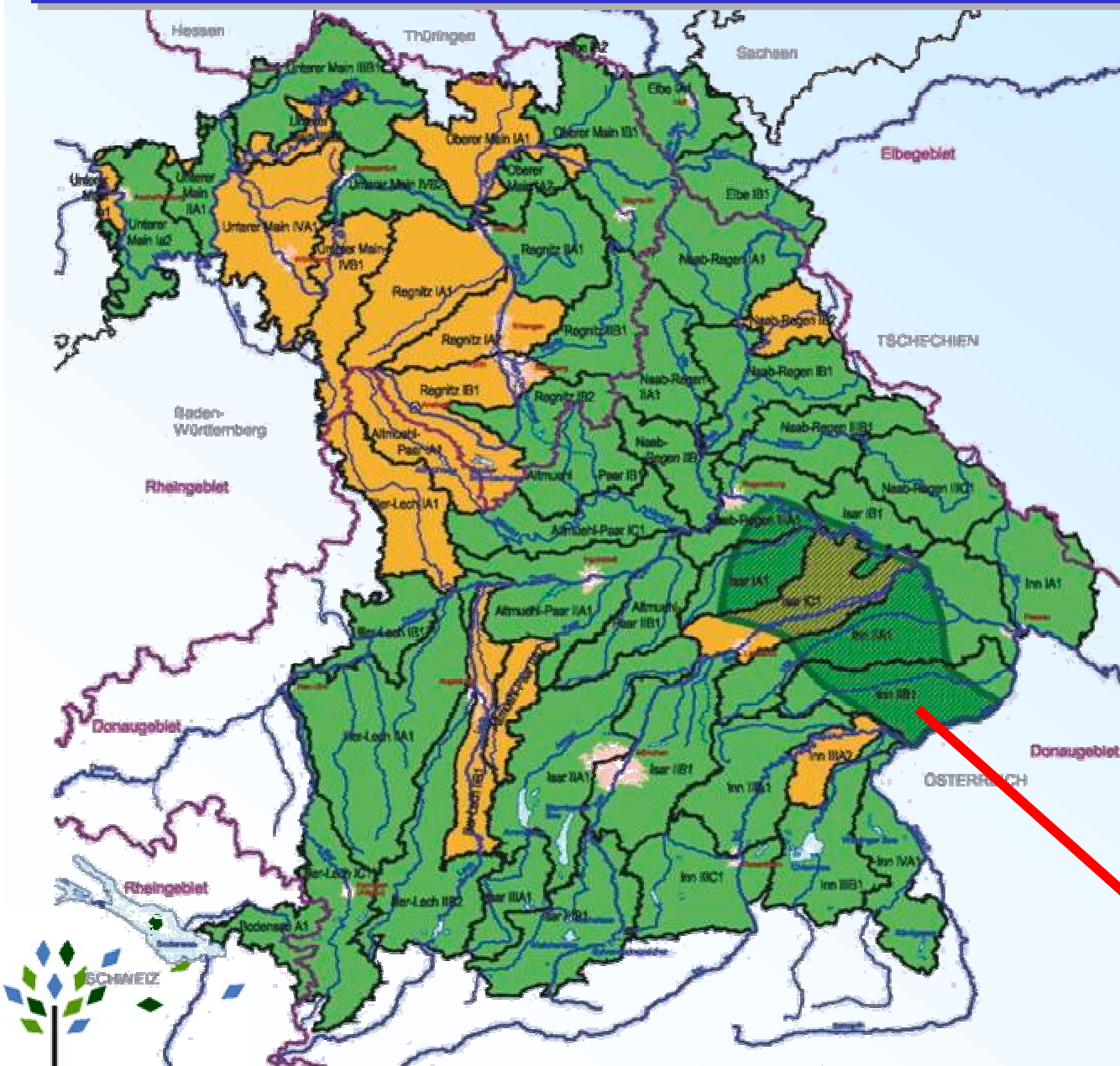
- Zielerreichung zu erwarten
- Tiefengrundwasserkörper,
Zielerreichung zu erwarten
- Zielerreichung unwahrscheinlich



In Prozent der Landesfläche

- Grenzen der Grundwasserkörper
- Hauptwasserscheiden Donau, Rhein, Weser und Elbe

