

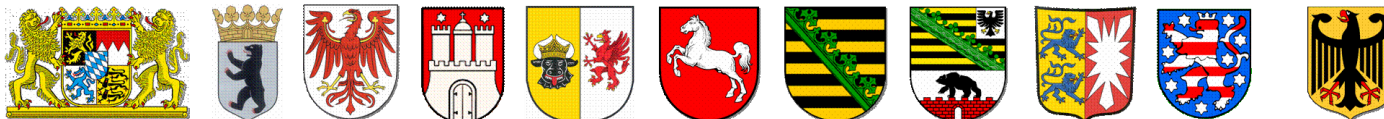
Designation of HMWB & GEP

Workshop

12.-13.03.2009 Brüssel

Ulrike Hursie

Ministry of Agriculture and Environment
Sachsen-Anhalt

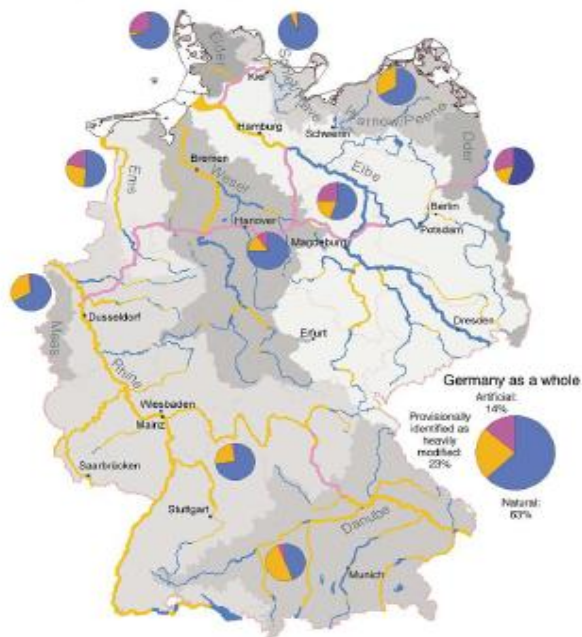


Provisional identification of HMWB in Germany in 2004

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

Umwelt Bundes Amt

Figure 14: Natural and artificial water bodies and water bodies that have been provisionally identified as heavily modified in Germany



Legend:
 - Capital of Germany
 - Capital of a German state
 - Boundary of a German state
 - Lake
 - River basin district
 - Natural water body
 - Artificial water body
 - Water body provisionally identified as heavily modified

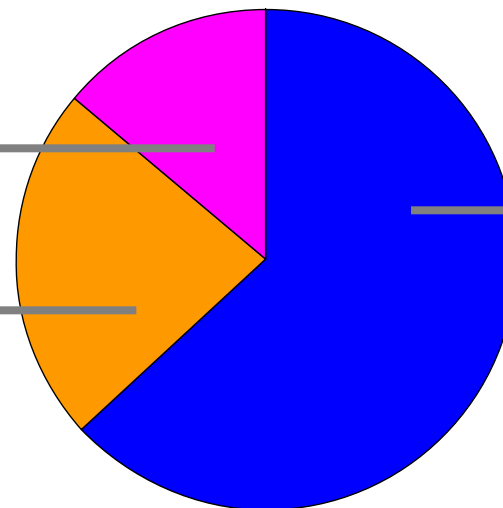
Information valid as at January 2006
 For further information see text and Annex
 Source: Data aggregated from information provided by German states
 Source maps: Umweltbundesamt and Bundesamt für Kartographie und Geodäsie

Provisional identification entails determining whether the various water bodies are likely to achieve good ecological status. Only those water bodies that fail good ecological status owing to hydromorphological changes are to be provisionally identified as “heavily modified”.

AWB:
14%

HMWB:
23%

NWB:
63%

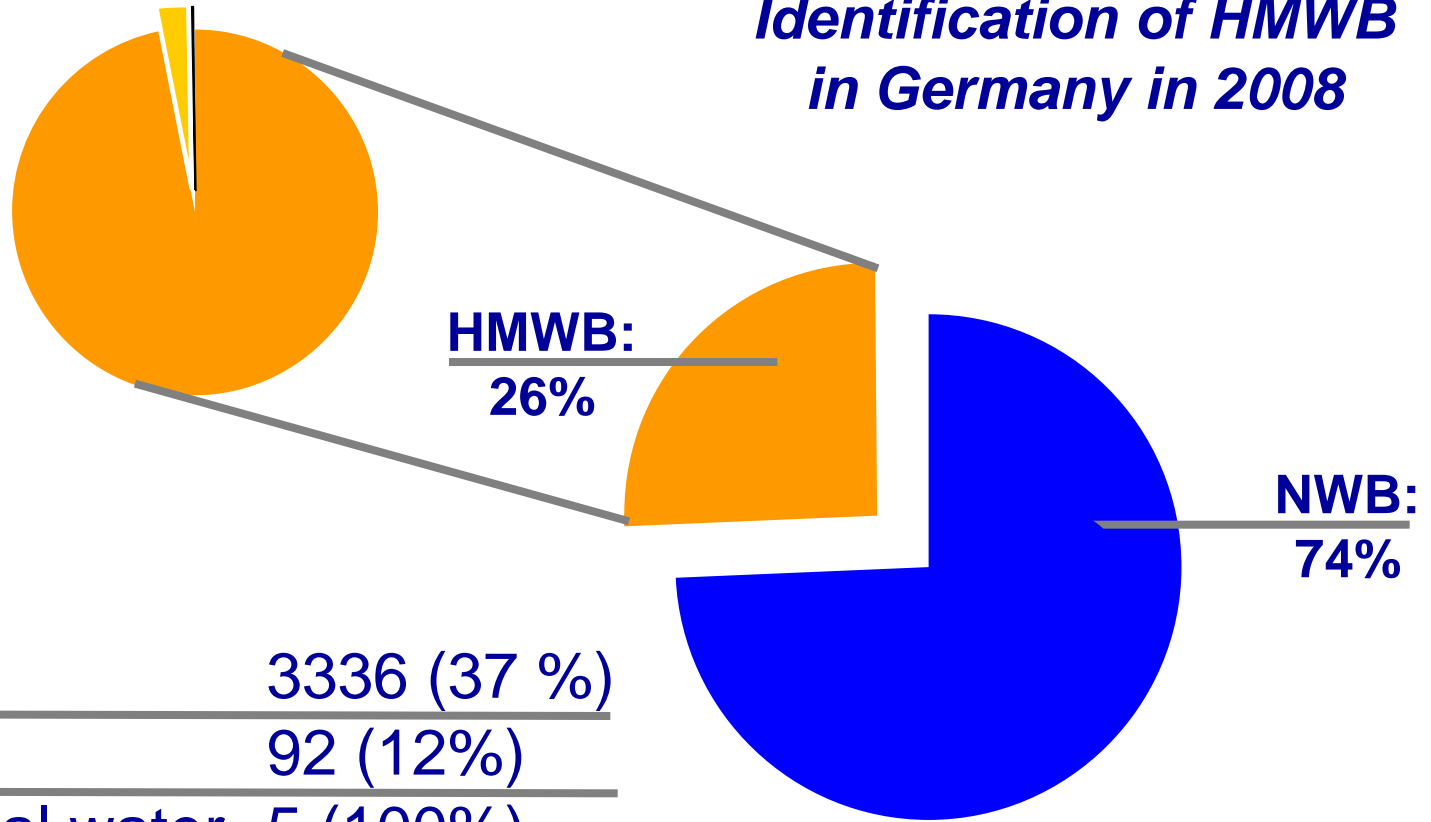


Designation of HMWB

Germany
(Draft RBM)



