

Economic Instruments in the Water Framework Directive: An Opportunity for Water Protection

Shortcomings in the First Management Cycle
and the Need for Action

**Policy Paper from GRÜNE LIGA e.V.
on the German River Basin Management Plans**



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*“With the Water Framework Directive,
it is the first time in EU environmental policy that economic principles,
tools and instruments are explicitly integrated into a piece of legislation”
(WATECO Guidance)*

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I. Cause

The European Union's Water Framework Directive (WFD) marked the beginning of a new era of European Water Policy when it came into force on 22nd December, 2000. For the first time ever, objectives for the ecological status of surface waters were defined along with a binding timeframe for their achievement. A non-deterioration clause for the status of water bodies was introduced. The Directive requires the member states to adopt river basin oriented management with extensive public participation. At the same time, the WFD introduced several economic instruments into European water legislation.

The economic instruments of the Water Framework Directive are not ends in themselves. They serve to support the achievement of the environmental objectives of the Directive and they build on and support existing regulatory and planning targets. Furthermore, they are important instruments for the integration of water protection into other policy fields. However, as can be concluded from the Interim Review carried out by GRÜNE LIGA ten years after the adoption of the Directive, the economic elements of the WFD have so far been insufficiently implemented in the national water policies and in River Basin Management Plans of EU member states.


The economic analysis of water uses was an integral part of the first analysis of the river basins (concluded in 2005). The River Basin Management Plans (RBMP's) – a milestone for future water management in the EU, achieved after years of preparation – were to be concluded in 2009 and published by March 2010. This deadline was met in all German river basins thanks to enormous efforts to coordinate the RBMPs both between the individual federal states and internationally. The WFD specifically requires these plans to take into account aspects of cost and efficiency in the application of exemptions and in the selection of measures. The introduction of water pricing schemes based on the principle of cost-recovery – as a core element for sustainable water use – was scheduled for 2010 across the EU.

The European Commission had reached a similar view following an evaluation of the 2005 First Analyses of river basins: *"The economic analysis of most Member States are incomplete and is therefore one of the biggest shortcomings in the WFD implementation so far."* (European Commission 2007).

Without solid economic analysis and assessment of the diversity of water uses and water management measures, society runs the risk of continuing to pay for immense misallocations of funds and of public goods, to use water resources in inefficient and unsustainable ways and to cause significant deterioration in aquatic ecosystems.

There is an urgent need for action. The economic instruments must be applied and implemented swiftly and must not be postponed until the second management cycle: Direct and hidden subsidies for agriculture, energy supply, hydropower, mining, inland navigation, flood protection and other water uses must be put to the test and evaluated in terms of the ecological damage they cause. Existing instruments for internalising environmental and resource costs, such as water abstraction taxes, should be applied throughout Germany and significantly extended in their scope by removing exemptions. In light of the pressing need to reduce the use of resources, new instruments such as nitrogen surplus levies or substance-specific taxes on the use of pesticides and mineral fertilizers should be investigated as a matter of urgency.

The re-assessment of the economic analysis of river basins is scheduled for completion by 2013. This offers an excellent opportunity to use the experiences gained in producing the first River Basin Management Plans to improve and enhance the use of economic instruments. This policy paper is based on an analysis of the River Basin Management Plans for the river basins of the Federal Republic of Germany. It aims to contribute to the discussion and outline the need for action in a tangible way.

 ***The conclusions of the GRÜNE LIGA concerning the implementation of the WFD in 2010 are as follows:***
The opportunities that are provided by the economic instruments of the WFD have not been seized in the first management cycle.

II. Background: Economic Instruments in the WFD

Economic analysis

The *economic analysis of water use* (according to article 5 WFD)

- ▶ is part of the first analysis of the river basins (2005)
- ▶ is to be revised no later than 2013, and every 6 years after that;
- ▶ is closely linked with the analysis of the human impact on the status of surface and groundwater;
- ▶ delivers relevant calculations, necessary for achieving the principle of recovery of water services costs; and
- ▶ includes judgements about the most cost-effective combination of measures.

The River Basin Management Plans include

- ▶ a summary of the economic analysis of water uses (article 5 and annex III WFD); and
- ▶ a list of environmental goals, particularly details regarding exemptions according to article 4 WFD.

Recovery of costs for water services

The member states of the EU are required to ensure that by 2010 water-pricing policies provide adequate incentives for users to use water resources efficiently. Different water uses (industry, households, agriculture, etc.) should make adequate contributions to the recovery of the costs of water services, taking into consideration the polluter pays principle, including environmental and resource costs (article 9 WFD).

There is disagreement between the EU and some member states on the interpretation of the definition of water services (article 2 WFD):

Does impoundment and storage of surface water and groundwater include economic activities of all kinds such as agriculture, inland navigation, mining, flood protection, hydropower and land drainage? The European Commission has started infringement against some member states on this issue.

Economic aspects – environmental objectives

In summary, according to WFD economic aspects should be applied to support the achievement of the environmental objectives for water bodies and the application of exemptions in the following way:

- ▶ Measures to promote efficient and sustainable water use in order to avoid compromising the achievement of the objectives specified in article 4 are part of the core requirements for the programmes of measures.
 - > basic measures according to article 11.3 (c)
- ▶ Disproportionate costs or technical infeasibility are general criteria for exemptions to the environmental objective of good status:
 - > heavily modified and artificial water bodies
 - > extension of deadlines, stipulation of less stringent objectives
 - > further deterioration of water bodies.
- ▶ The beneficial objectives or the environmental and socio-economic needs that are served by the modification of water bodies must not be achievable by other means, which represent a significantly better environmental option.
 - > prevention of further deterioration according to article 4.7
 - > designation of Heavily Modified Water Bodies (HMWB)
- ▶ If the benefit of the new modifications to human health, human safety or sustainable development is greater than the benefit of the objectives of the WFD, an exemption to the principle of non-deterioration can be made:
 - > exemptions according to article 4.7

III. Economic Instruments in German River Basin Management Plans

Management Plans

The summaries of the economic analyses that are included in the River Basin Management Plans (RBMPs) are mainly based on the results of the first analysis of river basins from 2004, which in turn were based on data from 2000 to 2002. In some cases, new background documents and updated information have been added. Some federal states do not have their own, separate management plans or didn't include a separate economic analyses there and so rely on the superordinate plan of the coordinating body for the respective river basins.

Recovery of operational and investment costs of drinking water supply and wastewater treatment

The principle of cost-recovery has been established and implemented for a long time in Germany as a central part of the law on local government levies and duties. Water supply and wastewater disposal traditionally fall under the responsibility of the municipal authorities, and the fees are "based on cost-recovery, non-discrimination and equivalence". In this narrower sense, cost-recovery is generally achieved in all federal states. However, cost-recovery of regular water prices only includes total costs and thus does not automatically meet the cost-recovery requirements including environmental and resource costs set forth in article 9 WFD.

Regarding fee calculations for public water services, no distinction is made between consumers from different economic sectors in Germany. The characteristics of the "product" and the associated services are identical since the same treatment requirements apply in each case. In some instances, however, special rates for single large industrial consumers apply.