Deep groundwater body

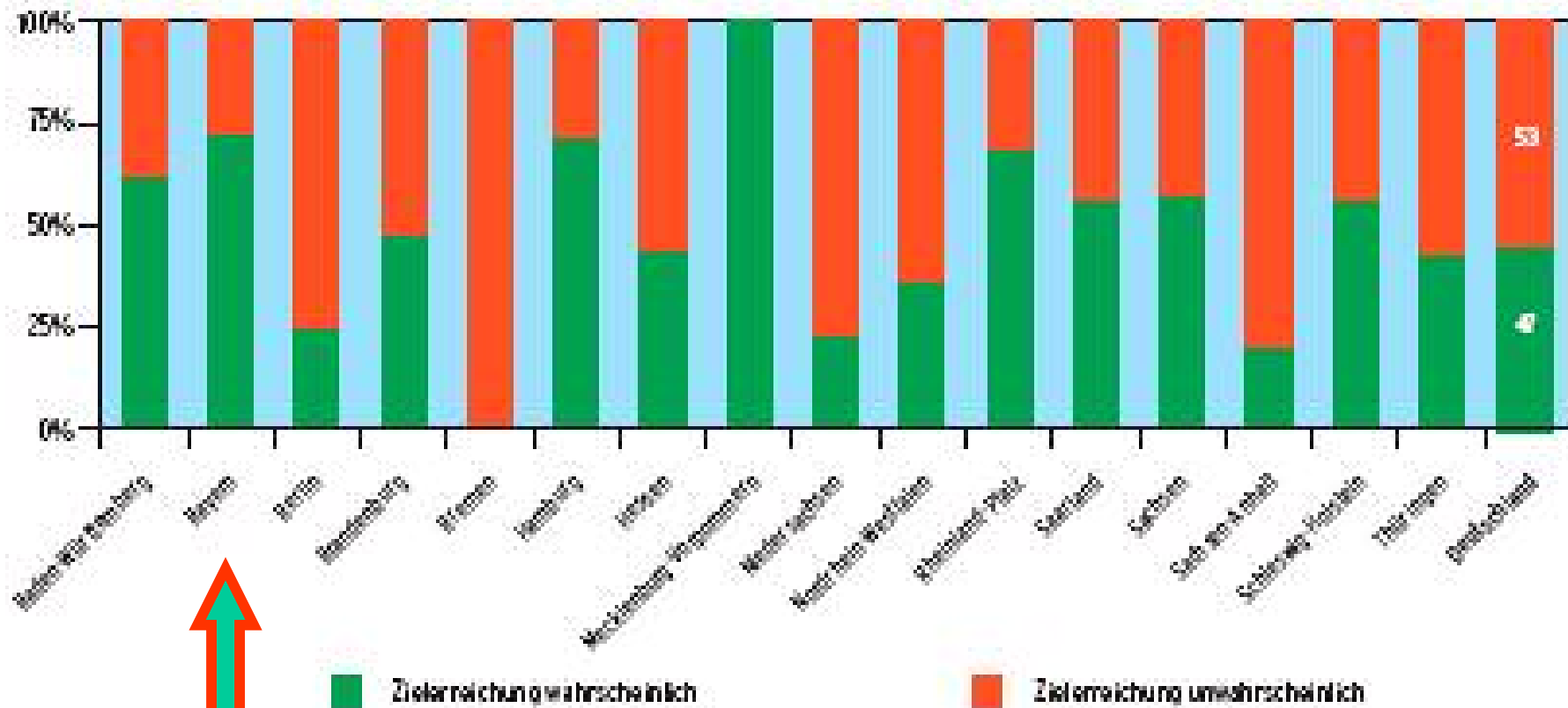




Risk assessment groundwater bodies in Germany



Abb. 26: Ergebnisse der Bestandsaufnahme der Grundwasserkörper in den Bundesländern



BY



3 fields of communication



INFORMATION

Use of media:
Publication
Presentation
exhibitions
Single actions

Broad public

INTERNET

Platform for
continued
information:

[www.
wasserforum.
bayern.de](http://www.wasserforum.bayern.de)

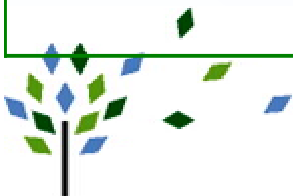
Exchange

CONSULTATION

WASSER
FORUM
BAYERN

Dialogue with
20 NGO's

Organised
target groups





Wasserforum Bayern: Participants



since 2002



- **Organisation and chair: Ministry for Environment**
- **Mediation: Extern**
- **20 associations:**
 - (3) municipalities
 - (4) agriculture and forestry
 - (2) nature protection
 - (2) water services
 - (1) leisure and sport
 - (5) industry
 - (1) fishery
 - (2) planner
- **Water and navigation administration**
- **3 Ministries: Interior, Economy, Agriculture & Forestry**



Implementation of the WFD in Bavaria/Germany

How to proceed?