Identification of HMWB in Germany in 2008



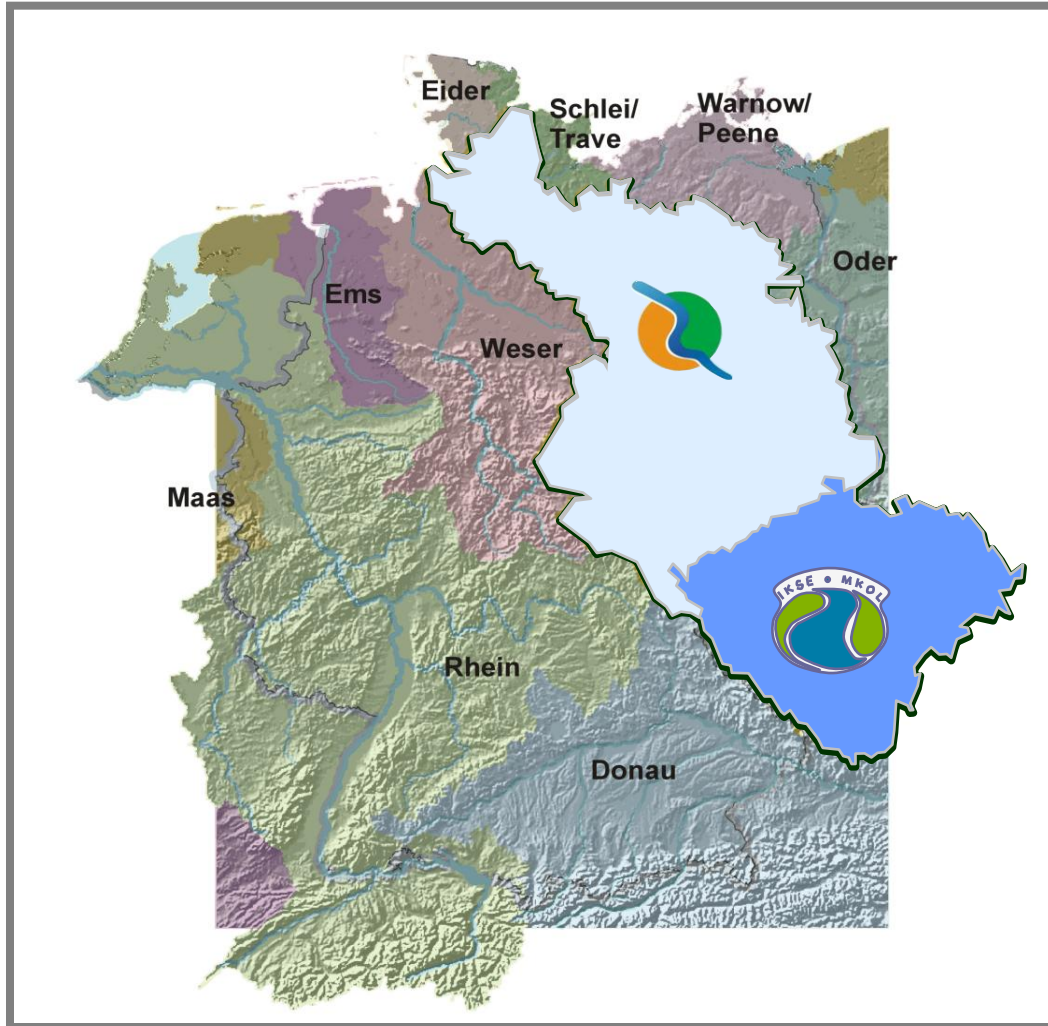
HMWB:

River	3336 (37 %)
Lakes	92 (12%)
Transitional water	5 (100%)
Coastal water	5 (7%)



River basin district Elbe

ICPER/
FGG Elbe



Elbe length: 1.094,3 km

ICPER/IKSE



International Commission
for the Protection of the
Elbe River

FGG Elbe



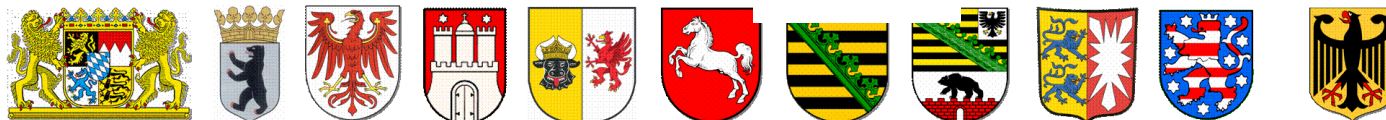
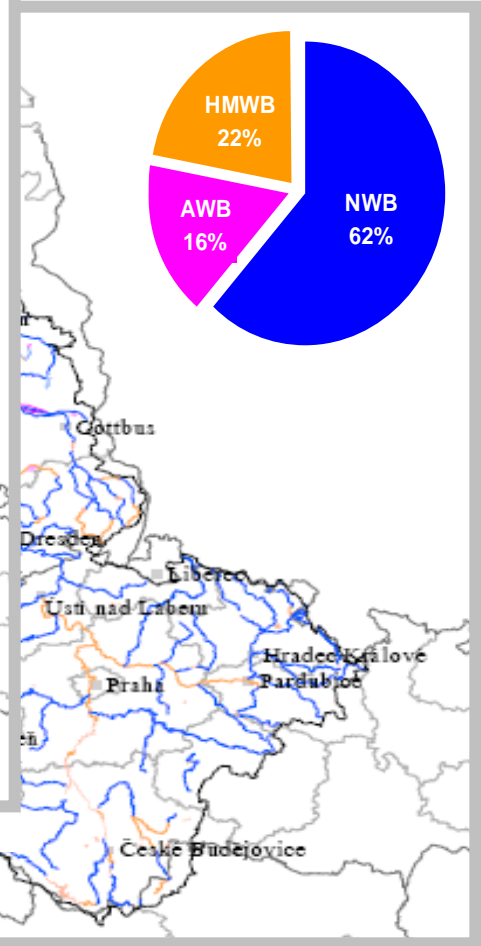
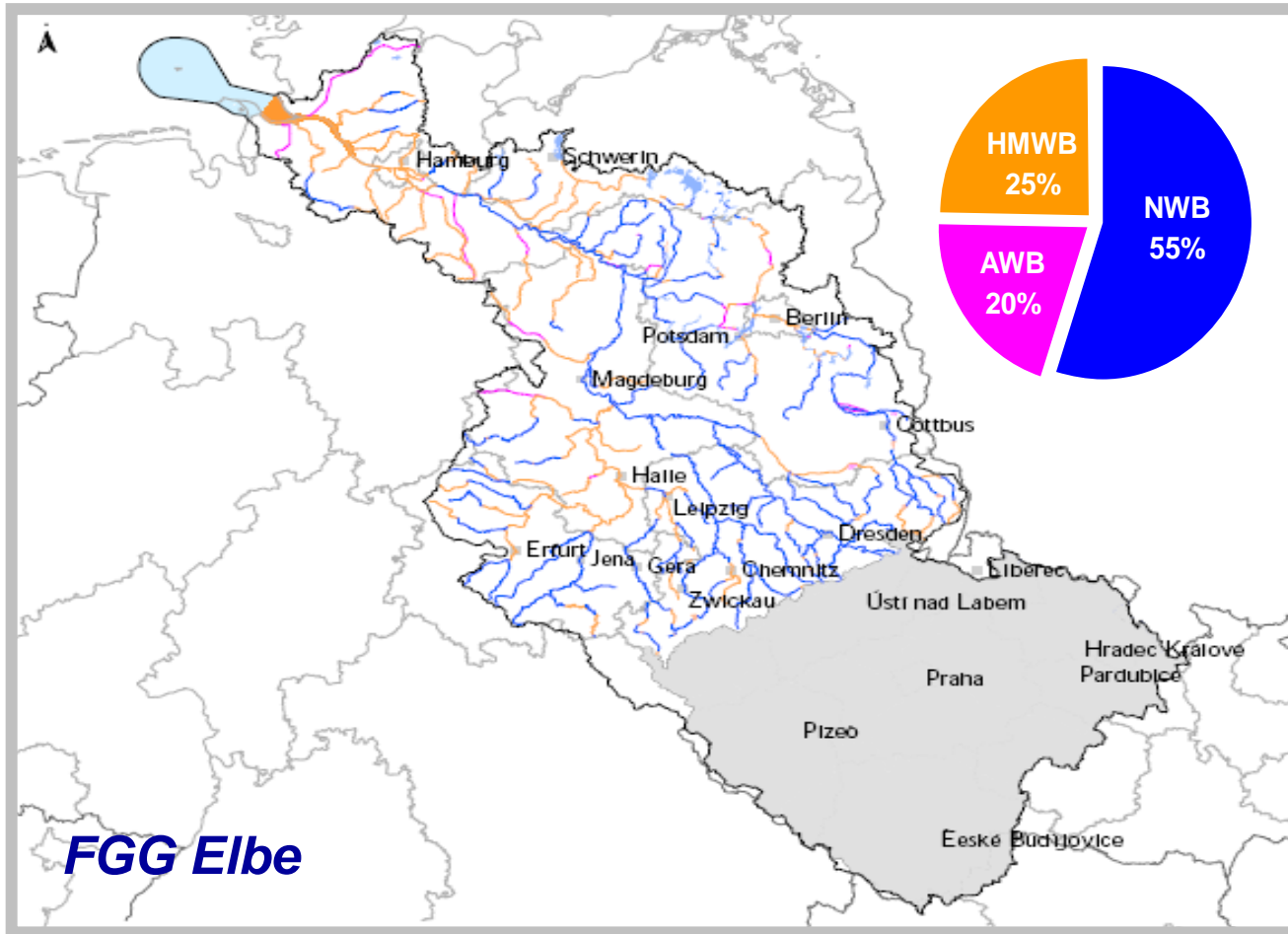
catchment area: 148 268 km²,
24,52 Mio. inhabitants