Wastewater tax

The wastewater tax – an instrument introduced on the federal level and, therefore, applicable throughout Germany – leads to the internalisation of environmental costs in all federal states. The tax provides for incentives to reduce pollution. The charging avoids resource costs for other users.

Water abstraction taxes/fees

In all eleven federal states which levy fees or taxes on the abstraction of groundwater and/or surface water, these taxes are interpreted in the RBMPs as an instrument for internalisation of environmental and resource costs. Water abstraction fees provide incentives for more efficient and considerate water use. Additionally, they include a financing function for water protection measures.

Further instruments for internalising environmental and resource costs

In some RBMPs, a number of other fees and charges (outlined below) that are levied at a state or federal level are described as instruments that are suitable for internalising environmental and resource costs. This indicates that the cost recovery obligation of article 9 of the WFD is seen to be applicable to all respective uses for which these charges apply and not only for specifically defined water services.

- ▶ *Inland navigation fees* are based on federal law and hence apply nationwide, but only Lower Saxony considers them to be instruments for internalising external costs. A reasonable approach in theory; in reality, however, these navigation fees only recover a small fraction of the costs of inland navigation, let alone its environmental and resource costs.
- ▶ In Baden-Württemberg, a specific *water use fee for hydropower* (annual revenue approx. EUR 2 million) and also the state *fisheries fee* are counted as instruments of internalisation.

In all RBMPs, *regulatory permits* are classified as an instrument for internalisation. As the restrictions and conditions of the individual *water-regulatory permit* include protective, precautionary and compensatory measures, environmental pollution is thus prevented or compensated. This also applies to *compensation* or *mitigation* regulation under nature conservation laws. Even though regulatory permits are not usually regarded as economic instruments, it could be argued that they do internalise environmental costs as they prevent pollution or increase the cost of pollution.

Calculation of environmental and resource costs

All federal states emphasise that there is still no fundamental definition of environmental and resource costs. Economic analyses show that the environmental and resource costs of water services could not be estimated to their full extent but only their “internalised” portion, i.e. the amount that has been included into these actual economic costs through permits, taxes, fees, etc.

Water quantity is mostly not identified as a problem by either the federal authorities or the states, since only regional and seasonal shortages exist. The associated resource costs are – it is argued by the federal states – seen to be covered sufficiently by the aforementioned instruments.

When estimating water quantity, issues such as ecological flows or excessive drainage of bogs and wetlands are not discussed. Another problem is that resource costs are only addressed in the context of water quantity issues. However, such costs also occur where water uses compete on quality aspects. A conflict of this kind is arising from agricultural pollution of drinking water resources. It regularly entails high compensation payments for farmers that are not in line with the polluter pays principle. The RBMPs widely ignore this fact.

Extension of deadlines due to disproportionate costs

The disproportionality of costs is only rarely used as a justification for extending deadlines. Examples:

- ▶ Elbe River Basin: Surface water bodies:
94 rivers, 20 lakes;
Groundwater: 19 water bodies
- ▶ Oder River Basin: none
- ▶ Weser River Basin: 70 water bodies
(= 9 % of water bodies)
- ▶ Rhine River Basin: Only a few cases

The justification as to why costs might be disproportionate is, generally speaking, quite weak. In most cases, the “Exemption Justification Code” published by the German Working Group on Water Issues of the Federal and State Governments (LAWA) is applied. However, this is quite vague since no quantitative criteria, such as thresholds, are provided.

A few examples of such threshold values relating to the disproportionality of costs are as follows: Schleswig-Holstein proposes a threshold of around EUR 245,000 per km for restoring good ecological status in rivers on average. Thuringia applies a threshold cost of EUR 150,000 per ton for the elimination of phosphorous and EUR 40,000 per ton for ammonia, which measures must not exceed – at least not during the First Management Cycle.

Cost-effective combinations of measures

All states indicate that they considered the principle of cost effectiveness when selecting measures. Details about this remain unclear, however. Several states refer to the manual on selection of the most cost-effective combinations of measures, which is produced by the German Federal Environmental Protection Agency (UBA). Further sources include LAWA’s catalogue of implementation examples and cost efficiency programmes and studies, as well as previous experiences with efficient measures.

With regard to the cost-efficiency of measures Bavaria offers commonplaces like observing best practice, complying with budgetary and procurement regulations, as well as the implementation of measures by farmers in collaboration with agricultural authorities and the specific use of public funding.

Schleswig-Holstein applies a formula for estimating the cost efficiency of restoring lakes and rivers. It includes costs for measures to achieve the objectives (KE), length or area of the water body (MK) and a “priority factor” (PF):