- **Labour and cost efficient and pragmatic 1 to 1 implementation**
- **Essential conflicts could rise in the fields of agriculture, hydropower and municipalities**
- **The implementation of Natura 2000 must not be the role model for the implementation**
- **Local problems have to be solved at the local level**
 - **Subsidiarity!**



River Basin Management Plans and the programme of measures

- **DANUBE**
- **RHINE**
- **ELBE**
- **WESER**

BAVARIA





**Review acc. Art. 5 WFD
(polishing?)**

+

Monitoring

=

**Actual status
(+ prognostic for 2015)**

The WFD

☒ 3/2005

☒ 12/2006



Public participation

Environment objectives incl. exemptions

TM

deficit → management objectives



Measures

Management Plan

☒ 12/2009





Table 4 Basic outline for the DRBMP (based on Annex VII WFD)

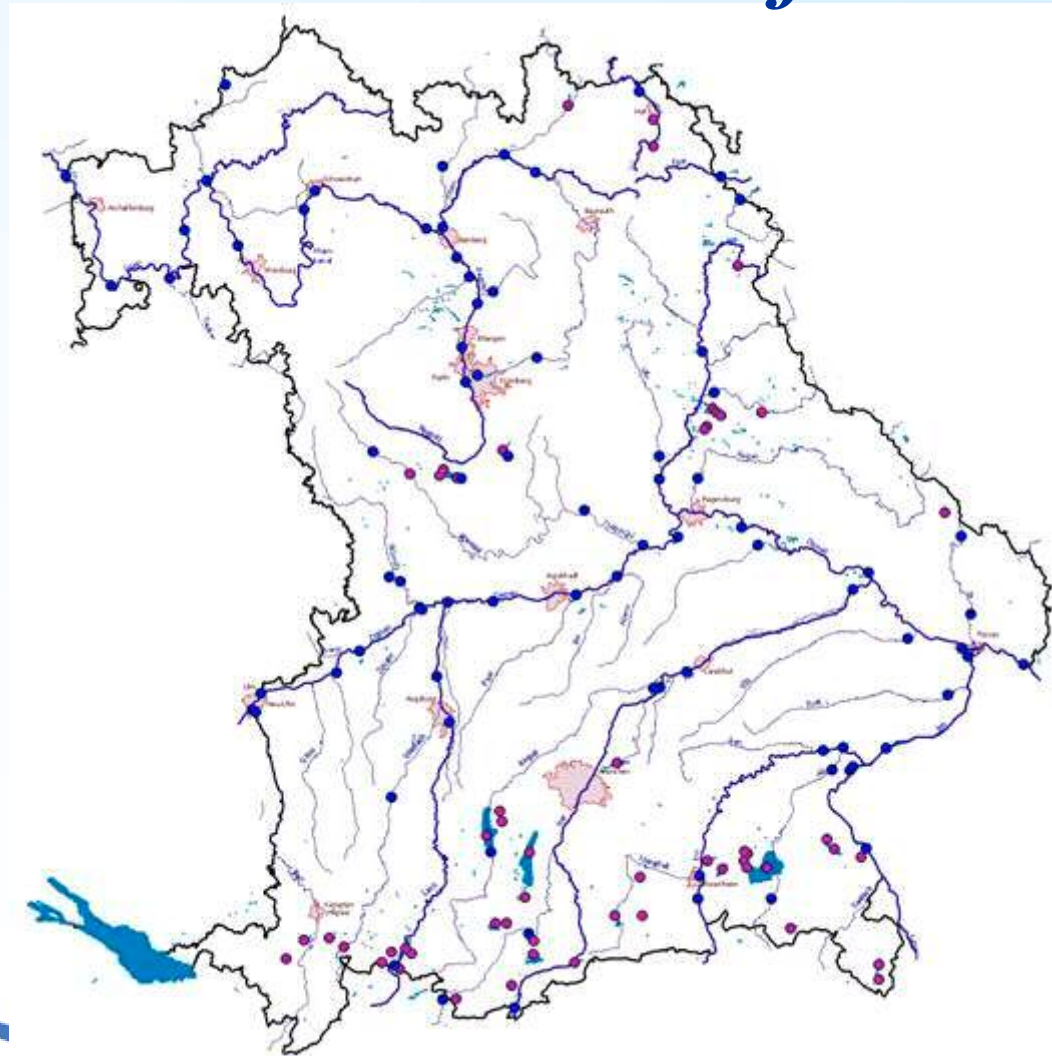
No.	Chapter title	WFD Roof Report 2004
1.	Characteristics of the Danube River Basin District	x
2.	Significant pressures and impacts from human activity	x
3.	Identification and mapping of protected areas	x
4.	Monitoring networks and monitoring results	-
5.	Environmental objectives and exemptions	-
6.	Economic analysis of water use	x
7.	Programme of measures	-
8.	Register of more detailed programmes or management plans	-
9.	Public information and consultation measures	(x)
10.	Competent authorities and international coordination arrangements	x
11.	Contact points for obtaining background documentation	x