Germany (DE) 65,54 %
Czech Republic (CZ) 33,68 %
Austria (AT) 0,62 %
Poland (PL) 0,16 %



Designation & GEP

ICPER/
FGG Elbe



Derivation of GEP

*Definition of the Good Ecological Potential
two approaches:*

CIS approach“

based on biological
assessment
methods

„Prague approach“

based on mitigation
measures

Combinated approach“

based on both approaches



Derivation of GEP: CIS approach

CIS approach

Identify all mitigation measures that do not have a significant adverse effect

Define MEP by estimating the biological values expected if all mitigation measures were taken

Exclude those mitigation measures that, in combination, are only predicted to deliver slight ecological improvement

GEP = the biological values expected from taking the identified mitigation measures



Derivation of GEP: Prague approach

„Prague approach“

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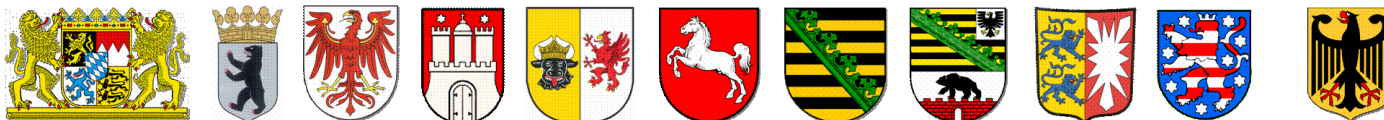


„Combinated approach“

Method A*

- Choice of mitigation measures according to Prague methodology (GEP = all ecological effective measures)
- List and abundance of habitats, which would be created when 1) would be fulfilled
- Definition of the list of species and their abundance according to habitats under 2) (as "reference" for GEP)
- Biological assessment

* Source:
Discussion Paper



„Combinated approach“

Method B*

- Identification of measures without use conflicts
- Modelling hydromorphology after implementation of the measures
- Calculation of class limits for ecological potential
- Transfer of these class limits (hydromorphology) to the class limits of biological quality elements (use of mathematical modelling)
- Comparison of the hydromorphological and biological current potential with the determined values for GEP



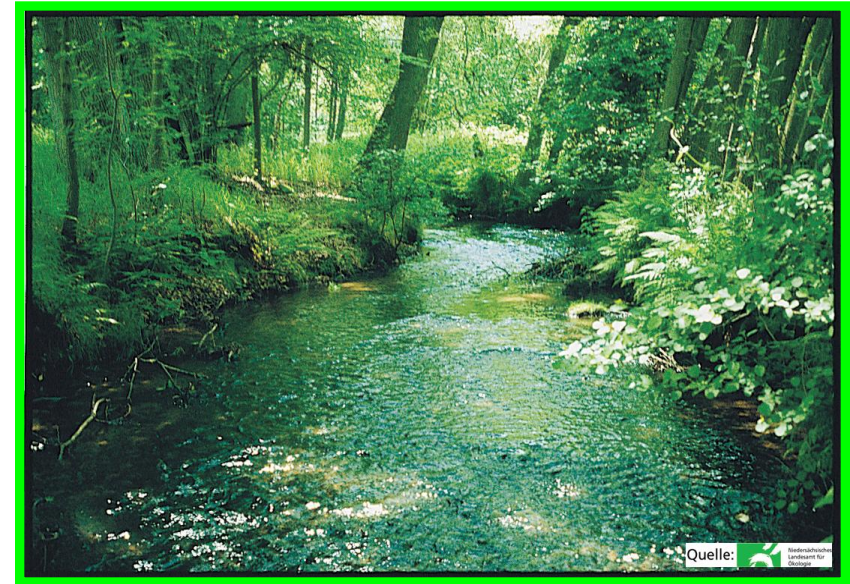
* Source:
Discussion Paper

Fundamentals

Stream habitat survey/
structural quality of running surface waters



Morphological strongly
impaired stretch

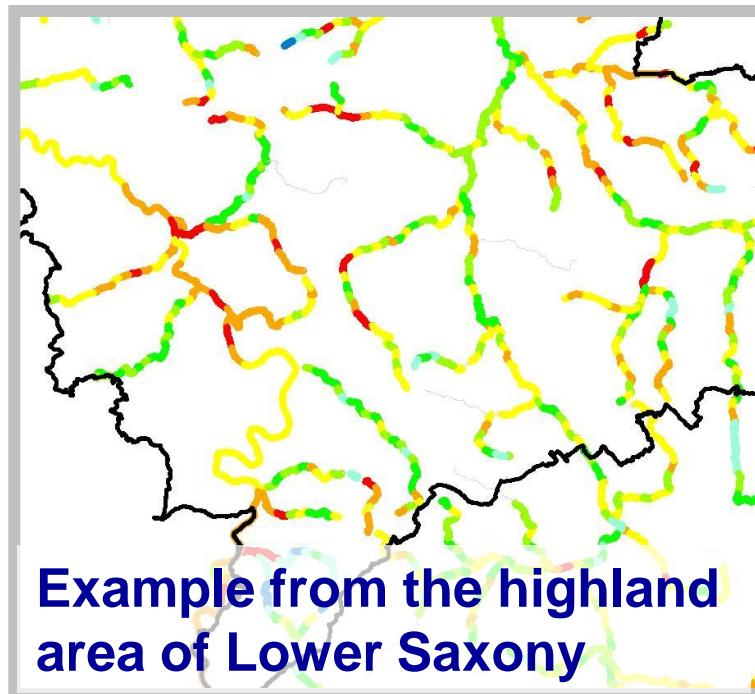


Close to nature stretch

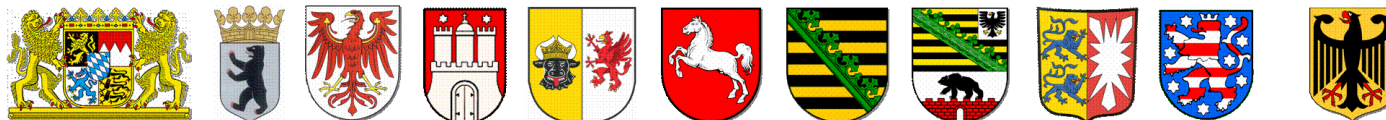


Map of the structural quality of running surface waters

The structural quality has become in Germany a generally applicable assessment basis for the survey or in projects for river development

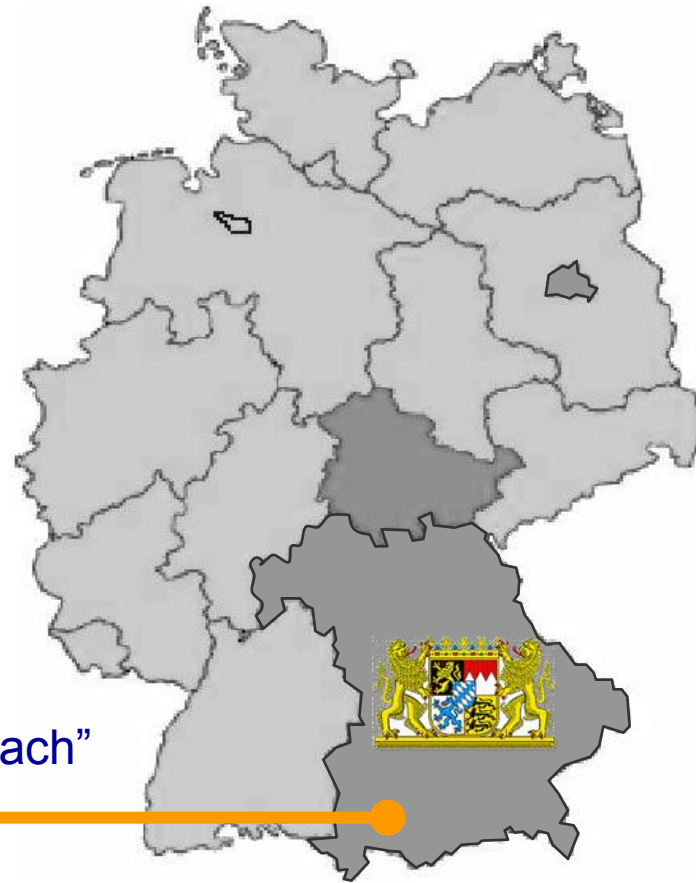


Quality class	State
1	Unchanged
2	Slightly changed
3	Moderately changed
4	Distinctly changed
5	Obviously changed
6	Strongly changed
7	Completely changed