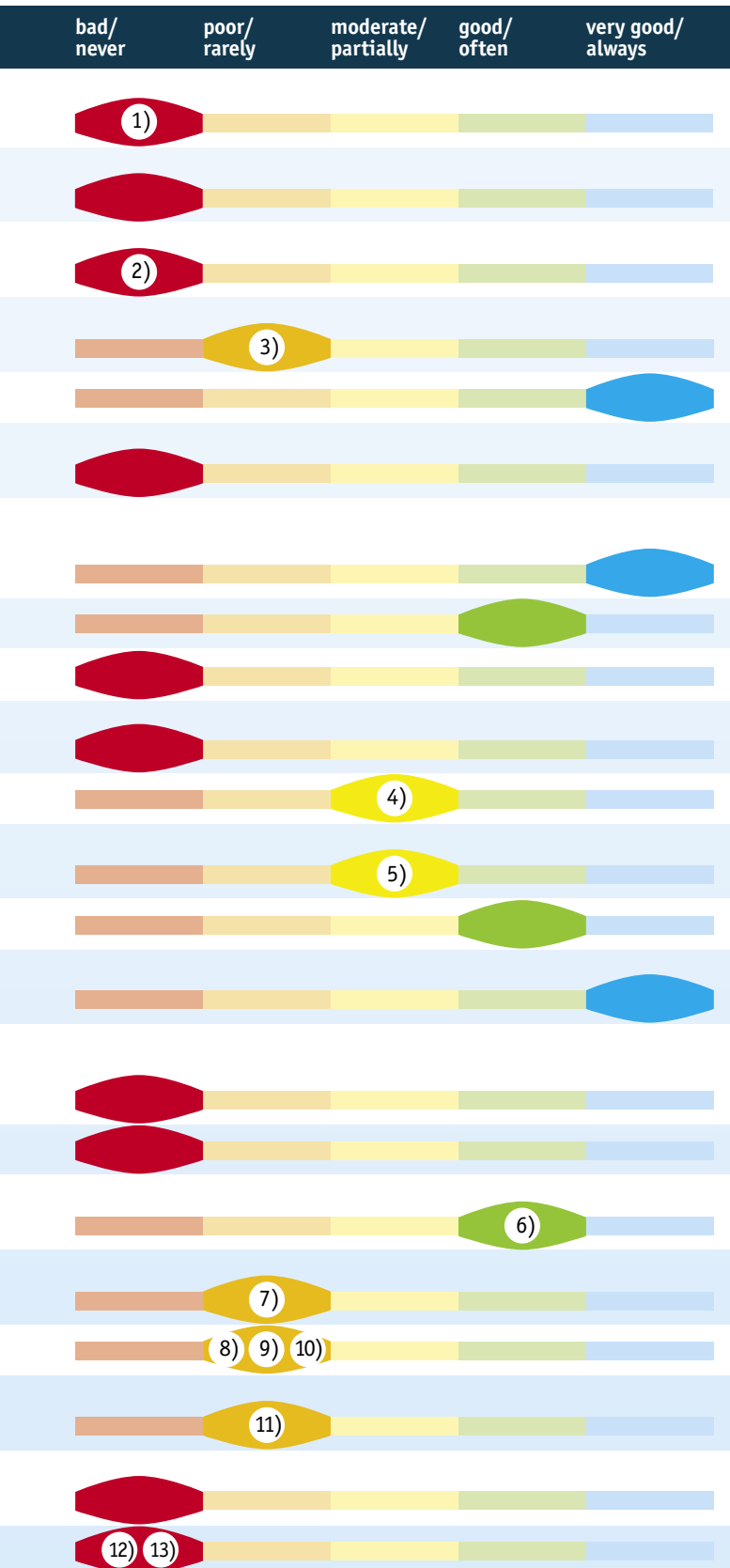
$$(KE = MK_{WK} / L_{WK} \times PF).$$

In Thuringia, the selection of combinations of measures follows a well-structured and comprehensible process (BASINFORM). Potential measures were identified and catalogued using target values (chemical parameters) and taking likely future developments into account. After a preliminary selection of measures, the most suitable combination was identified, using cost-effectiveness as a key criterion. As part of this process, the aforementioned threshold values for disproportionality were also applied.

Survey: Application of Economic Instruments in the German River Basin Management Plans*

Question / Indicator

- 1 Economic analysis (general):**
Do the economic analyses provide sufficient information to assess the economic relevance of water uses?
- 2 Heavily Modified Water Bodies:**
Have disproportionate costs been specified?
- 3 Exemptions (extension of deadlines and less stringent environmental objectives):**
Have disproportionate costs been specified?
- 4 Polluter pays principle and recovery of costs:**
 - a) Have all relevant water uses been defined as water services?
 - b) Has recovery of costs been achieved in the prices for public water supply and wastewater disposal?
 - c) Have rates of cost recovery been determined for all other water services according to their definition in the RBMP (abstraction for irrigation, industrial “self-abstraction”)?
- 5 Incentives of water pricing:**
Do the prices/waste water charges provide incentives for efficient water use/for water saving for
 - ▶ Public water service including wastewater treatment?
 - ▶ Industry?
 - ▶ Agriculture, Mining industry?
- 6 Internalisation of environmental and resource costs:**
 - a) Have the environmental and resource costs of water services been identified?
 - b) Have attempts been made to integrate environmental and resource costs into water abstraction fees/taxes?
 - c) Are revenues from water abstraction fees/taxes earmarked for water resource protection or ecological improvements?
 - d) Have attempts been made to integrate environmental and resource costs into the wastewater tax?
 - e) Are revenues from the wastewater tax earmarked for water resource protection or ecological improvements?
- 7 Harmful subsidies:**
 - a) Have subsidies with adverse ecological effects (agriculture, inland navigation, hydropower, flood protection, etc.) been identified and quantified?
 - b) Have counter-productive subsidies been revised?
- 8 New financial instruments:**
 - a) Have financing and funding instruments been introduced into water management or expanded?
 - b) Have new funding instruments been introduced into other relevant policy fields (policy integration), e.g. funding in agri-environmental programmes?
 - c) Have new economic incentive instruments been introduced (e.g. nitrogen surplus tax)?
- 9 Cost-effective combination of measures:**
Have measures been selected and prioritised according to their cost-efficiency?
- 10 Benefits for the environment and society:**
 - a) Have ecological improvements been valued in monetary terms (e.g. lower maintenance costs, etc.)?
 - b) Have ecosystem services been taken into consideration as benefits?



*** This overview is an assessment based on an analysis of River Basin Management Plans and Programmes of Measures for German River Basins by GRÜNE LIGA.**

- 1) In general, only the sector's gross value is considered; there is no link between economic relevance of water uses and their pressures and impacts. Flood protection, fisheries and recreational use/tourism are not mentioned as water uses in the German Elbe RBMP.
- 2) Disproportionality of costs is never the single justification for deadline extensions and is rarely invoked; no detailed justification is given.
- 3) This omission resulted in infringement proceedings being brought against Germany and other EU member states.
- 4) State taxes/fees on water abstraction exist in 11 of the 16 federal states, with considerable differences in the design of these regulations.
- 5) Partially earmarked for alternative or opposing measures (e.g. dyke construction or river engineering); compensation payments in drinking water protection zones are not in line with the polluter pays principle.
- 6) In many federal states, funding programmes or guidelines for river and/or lake restoration have been introduced, redesigned or new funds have been allocated to them. However, no details are given about this in the RBMPs.
- 7) E.g. water protection measures in agri-environmental programmes in Thuringia and Saxony; several state programmes for river and/or lake restoration.
- 8) Introduction of water abstraction taxes/fees in Saarland (2008) and North Rhine-Westphalia (2004); revoked in Hesse (2002).
- 9) Several research projects have nevertheless been launched.
- 10) Agricultural extension could be seen as new instruments (e.g. Lower Saxony, Schleswig-Holstein); they are not mentioned in the RBMPs.
- 11) E.g. basin-oriented prioritisation of investments in wastewater treatment plants in Thuringia.
- 12) Important in the context of identifying the environmental costs, relating to considerations about a "better environmental option" and for non-deterioration (article 4.7). Surprisingly, though, no non-deterioration cases have arisen in the German RBMPs to date.
- 13) Except for the above mentioned cases, the WFD does not explicitly require the benefit of increased river protection for the environment and society to be considered. However, this is in the spirit of the Directive. The opening recital (1) is clear evidence of this: "Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such."

IV. Guidance from GRÜNE LIGA

Economic analysis

Continue with the economic analysis and correct the major areas of weakness as quickly as possible.