From „Development of the DRBMP“



Surveillance Monitoring Surface Waters



● Lakes: 54 MP's ● Rivers: 83 MP's

Data completing 2005



Establishing the
monitoring points 2006

- ⇒ important discharge
- ⇒ typical natural conditions
- ⇒ longterm trends



Environmental Objective - good ecological potential

- Develop each case individually in a pragmatic way on the basis of status review and monitoring
- Inference from pilot projects (“best practice”)
- Basis is the water defined by the indispensable uses
- Strive for minimum discharge, ecological continuum, connection to spawning and breeding grounds
- Under the reserve of proportionality
- Continuum shall be improved, creation is not requested per se: specification in the integral concept for the sub-basin
- Establishing the good ecological status or potential is developing the already practiced river reactivations





Programme of measures – example diffuse pollution - agriculture

- At local level ☒ freedom when implementing the WFD, no imposed regulation ⇒ **Subsidiarity!!**
- Define sub-basins (WB-groups)
- Use tool box with possible measures
- Compile measures together with agricultural services
- Agriculture service advise the farmer
- Utilise possible subventions
- What can farmers really afford?
- Proceed step by step in a pragmatic way – in the 1st river basin management plan you cannot achieve all!



• Set priorities



Tool Box Diffuse Pollution Agriculture

Measure	Efficiency ➔ N	efficiency ➔ P	efficiency ➔ pesticides	Controle?	subventions
Change field to grassland	***	**(*)	*	***	In special areas

grassland

Increasing efficiency from: 0 - * - ** - ***

- **Basic table: Water and Agriculture Services together**
- **On this basis tailor made tool boxes for groups of water bodies/sub-basins with there possible measures**
- **Agriculture Service consults, motivates, helps financially the farmers**
- **Tailor made tool boxes = programme of measures**





Tool Box Hydromorphological Alterations - 1



Maßnahmen	Hydromorphologische Belastung / Verbesserungspotential für die Biokomponenten				Pflege- und Entwicklungsmaßnahmen in Natura 2000 Gebieten
	Wirkung auf Fische	Wirkung auf Makrozoobenthos	Wirkung auf Makrophyten	Wirkung auf Phytoplankton	
1. Belastungsbereich Wasserentnahme					
Mindestabfluss in Ausleitungsstrecken nach ökologischen Kriterien bemessen	++	++	++	0	0
Schwellbetrieb nach ökologischen Kriterien modifizieren	+	+	+	0	0
2. Belastungsbereich Abflussregulierung					
Naturgemäßes Abflussregime erhalten bzw. wiederherstellen					
Retentionsflächen aktivieren	++	++	++	0	++
Rückverlegen von Deichen	0	0	0	0	++
Anlegen von Flutpoldern	0	0	0	0	0
Naturgemäßes Ausuferen ermöglichen					
Abragen von Uferrehrnen	0	0	0	0	++
Sohlauhebung; Einbau von Sohlrampen, -gleiten	0	0	0	0	+
Erhöhen der Rauigkeit im Gewässerbett					
Zulassen der Eigenentwicklung	+++	++	+++	0	+++
Gestalten gewässertypischer Lauformen	+++	++	+++	0	+++
Begründung von Auwäldern	0	0	0	0	+++
Dämpfen von anthropogen verschärften Abflussspitzen					
Anlegen von Regenrückhaltebecken	+	+	+	+	0
Auertypische Grundwasserverhältnisse fördern					
Rückbauen von Dränungen	+	+	+	+	+++
Nichtunterhalten/Einstauen von Gräben	+	+	+	+	+++
Herstellen der biologischen Durchgängigkeit im Gewässer					
Rückbauen von Querbauwerken	+++	+++	++	+++	+++
Anlegen von Umgehungsstrukturen	+++	+++	+++	+	++
Umbau von Absätzen in Sohlrampen oder Sohlgleiten	+++	+++	+	+	+
Verbessern der Strömungsvielfalt					
Ablösen von Wasserrechten	+++	+++	+	+	+++
Aufweiten und Einengen des Gewässerbettes	+++	+++	++	+	++

We already know the key issues !! Start with the measures
No scientific research





Conclusions

In summary, we need to prioritise our efforts if we are to make progress in improving the environment

- **The pressures and impacts analysis is a precious instrument to help us to do this**
- **We will inevitably miss some problems in the first cycle but we cannot do everything anyway**
- **We already know the key issues**
 - **Nutrients pollution**
 - **Hydromorphological alterations**
- **Our priority in the first cycle is to focus on the big problems**