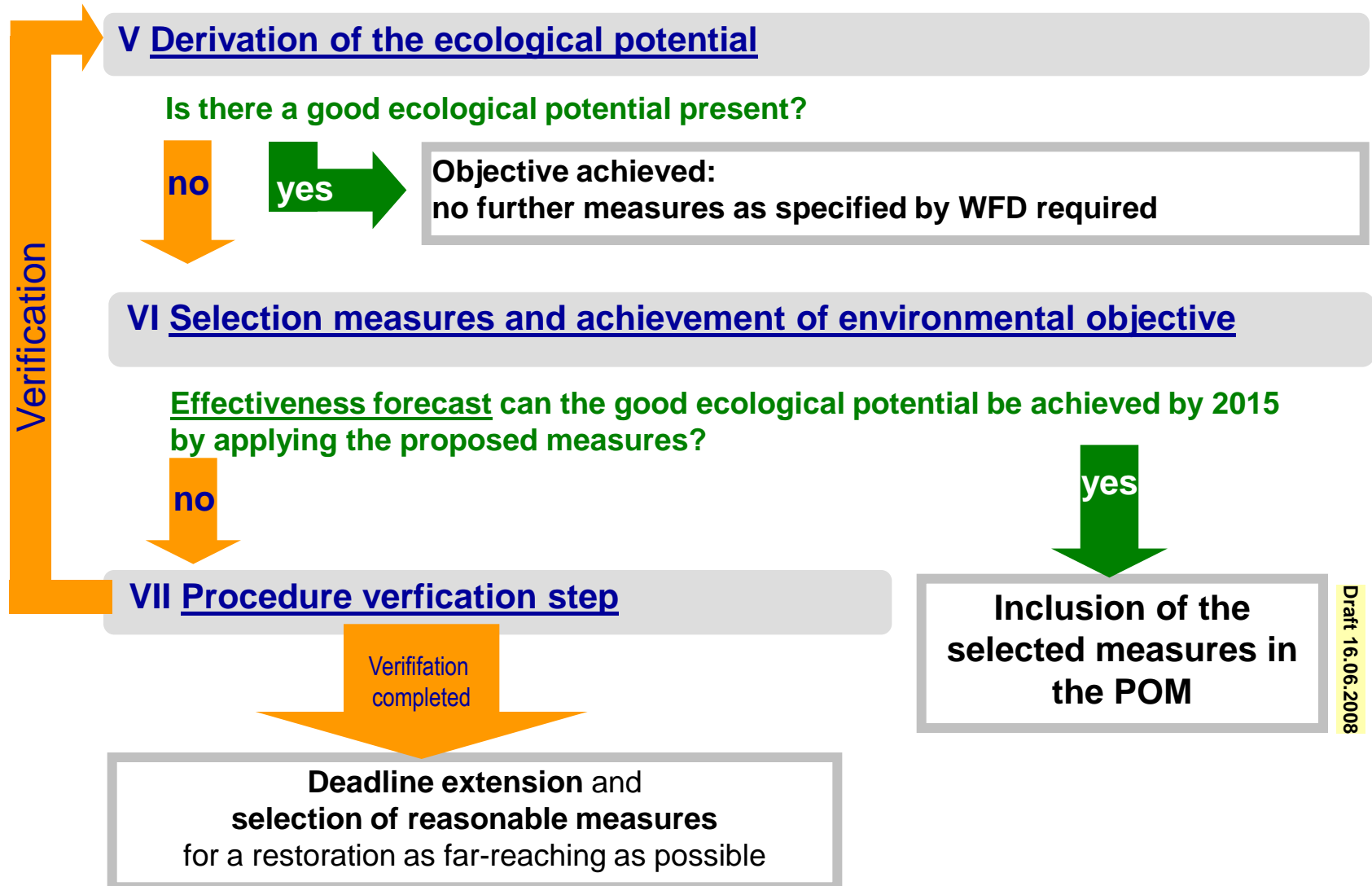


3 Examples for the approach in Germany:

- **Bavaria**
- Thuringia
- Berlin



Derivation of the Ecological Potential



Assessment of the Ecological Potential using the example of “Middle Reaches of the Wertach”

Category change: Running Water → Lake?



?

No!



Also in the dammed sections of the Wertach
Water retention time < 3 days



Assessment of the Ecological Potential using the example of “Middle Reaches of the Wertach”
change in type of running water?



?

Yes!



Change owing to use,
loss of Alpine-river characteris
(original Type 4 is now equivalent
to Type 2.2)



Status assessment
based on "new type"
⇒ ecological potential!



Assessment of the Ecological Potential using the example of “Middle Reaches of the Wertach”

- water-power use
(dammed sections clearly above 50%, of which 6 large reservoirs) ⇒ only a **“moderate ecological potential”** with regard to the **structure-indicatory components** (MZB with the modules General Degradation and Fishes)
- land use in the catchment area
The **objective** is also **not achieved** with regard to nutrient-indicatory macrophytes & phytobenthos.



Assessment of the Ecological Potential using the example of “Middle Reaches of the Wertach”

- following **measures** (examples) were included in the programme of measures in order to
 - improve the structure and promote own dynamics
 - improvement of free passage
 - agriculture use of land preserving water bodies in the catchment area
- The implementation of the measures is planned to be completed by 2027, major measures already by 2015 (Bavaria-wide prioritization)



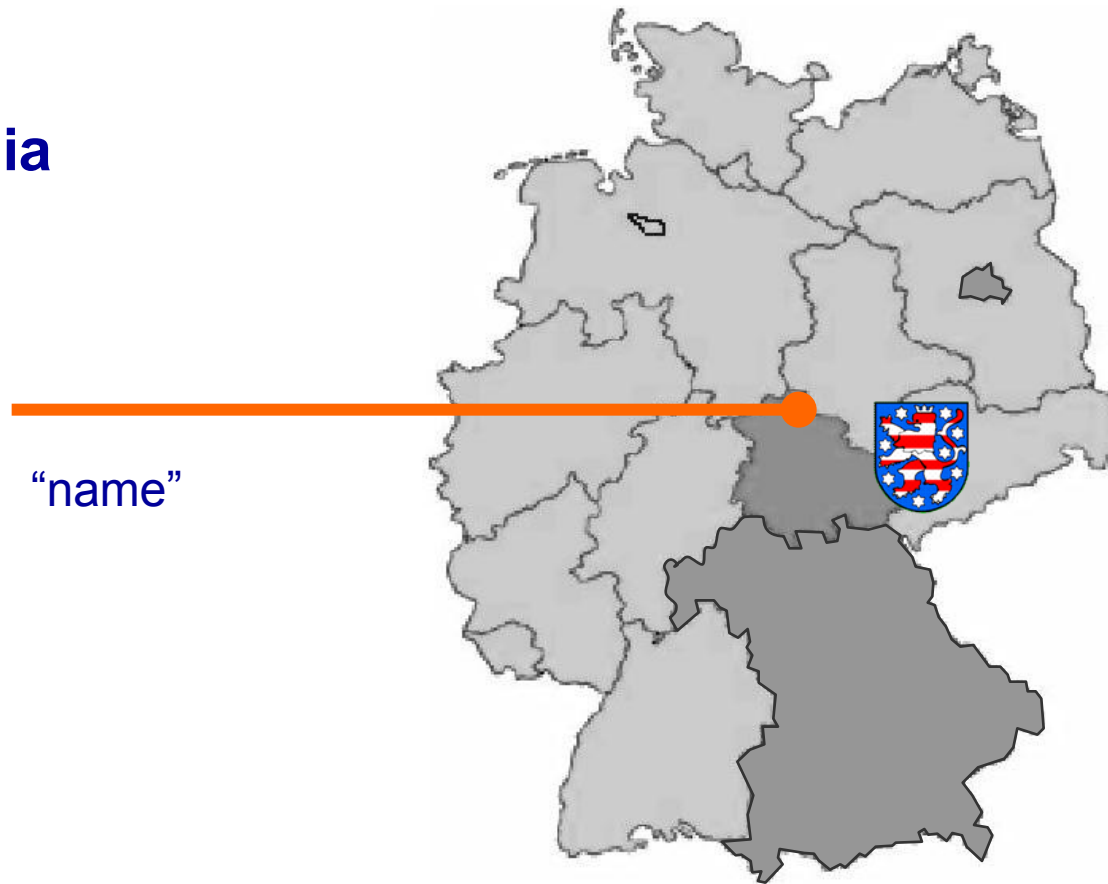
Summary – Potential Assessment - “the Bavarian Approach”

- The **potential assessment is carried out using the assessment methods** for the ecological status (= Assessment-Oriented Approach)
 - If, according to the result of the assessment, it proves impossible to achieve the good ecological potential, as far-reaching an improvement as possible should be aimed at by **implementing all reasonable measures** (= measure-oriented approach).
 - The approach is **conform with the WFD**
 - The **selection of measures and their implementation** are oriented on a clearly defined objective, the easurable achievement of the **good ecological potential**.
- ⇒ The **examination** of **reasonable measures** is not necessary for the Designation of GEP



3 Examples for the approach in Germany:

- Bavaria
- **Thuringia**
- Berlin



„Combinated approach“

(Model – based)

Identification of all mitigation measures without significant adverse effects on the use