Economic analysis of water uses is set out in the WFD as the basis for the sustainable management of water resources. The guidance on economic analysis (WATECO) that was produced as part of the EU's Common Implementation Strategy (CIS) sets the following objectives for economic analysis:

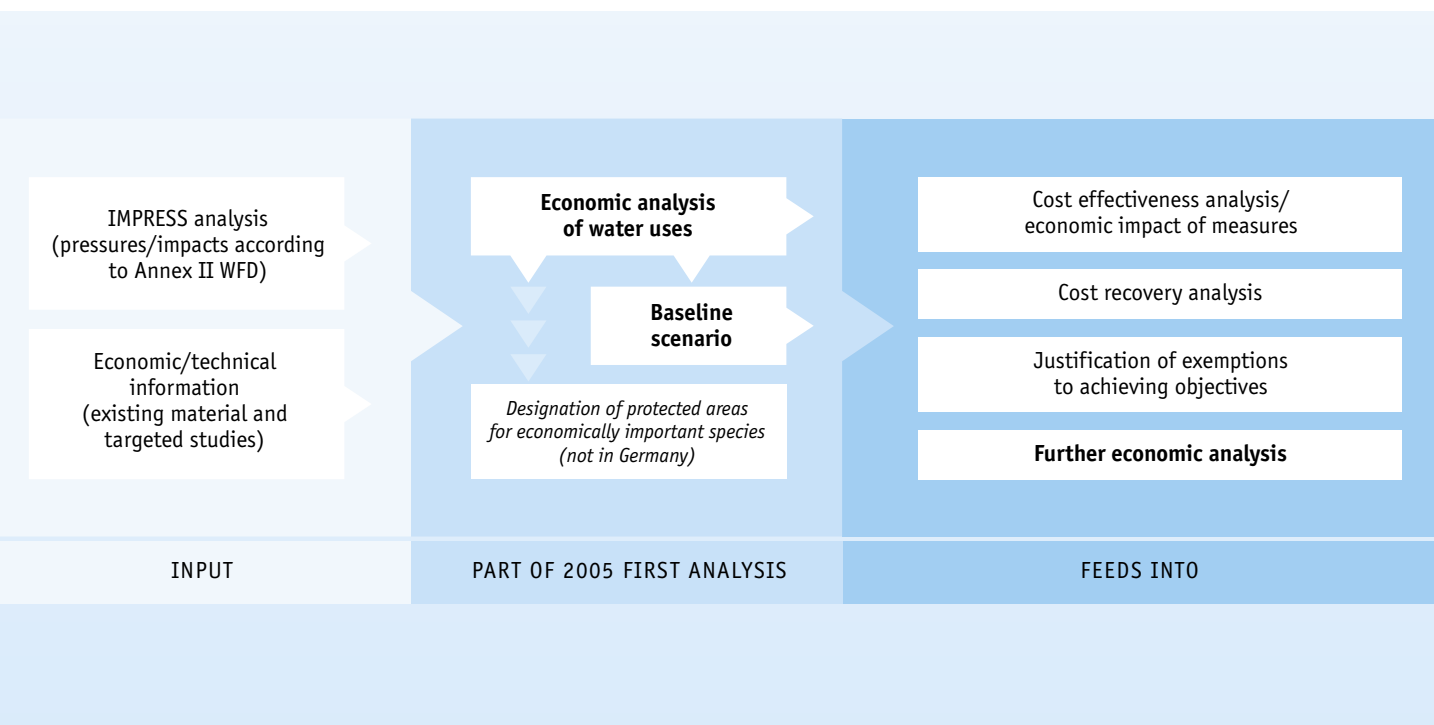
- ▶ assessing the economic importance of water uses, cost-recovery and trends in supply and demand;
- ▶ understanding the economic issues and trade-offs at stake in a river basin; and
- ▶ Overall, the economic analysis is a process of providing valuable information to aid decision-making.

However, the economic analysis published in 2005 and summarised in the German River Basin Management Plans (RBMP) – despite being amended a few times between then and 2009 – still does not supply enough information to act as a basis for determining the economic relevance of water uses in relation to the scope

of their adverse effects on water management and for evaluating the cost efficiency of measures. In its present form, the economic analysis doesn't provide for sufficient information to effectively support the designation of water bodies as artificial or heavily modified and the justification for exemptions under article 4 WFD (non deterioration).

» Conclusions of GRÜNE LIGA:
The analysis of water uses represents an important weakness in the RBMPs.

The economic analysis of water uses, which has hitherto been insufficient, should be resumed as a matter of urgency and it should not be postponed until the next Management Cycle. Article 5 WFD provides for a re-evaluation by 2013; the major inaccuracies and weaknesses must be corrected as part of this process.



Combination of various economic elements of the WFD (based on Drafting Group ECO1: Information Sheet on River Basin Characterisation: Economic Analysis of Water Uses, adapted)

Heavily Modified Water Bodies and exemptions

Reassess the designation of Heavily Modified Water Bodies and the justifications for exemptions on the basis of clear economic criteria.

For over half of all river water bodies in Germany, the environmental objective is not “good ecological status” (GES). The water bodies designated as “heavily modified” (37%) or “artificial” (15%) only have to reach “good ecological potential”. The designation of water bodies as heavily modified (HMWB) or artificial is by far the most common exemption from good ecological status.

However, in so doing, nearly no use has been made of the economic designation criteria, particularly the assessment of a “better environmental option”. Equally, in the case of deadline extensions and less stringent environmental objectives, the exemptions are more indicative of uncertainties in the planning of measures than substantive, confirmed justifications relating to specific water bodies.

Generally, the federal states refer to the Guidance Document produced by the CIS Working Group 2.2 to describe – in all cases surprisingly brief – their approach to HMWB designation (“Guidance Document on the Identification and Designation of Artificial and Heavily Modified Water Bodies”, issued in November 2002).

Considering the hydro-morphological alterations of a water body in relation to its uses is – according to the Guidance document – only sufficient for a *preliminary identification as heavily modified* (as had to be carried out in 2004 as part of the first analysis):

Step 6: Is the water body substantially changed in character due to physical alterations by human activity? [article 2(9)]

The so-called “designation test”, however, also contains a more comprehensive *assessment of the economic implications* in two further steps. A designation as heavily modified or artificial should be made only after these have been carried out.

Step 7: “Designation test 4(3)(a)”: Identify restoration measures necessary to achieve good ecological status. Do these measures have significant adverse effects on the wider environment or the “specified uses”? [article 4(3)(a)]

Step 8: “Designation test 4(3)(b)”: Can the beneficial objectives served by the modifications of the water body be achieved by other means, which are a significantly better environmental option, technically feasible and not disproportionately costly? [article 4(3)(b)]