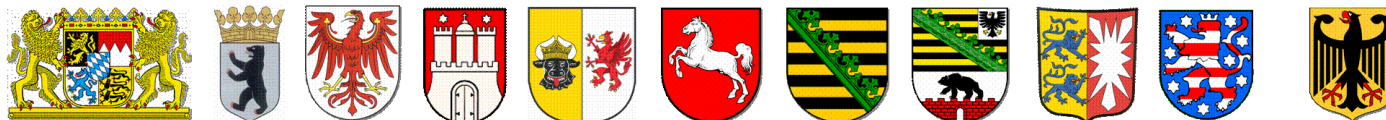
The resulting status represents the hydromorphological conditions at the MEP
(assumption: all mitigation measures will be realized)

Calculation of the ecological status values for the biological quality

components at MEP
..by using mathematical / empirical models
(assumption: all mitigation measures are realized)

Define the hydromorphological conditions at GEP as a standardised deviation from MEP
(uniform distribution of quality classes assumed)

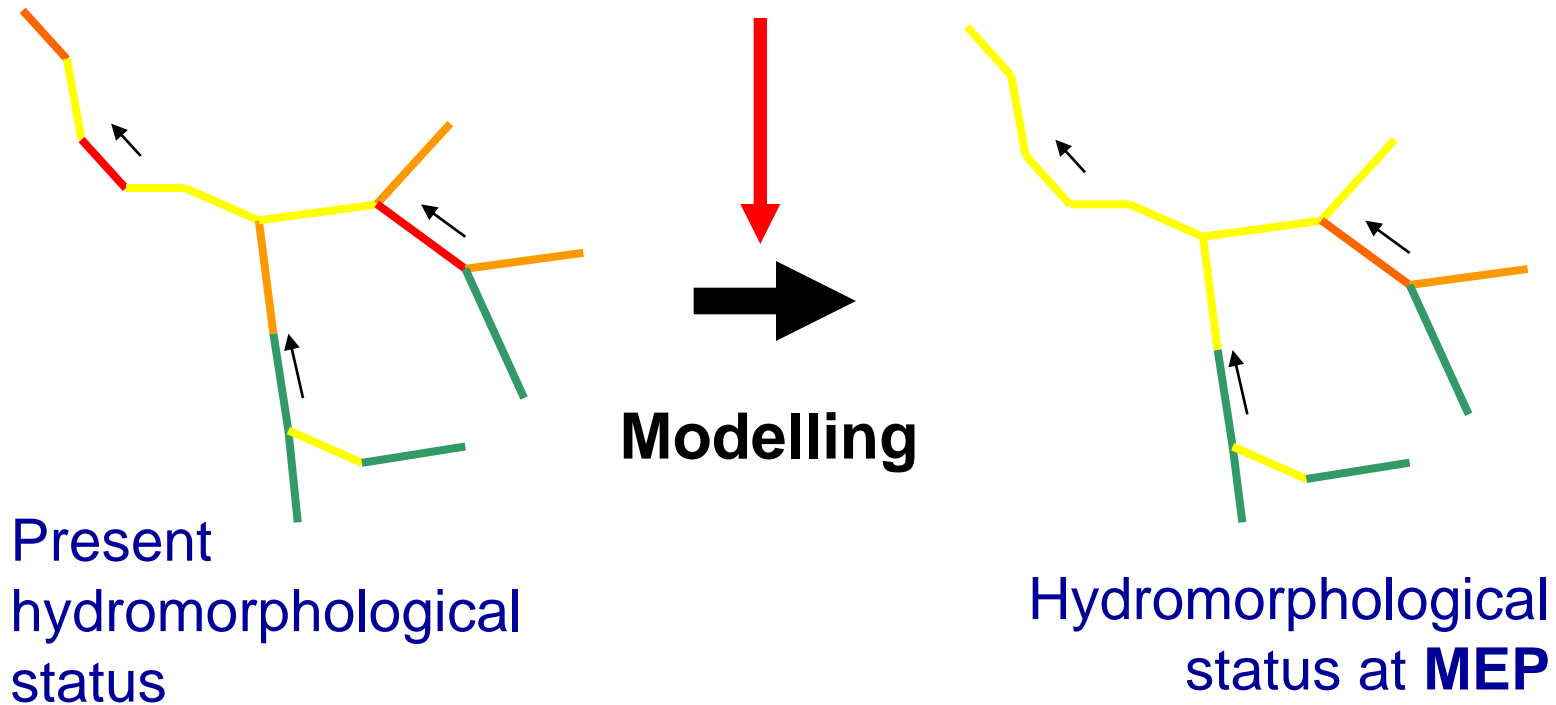
Calculate the ecological status values for the biological quality components at GEP
..by using mathematical / empirical models
(assumption: all mitigation measures are realized to achieve the hydromorphological conditions at GEP)



Determination of the Ecological Potential

STEP 1

Implementation of all mitigation measures without significant adverse effects on the use



Determination of the Ecological Potential

STEP 2

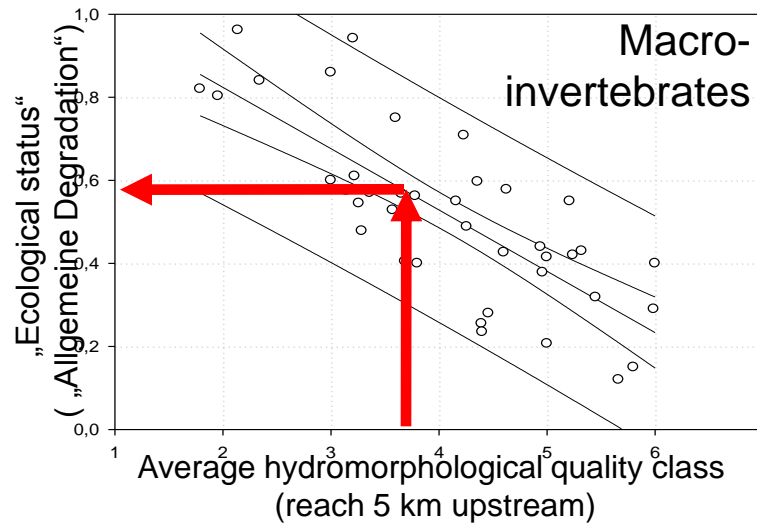
Hydromorphological status (at MEP / GEP)

Link

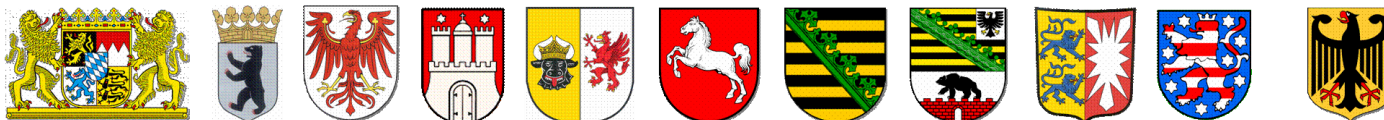
Ecological status (at MEP / GEP)



Correlation between ecological status of biological quality components and hydromorphological conditions at „unpolluted“ reference sites

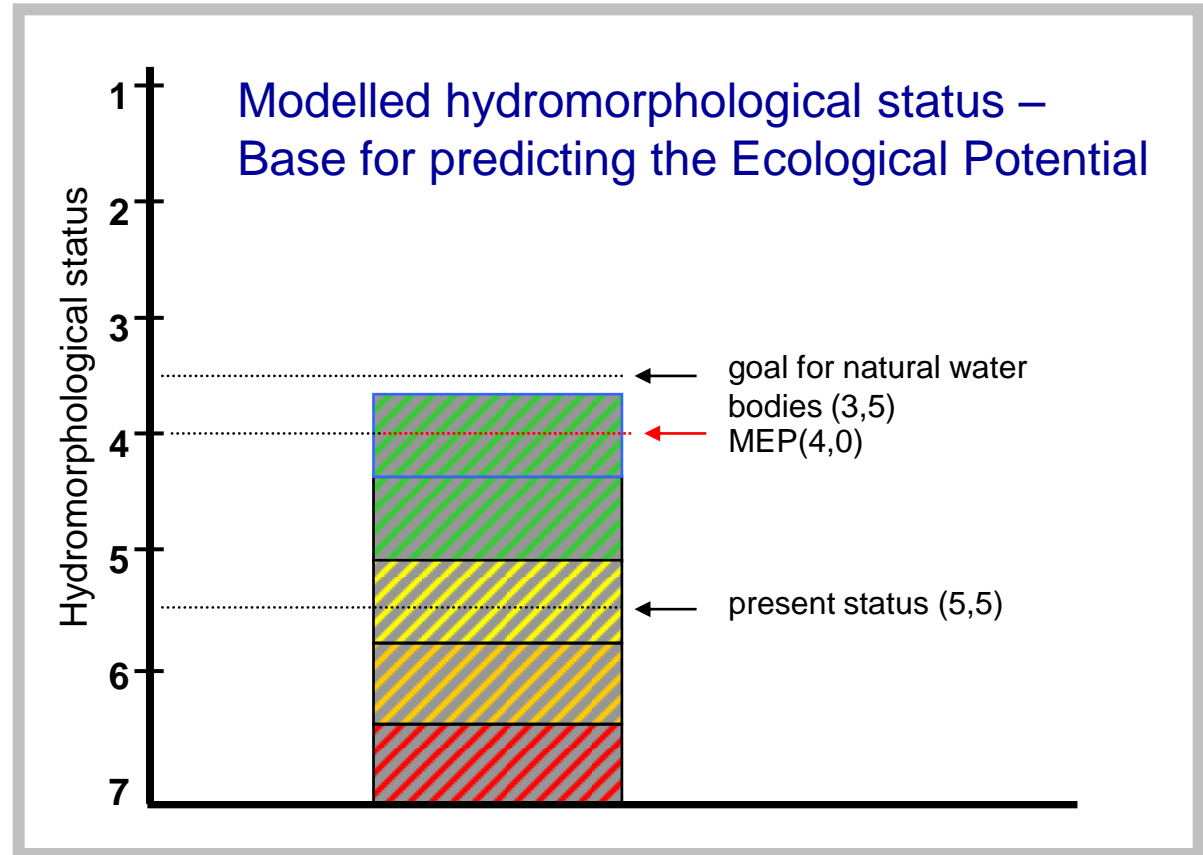
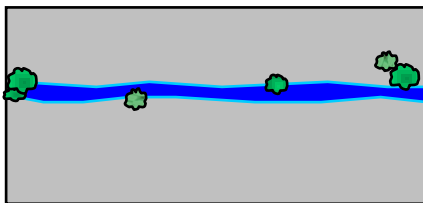
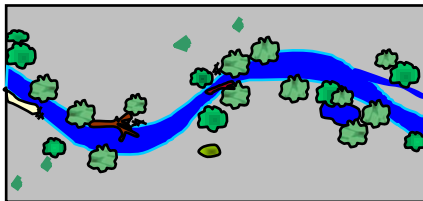
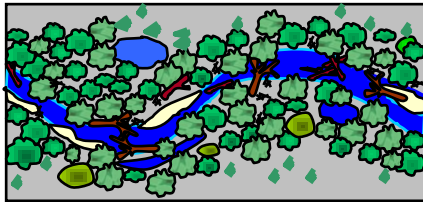


..using models to predict the ecological status



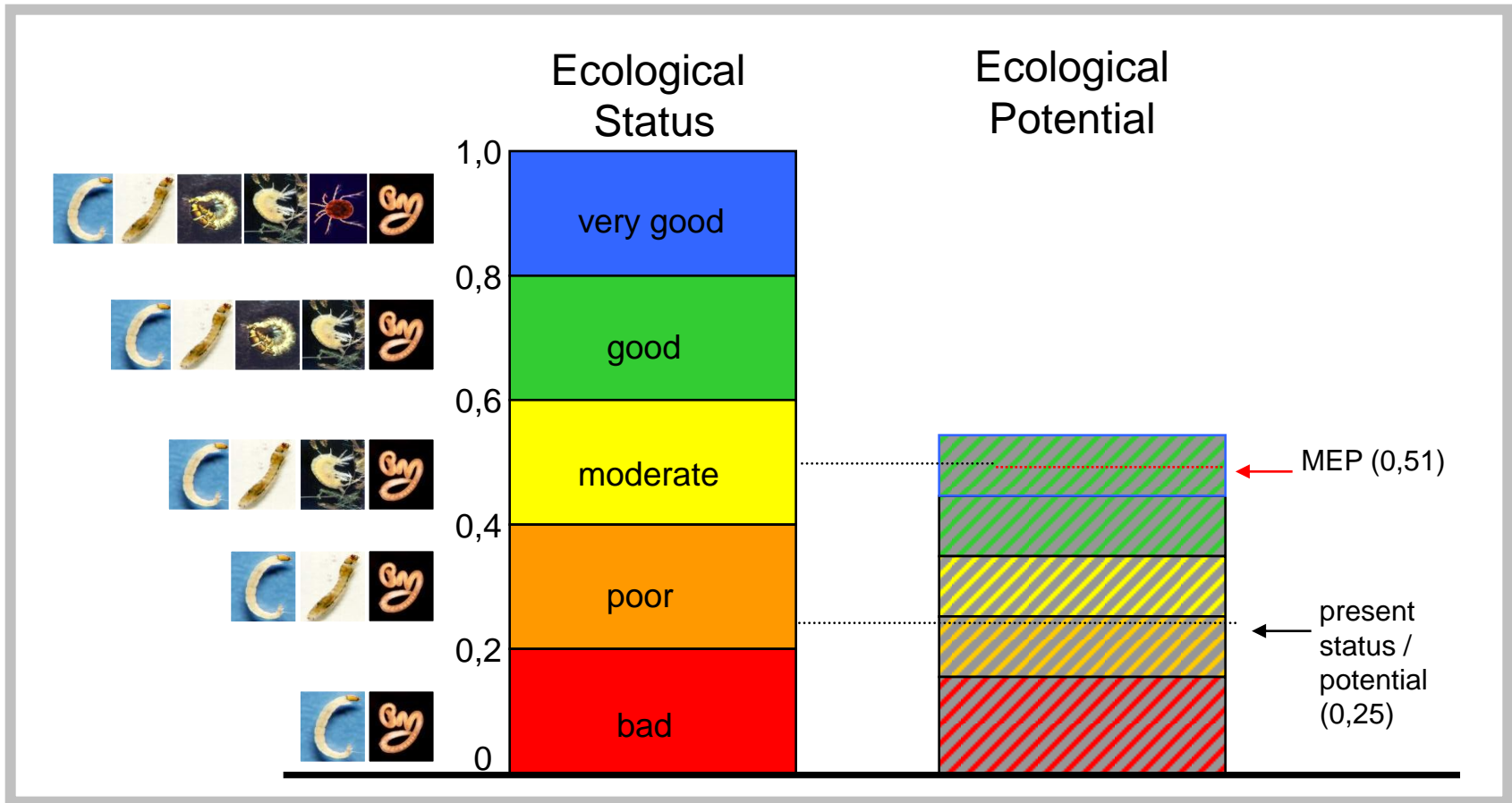
...an example: water body „X“, FG – Typ 5

Hydromorphology:



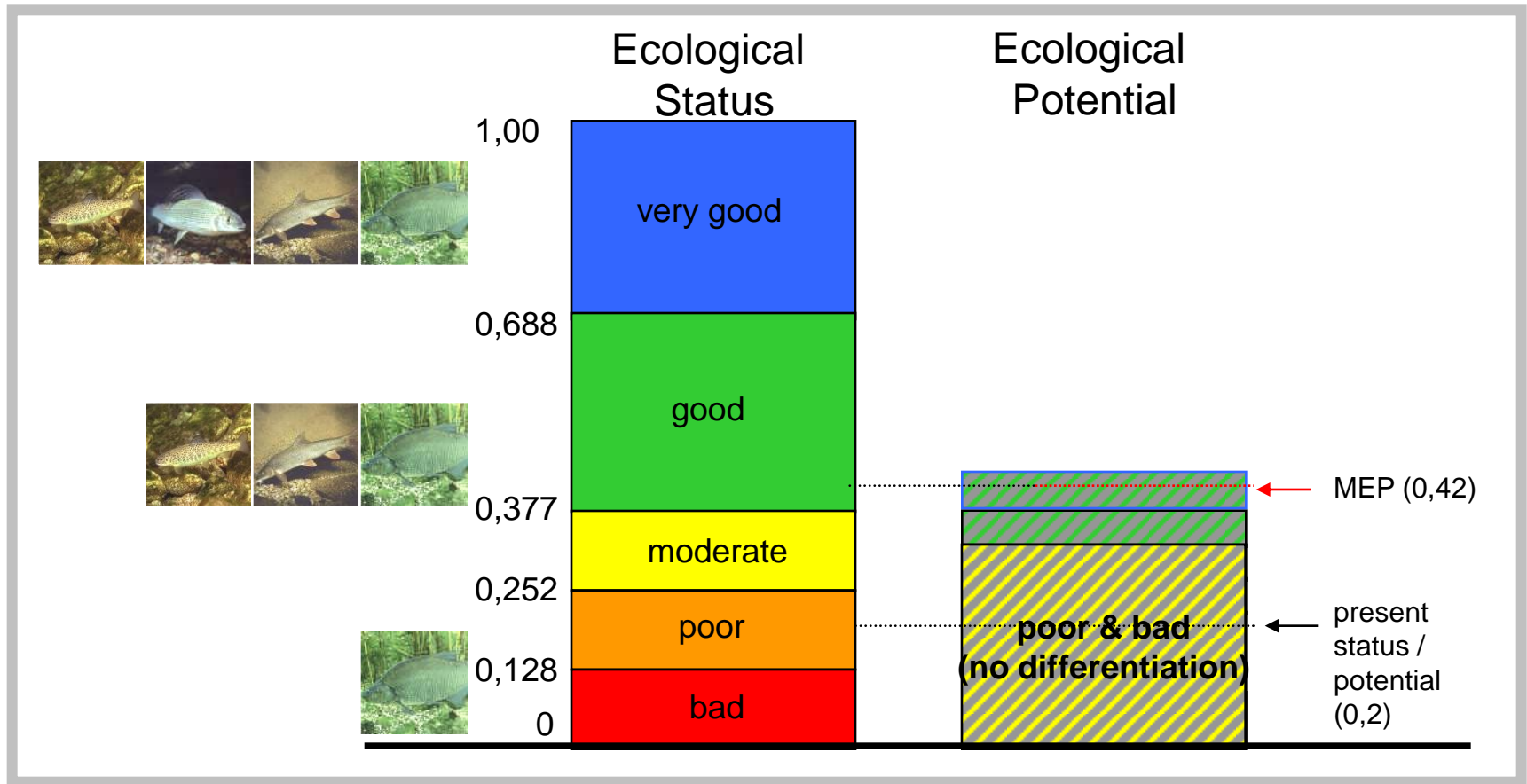
...an example: water body „X“, FG – Typ 5