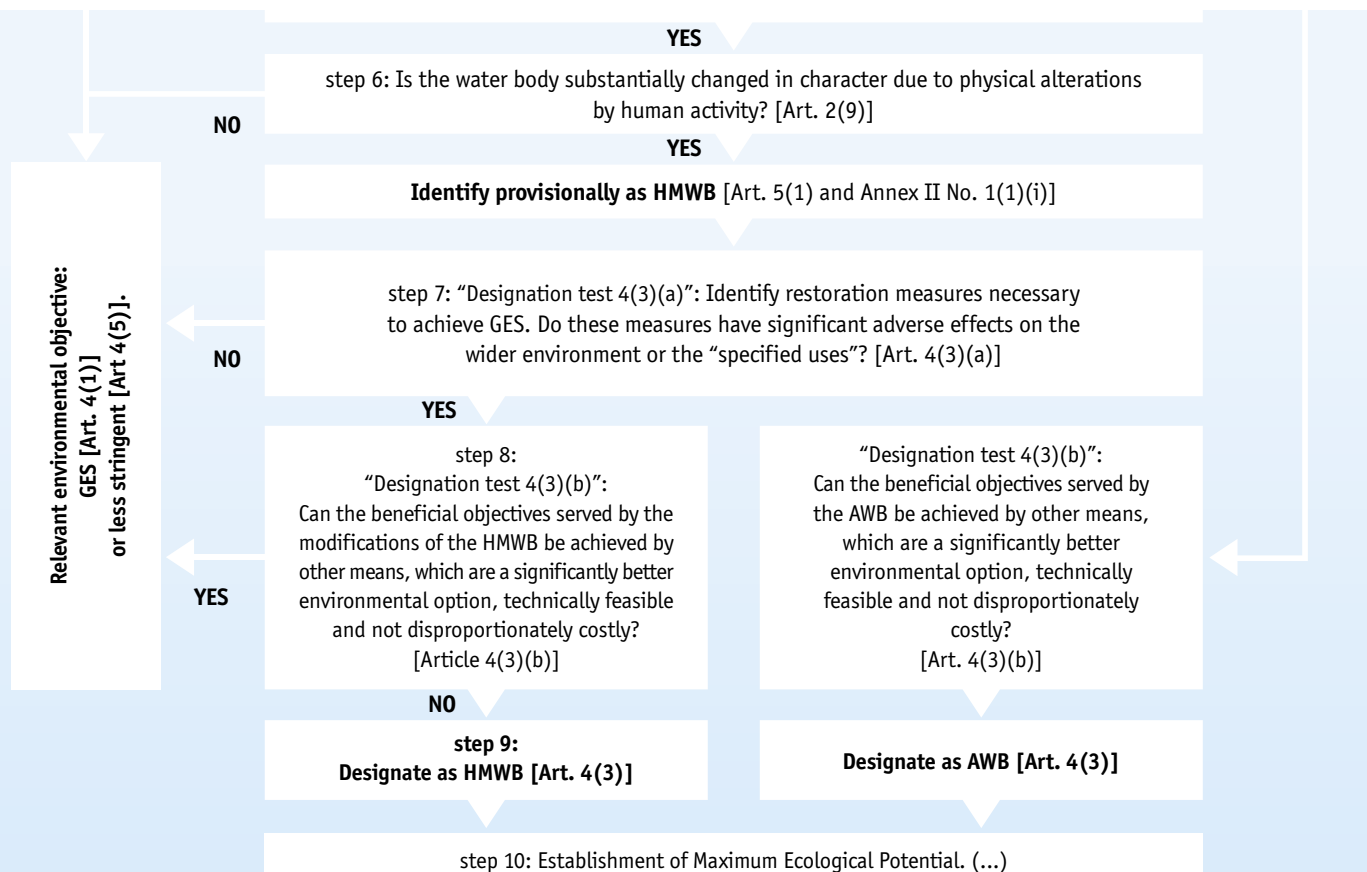
By contrast, most federal states simply list very generally those uses of the water body whose *mere existence* justifies designation as an HMWB (see Box). This is nowhere near sufficient to meet the requirements of the WFD and the recommendations of the CIS Guidance Document!



Conclusions of GRÜNE LIGA:

It can be assumed that by designating a water body as “heavily modified” and “artificial” there has been almost no serious assessment of the economic criteria as required by the WFD! This is a striking contravention of the Directive’s requirements. Thus, a reassessment of HMWB designation must be carried out as a matter of urgency.

Where there has been recourse to deadline extensions and less stringent environmental objectives, disproportionate costs must be discussed in a more concrete manner than has hitherto been the case in the RBMPs.



Excerpt of the decision tree for HMWB designation as given in the Guidance Document of the CIS Working Group 2.2

Example: HMWB designation in Lower Saxony

(as described in Appendix A5-1 to the River Basin Management Plan for the Elbe River Basin):

"All water bodies were evaluated systematically on the basis of test criteria which closely follow the Guidance Document of the CIS Working Group 2.2 entitled 'Identification and Designation of Heavily Modified and Artificial Water Bodies'.

In an area so characterised by the cultural landscape as the Elbe River Basin District in Lower Saxony, the issue of designating artificial and heavily modified surface water bodies has been intensively discussed within the Basin's cooperation forums which represent the water users and those principally affected.

Following the most recent assessment, the designation of running water bodies as heavily modified or artificial water bodies in the Elbe River Basin in Lower Saxony is principally due to the following reasons: agriculture and forestry, fishing, irrigation and drainage, settlement development, water regulation, and flood protection."

Polluter pays principle and principle of cost recovery

Apply the polluter pays principle more consistently: oblige energy producers, mining companies, agricultural business and other intensive water users to pay adequate contributions to the recovery of costs.

Water prices based on the principle of cost recovery, including environmental and resource costs, should not just be limited to the water prices and wastewater charges payable by individual citizens. According to the polluter pays principle, the cost recovery requirement should apply to all water abstractions and discharges, and in principle to all water uses. The adverse effects on hydromorphology caused by navigation, hydropower, urban and tourism uses, as well as agriculture need to be reflected in economically effective incentives in order to promote sensible economic action. Accordingly, damage to wetlands and floodplains caused by large-scale lowering of the (ground)water level, which is associated with these uses, should also be factored in.

The polluter pays and/or user pays principle is an environmental policy guideline that assigns responsibility to those causing environmental pollution (e.g. agricultural nitrate emissions to groundwater) and/or consuming resources (e.g. cooling tower losses from thermal power stations).

Legal regulations also cause water body modification to continue: to date, there has been no effective instrument for revision when planning approval is granted for an artificial water body when the underlying water body use has been relinquished.

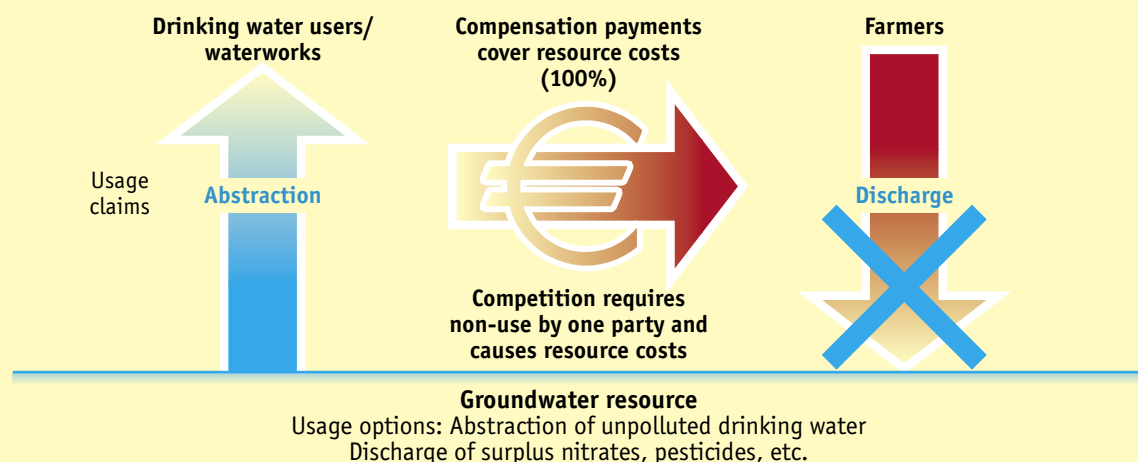
» **Conclusions of GRÜNE LIGA:**
The polluter pays principle and the principle of cost recovery are set forth in article 9 WFD. In view of its impreciseness and the dispute surrounding the meaning of article 9, it should be remembered that the "polluter pays" principle and the principle of cost recovery have been anchored in German water management and environmental policy for many years.