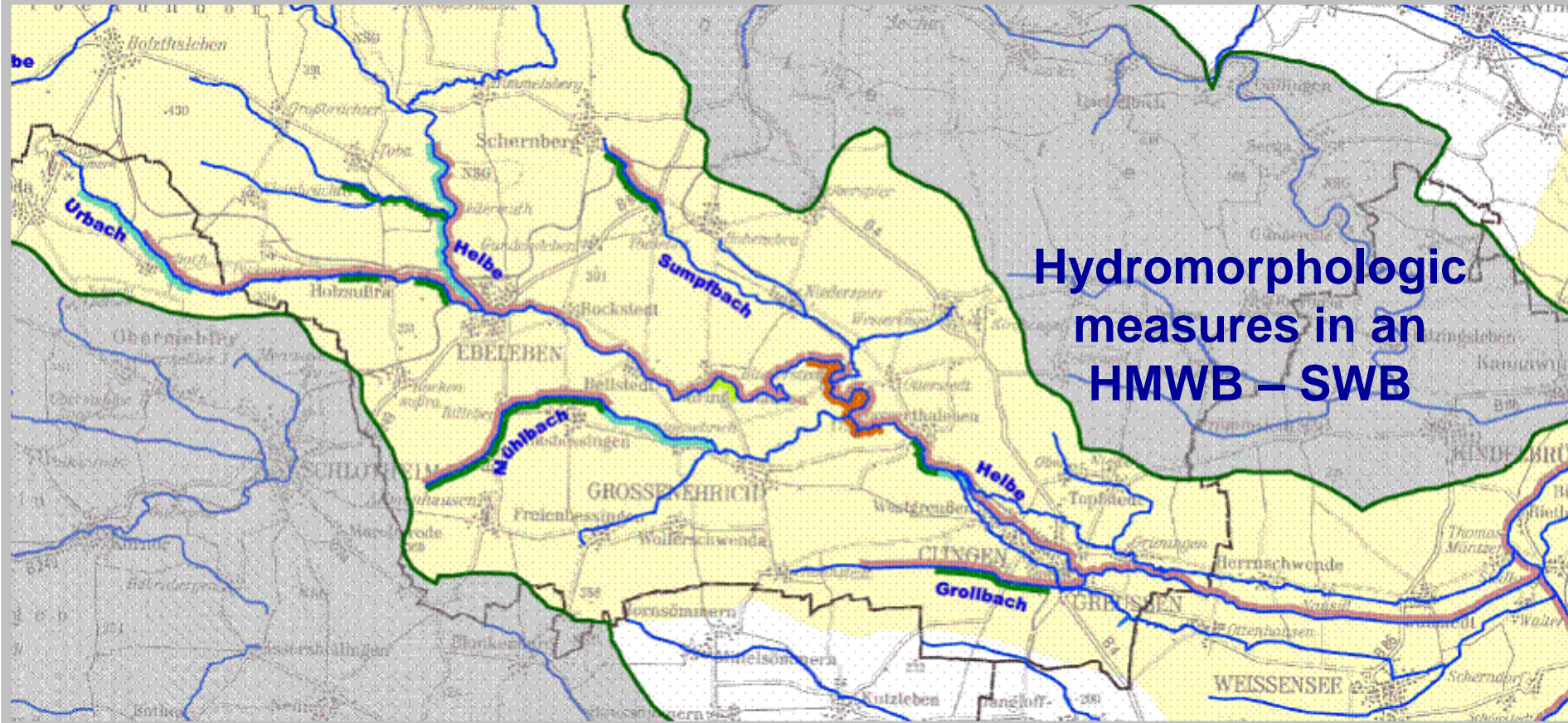
Macroinvertebrates (Allgemeine Degradation as EQR):



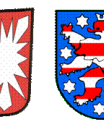
...an example: water body „X“, FG – Typ 5

Fish-Fauna (FIBS as EQR):





measures of **passability** (pink stripe) in spite of HMWB
measures to **improve the structure** in spite of HMWB
⇒ not enough to achieve GES



3 Examples for the approach in Germany:

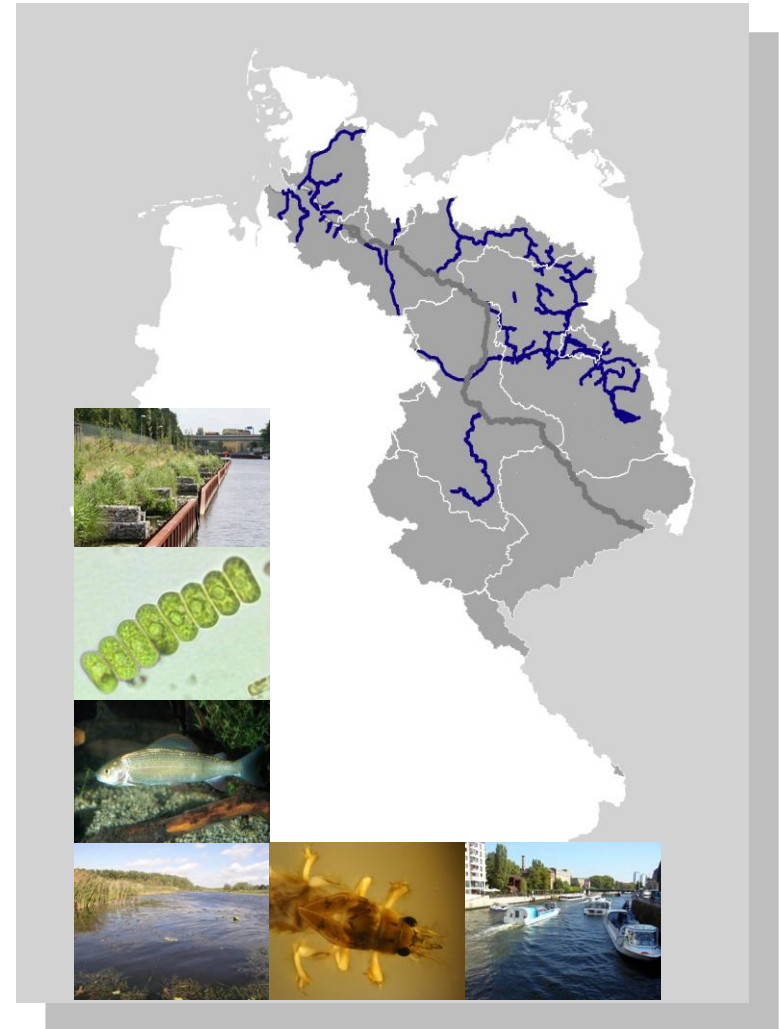
- Bavaria
- Thuringia
- **Berlin**



Project
Derivation of GEP for
federal waterways
in RBD Elbe:

„Endbericht PEWA II
Potenzialherleitung und
Beschreibung“

<http://www.berlin.de/sen/umwelt/wasser/wrrl/de/potentiale.shtml>



Defining good ecological potential according to the „Prague approach“ (good practice paper)

Step 1: Measures to reach maximum ecological potential (MEP)

Excluding measures having a significant adverse effect

Step 2: Measures to reach good ecological potential (GEP)

Further excluding measures that, in combination, probably only deliver slight ecological improvement

Step 3: Abiotic conditions (GEP)

Assessing the effect on hydro and physico-chemical conditions

Step 4: Biological state (GEP)