However, the use of these two principles ranges from nearly full application to no inclusion and anywhere in between, depending on the water use. A more systematic application for all water uses is called for.

Controversy surrounding the application of the cost recovery principle in article 9 WFD

The distinction between water uses and a smaller circle of water services is crucially important for the

Example: Agricultural compensation payments in areas used for drinking water abstraction according to § 52(5) of German Federal Water Management Act [Wasserhaushaltsgesetz] and similar state legislation



Compensation payments to the farmer turn the polluter pays principle on its head and follow the "pay the polluter" principle instead.

Water prices and water abstraction fees

obligation to apply *the principle of cost recovery as set forth in article 9 WFD*. The WFD requirements for cost recovery only apply directly to water services.

Due to the crucial importance of this distinction, the EU Commission launched *infringement proceedings* against the Federal Republic of Germany and some other Member states in 2007 also because they had not adequately implemented the requirements of the WFD relating to this point. There has been a deviation from the recommendations made at EU-level in the Elbe Basin and – in the opinion of GRÜNE LIGA – an unacceptably narrow definition of water services has been chosen, which excludes intensive water uses, such as abstractions as part of mining and energy production, from the stricter requirements on pricing and/or does not subject these uses to a cost recovery analysis. In 2006, the European Environmental Bureau (EEB) and the WWF submitted a strategic objection against this to the EU Commission on behalf of several organisations, including GRÜNE LIGA.

The decisive questions for implementing the cost recovery requirements in accordance with article 9 WFD are as follows:

- ▶ Have all relevant water uses been considered as “water services”?
- ▶ Has cost recovery been achieved in the areas of public water supply and sewerage?
- ▶ Have cost recovery levels been calculated for the remaining uses that were described as water services in the RBMPs (water abstraction for irrigation, industrial or commercial self-supply)?

GRÜNE LIGA considers there to be *significant shortcomings in Germany* with regard to the first and third points.

Develop quantity-dependent water prices as a key incentive for more sustainable water use.

The water price is the *key economic instrument* for sustainable water use. By the end of 2010, all EU member states were required to introduce a pricing policy that conforms to the requirements of article 9 WFD: according to this, water prices should offer *incentives for efficient use*; take into account the polluter pays principle; and require *appropriate contributions to recover costs*, particularly for water uses defined as water services.

The reality is somewhat divided, however:

Positive:

- ▶ Analysis of (commercial) cost recovery for drinking water and wastewater was initially conducted on the basis of a few case studies (2005); later analysis has been more extensive, though (e.g. Elbe Management Plan 2009).
- ▶ The existing recovery of total costs for public water supply and sewerage should be welcomed.
- ▶ Water abstraction fees are levied in 11 out of the 16 federal states. A wastewater tax is levied throughout Germany on the basis of pollution discharges.

Negative:

- ▶ The high level of cost recovery that has been achieved in Germany runs the risk of being challenged – at least in part – by recent developments in competition law.
- ▶ Water prices are increasingly focused on standing charges that do not relate to consumption levels.
- ▶ Analysis of cost recovery has been incomplete (omitting environmental and resource costs).
- ▶ There has only been partial revision of water pricing policies (introduction of water abstraction charges in North Rhine-Westphalia and Saarland).
- ▶ There has been no analysis of additional uses, neither of uses classified as water services, such as irrigation or self-supply, nor of other intensive water uses, such as mining and energy production.

Internalisation of environmental and resource costs

► Especially in the case of agricultural irrigation, such analysis would, however, have been necessary, particularly for subsidies for irrigation infrastructure and for the cost of water boards associated with surface irrigation.

» Conclusions of GRÜNE LIGA:
Quantity-dependent water prices for public water supply in Germany, which by and large recover costs, have been a successful model – also when compared to other EU countries – and have led to a significant reduction in drinking water consumption since 1990. The incentive effect of this pricing structure should not be carelessly put at risk. Instead, the objective should be to transfer the effective incentives of quantity-dependent prices that recover costs to other water abstractions and uses.

Assess external costs of water uses and internalise these using taxes.

At present, the most important instruments which can be best designed for internalising environmental and resource costs are the *taxes or fees levied on water abstraction* at state level (water abstraction charges and taxes) and the wastewater tax, which is regulated at the federal level. Taxes or fees on the use of water represent a tried and tested instrument of environmental policy in Germany. According to the verdict in the “water penny” case heard in the Federal Constitutional Court, such charges are deemed resource usage fees. The ecosystem service of providing clear and healthy water is thus at least partly included into the economic system. Water usage charges serve both incentive and financing functions. Earmarking the revenue for water protection objectives is essential.

According to the Federal Constitutional Court, exemptions from taxation for individual water uses are to be regarded as subsidies which require sufficient justification (e.g. in the case of a “problematic competitive situation”). In most cases, however, such justifications cannot be identified.



Compiled for GRÜNE LIGA by Alexandra Gaulke on the basis of the budgets of individual federal states.

In the economic analysis submitted in 2005, some federal states argued that water abstraction taxes help internalise environmental and resource costs. The Federal Environmental Agency (UBA) considers the introduction of water abstraction taxes necessary to implement the WFD.

Furthermore, there are significant differences between states. Five federal states waive water abstraction charges entirely. Although regionally adapted schemes might be often be appropriate, the existing large differences in obligations to pay are inexplicable from the point of view of water protection.

The water abstraction tax amount varies considerably depending on the purpose of the water abstraction.

Example: Water abstraction tax rates for cooling water usage in federal states
in the case of surface and groundwater abstraction

Federal state	Groundwater per m ³	Surface water per m ³
Baden-Württemberg	0.00 EUR	0.01023 EUR
Berlin	0.31 EUR	0.00 EUR
Brandenburg	from main drainage: 0.005 EUR from other groundwater: to be clarified by Legislature	0.005 EUR
Bremen	0.025 EUR 0.005 EUR > 500 m ³	0.003 EUR < 500 m ³
Hamburg	0.11 EUR 0.12 EUR from deeper aquifers	0.00 EUR
Mecklenburg-Western Pomerania	0.077 EUR	0.006 EUR
Lower Saxony	0.02556 EUR	0.01023 EUR
North Rhine-Westphalia	0.027 EUR 0.0027 EUR for cooling flow	0.027 EUR 0.0027 EUR for cooling flow
Saarland	0.03 EUR 0.022 EUR für EMAS plants	0.00 EUR
Saxony	0.076 EUR	0.005 EUR
Schleswig-Holstein	0.07 EUR	0.0077 EUR



Example: Lack of water abstraction taxes for mining and energy production

Mining and energy production are by and large exempt from a duty to pay in all federal states where a tax or fee is levied on water abstraction. In future, the full rates for water abstraction charges should be applied in particular to these sectors as their water uses are associated with high external costs.

Thermal power stations – which abstract 20.1 billion m³ (2007) of water annually – represent the largest water users nationally across Germany. Coal mining requires about 800 million m³ of freshwater. The long-term negative implications are clear from the decision to set less stringent environmental objectives (according to article 4 paragraph 5 WFD) for nine groundwater bodies in the German Elbe River Basin that are affected by mining because it will not be possible to achieve a good status even by 2027.

Yet there have not even been rudimentary calculations in the River Basin Management Plans nor in the economic analysis which allow the enormous costs of mining and cooling water usage to be quantified. This must be rectified without delay!

Example: Effects of brown coal mining on the water resources in Brandenburg

- ▶ Lowering of the groundwater level for mining purposes has a massive impact on the water balance of a large region.
- ▶ Sulphate pollution represents a serious danger for the drinking water supplies of Berlin or Frankfurt/Oder, which are based on bank-filtered water.
- ▶ Every year, 92 million m³ of water are lost due to evaporation from Vattenfall's cooling towers at its coal power station in Lusatia.

Charge rates in Brandenburg for selected water uses

(according to § 40 of the Brandenburg Water Act [Brandenburgisches Wassergesetz])

	Groundwater		Surface water	
	per m ³	actual charge (as % of statutory rate)	per m ³	actual charge (as % of statutory rate)
Statutory rate	0.10 EUR	100 %	0.02 EUR	100 %
Abstraction for: Public water supply	0.10 EUR	100 %	–	–
Other production purposes	0.10 EUR	100 %	0.02 EUR	100 %
Cooling water	to be clarified by legislature		0.005 EUR	25 %
opencast main drainage with exemptions	0.00 EUR	0 %	0.00 EUR	0 %
– for “consumed” share	0.02 EUR	20 %	0.02 EUR	100 %
– for “commercially used share” / production	0.02 EUR	20 %	0.02 EUR	100 %
– for “commercially used share” / cooling water	0.005 EUR	5 %	0.005 EUR	25 %
Irrigation*	0.007 EUR	7 %	0.0014 EUR	7 %
Aquaculture	0.00 EUR	0 %	0.00 EUR	0 %

* Under § 40, 93% of the irrigation water abstracted is deemed to have been “recharged”; an untenable regulation.

The theoretical basis for determining environmental and resource costs must be elaborated further. However, this should not prevent effective economic instruments being used to protect resources and implement the polluter pays principle.

The current use of charges as a means of internalisation makes sense as a pragmatic solution. There is, however, no approximate estimation of the actual external costs and this should be carried out as soon as possible.

Harmful subsidies

» Conclusions of GRÜNE LIGA:
Water abstraction taxes and the wastewater tax are currently the most important instruments for allocating environmental and resource costs to polluters. The national wastewater tax should be retained. Introduction of water abstraction taxes in all federal states and the expansion of the scope of these usage-linked taxes is a matter of urgency.

There is still a great deal of leeway to (re)design water abstraction taxes in a sensible manner from an ecological and environmental perspective at the state level. This room to manoeuvre should be used promptly in order to achieve the environmental objectives of the WFD. In accordance with article 9 WFD, 2010 would have been a good time for this.

There is a particularly urgent need for far-reaching exemptions, such as for mining and energy production, as well as agriculture, to be removed since these act as subsidies that cause considerable environmental damage. In essence, failure to remove unreasonable privileges for individual groups of users is down to a lack of political will.

Quantify subsidies with adverse ecological effects and correct these as quickly as possible.

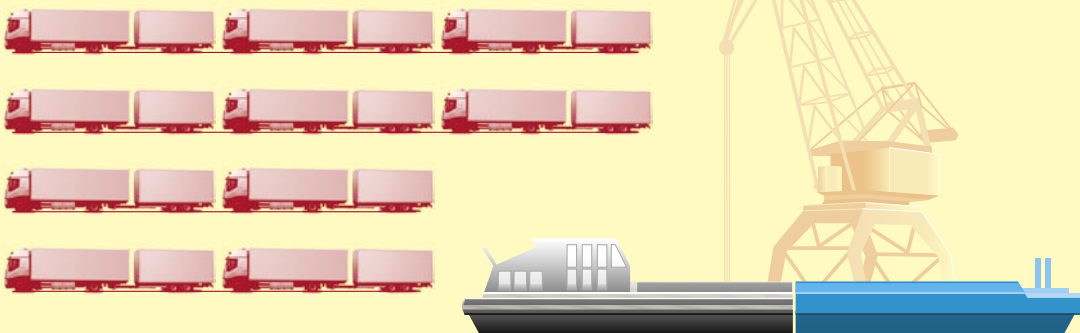
There has not been a reassessment or reversal of subsidies for ecologically harmful water uses by agriculture, inland navigation, energy production, flood protection, tourism, etc.

To date, there are still no precise figures available about the scale of environmentally damaging subsidies relating to water resources. There are only rough estimates for general subsidies that cause environmental harm.

Estimates by Peter de Pous (EEB): the Common Agricultural Policy (CAP) is responsible for EUR 40 billion worth of ecologically damaging subsidies; German Federal Environmental Agency 2010: There are more than EUR 48 billion worth of environmentally harmful subsidies (only at the federal level), not including CAP or fisheries assistance.

However, there are no similar estimates or references to similar estimates for the water sector in any of the RBMPs. Without taking stock of the situation, it is not possible to deploy funding efficiently and economically.

Example of economically dubious subsidisation of inland navigation in the Elbe River Basin



In the first quarter of 2005, the volume of goods transhipped at the port of Halle/Saale totalled a mere 391 tonnes. This broadly equates to ten lorry-loads or half a shipload. EUR 80 million are earmarked for investment to expand the waterways along the River Saale. Navigation on the River Saale is not mentioned anywhere in the Elbe RBMP.

In view of the volume and its ecological importance, agricultural subsidies must urgently be assessed in detail in terms of the pressures and impacts they impose on water resources.