Assessing the biological state based on the abiotic conditions

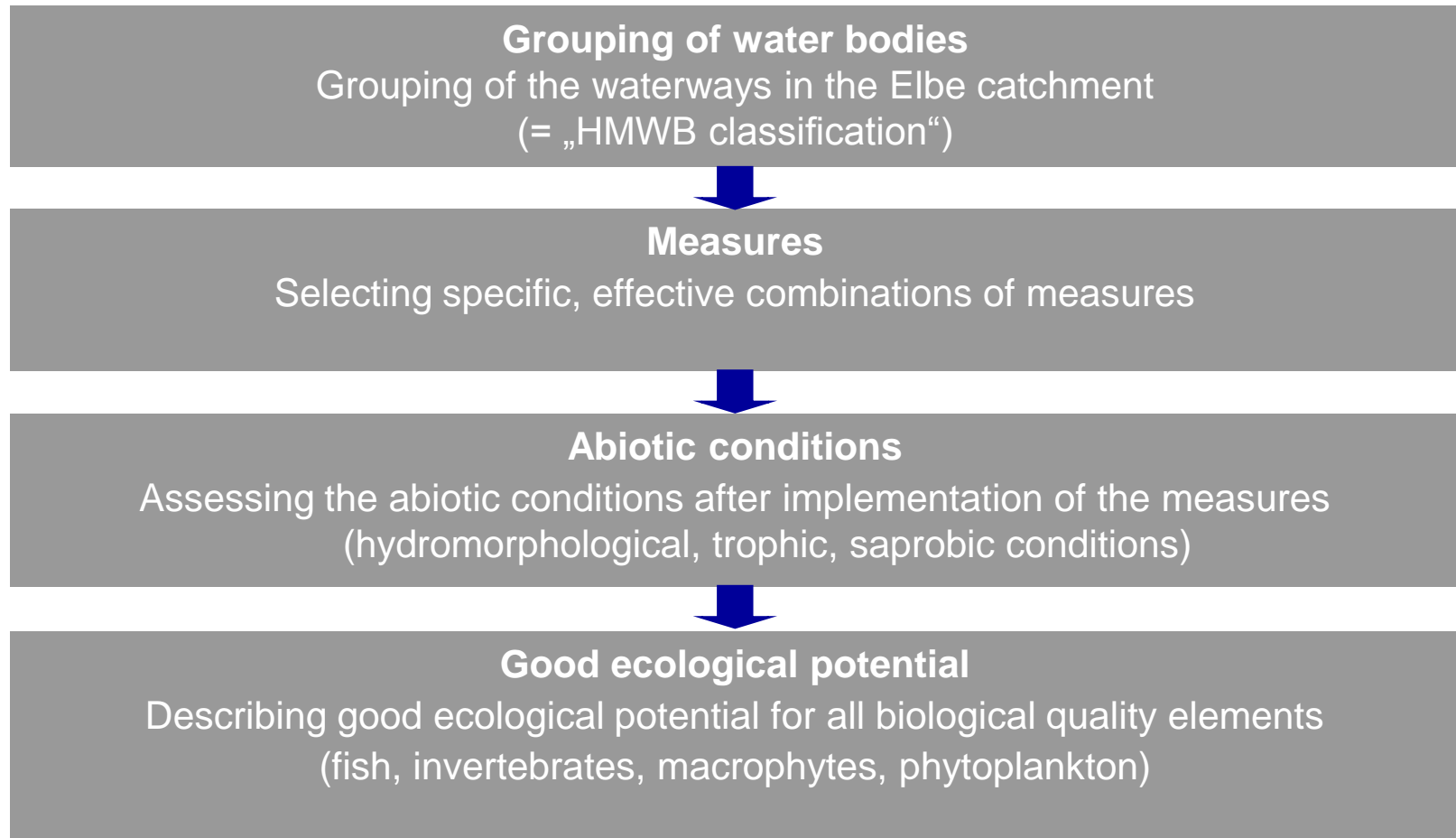
Step 5: Programme of Measures (not part of Prague approach)

Describing GEP measures in detail/ Considering costs/
Extension of deadlines or defining less stringent objectives, if necessary

Abiotic conditions biological state (MEP)

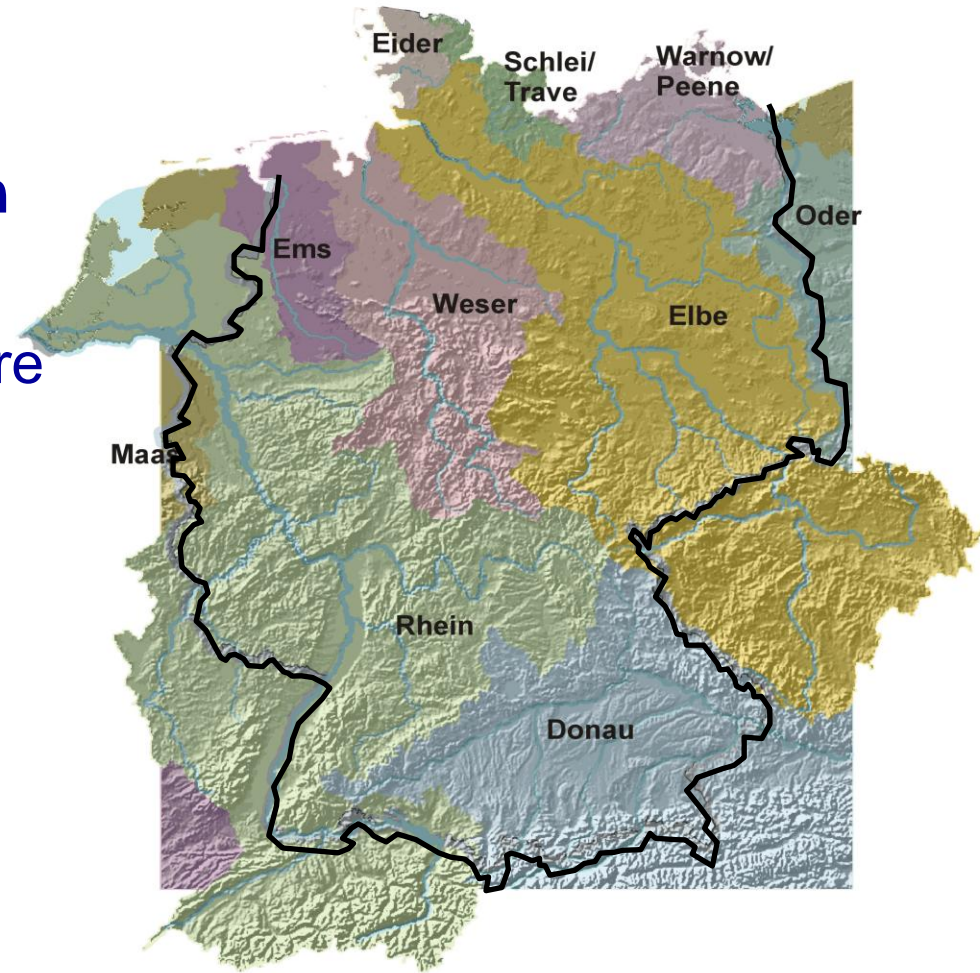


Major steps in defining GEP in the PEWA project



In federal Germany the states have used the „Prague Approach“, the „biological approach“ and a **combination** of both approaches

- ⇒ all „german“ approaches are suitable in spite of uncertainty
- ⇒ results are Germany-wide comparable
- ⇒ Derivation and concrete planning of measures are independent of the designation of HMWB



Advantages

- With the „Prague approach” it is possible to develop the derivation of the GEP based on identification of measure, with a “View” on the efficiency of the measures
- the „Prague approach” accepted of significant uses
⇒ with the knowledge, that measures are **necessary** also in HMWB/AWB – waterbodies
- With the „Prague approach” it is possible to develop the GEP individual for each SWB



Disadvantages

- both approaches: insufficient scientific knowledge about relationships between the ecological status of biocenoses and the hydromorphological and physico-chemical conditions
- Use of ambiguous terms (not well-defined terms)
s.a.: GEP = „slight changes“ in the values values (primary „CIS - approach“)
- Little knowledge about the efficiency of concrete measures and their effects on biological quality elements (primary „Prague approach“)



What is to do?

approaches until now used are **principally** possible for the first RBMP

Developing of an approach for the biological assessment of HMWB and the definition and classification of GEP which is comparable and harmonised on federal level.

- ⇒ Use and modification existent approaches
- ⇒ prevention of deficits of the existent approaches
- ⇒ Use of „new“ scientific knowledge based of the analyses of ecological data and mathematic models
- ⇒ well-defined terms
well-defined determinations based on “expert knowledge/ expert decision”

2010-2015

2016-2021

2022-2027



**Thank you for your
attention**



Derivation of GEP

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