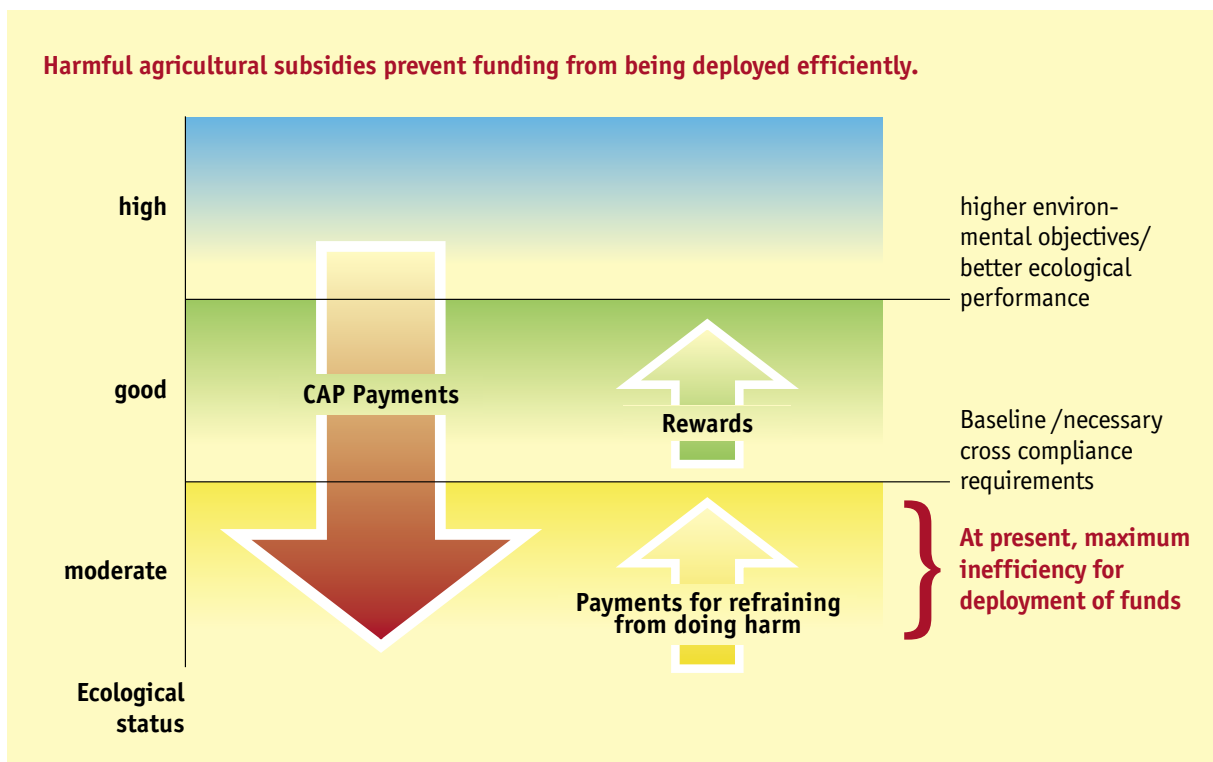
Key shortcomings of the Common Agricultural Policy:

- ▶ CAP payments to Germany (EUR 6 billion in 2004 according to www.farmsubsidy.org) have, by and large, an ecologically detrimental impact.
- ▶ To date, the “Cross Compliance” obligations have not been linked to the environmental objectives for water bodies.
- ▶ Best farming practices codes are not sufficient in terms of water protection; it is necessary to tighten the requirements and introduce a dynamic *further development similar to “state-of-the-art”*.
- ▶ New financing instruments (e.g. agri-environmental programmes) for water protection are in

competition with subsidies for harmful agricultural practices.

Fundamental requirements for ecological payments:

- ▶ Ecological payments must be linked to clear environmental objectives.
- ▶ Such payments require a clearly defined base line and should be granted only for ecological accomplishments beyond the so defined basic requirements.
- ▶ Cross compliance requirements must not endanger the ability to achieve good status of water bodies. Rather they should safeguard it.
- ▶ Correcting subsidies with adverse ecological effects should take priority over the deployment of additional grants and funding.



» **Conclusions of GRÜNE LIGA:** The large number of ecologically harmful subsidies should be evaluated comprehensively in terms of their extent and their impact on water resources.

It is necessary to take corrective action for subsidy policy, particularly in the area of agricultural funding, and this must take priority over the deployment of additional grants and funding.

New economic instruments

Introduce additional economic incentives and sanctions as a means for achieving the Management Plan objectives.

There has been surprisingly little said about new economic instruments as part of the River Basin Management Planning process in Germany. The national discussion about redesigning wastewater and water abstraction charges is, however, encouraging, particularly the contribution made as part of the research project “Enhancement of Wastewater Charges and Water Extraction Charges to a Comprehensive Charge for the Use of Aquatic Ecosystems” carried out by the Helmholtz Centre for Environmental Research (UFZ). However, the option of introducing a water usage charge into environmental legislation, specifically the new Water Management Act, was not utilised after all.

Generally speaking, the following instruments are suitable:

1. Sanctions to tax ecologically detrimental actions
2. Incentives to reward ecological performance or to conserve water use (e.g. within agri-environmental schemes)
3. Financing instruments for ecological improvements (e.g. public funding for river restoration).

Water abstraction taxes were introduced in North Rhine-Westphalia and Saarland, as well as funding in a number of federal states. None of the new economic instruments mentioned in point two have been included in the programme of measures.

Examples of measures in the agricultural sector, which are funded as part of rural development programmes:

- ▶ Extensive grassland use
- ▶ Restrictions on stocking density
- ▶ Bans on the use of pesticides and fertilisers
- ▶ Transformation of arable land into pasture
- ▶ Ecological farming methods
- ▶ Restoration Projects
- ▶ Buffer strips

A variety of economic instruments have been mentioned as part of the discussion surround environmental policy. In some cases, there are also practical exper-

iences from abroad. It appears particularly important to introduce a levy on nitrogen surplus, as proposed by the German Advisory Council on the Environment.

There is a wide range of economic instruments, as illustrated by the example of “MoorFutures” –used to generate funding for waterlogging drained bogs in Mecklenburg-Western Pomerania.


The OECD has formulated principles for introducing and designing environmental taxes and funding instruments to support environmental goods and services (OECD 2008). Some of the key messages are:

Environmentally related taxes:

- ▶ *These taxes provide incentives for polluters and resource users to change their behaviour today [and] long-term incentives to innovate for a more environmentally friendly future tomorrow.*
- ▶ *There is a high potential for greater use of environmentally related taxes [...] in order to better reflect the environmental externalities of relevance.*
- ▶ *Have of opportunities to scale back exemptions and other special provisions in existing environmentally related taxes been reviewed?*
- ▶ *Taxing or regulating environmental “bads” will reduce the risk of unintended subsidisation of environmentally harmful alternatives, as well as reduce the need for public funding.*

Public financial support for environmental goods and services:

- ▶ *Only in cases where public goods are expected to be generated.*
- ▶ *Should be consistent with the Polluter Pays Principle.*
- ▶ *It is important to consider whether such support really is the most economically efficient way of reaching a given environmental target.*
- ▶ *It is also important to define an appropriate reference level.*

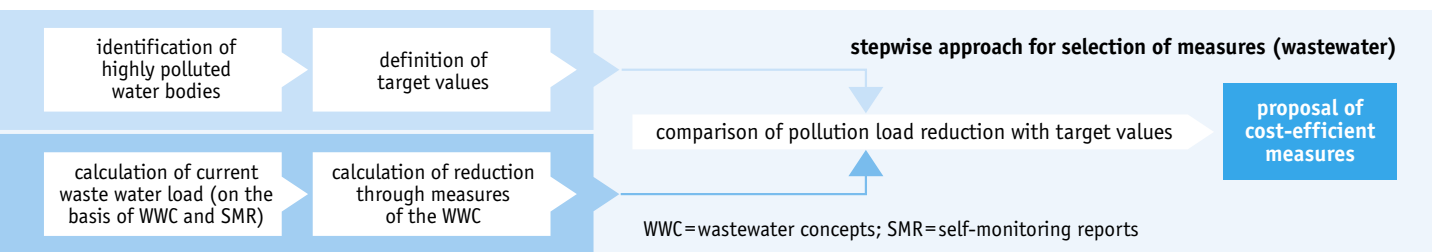
 **Conclusions of GRÜNE LIGA:**
The broad lack of new economic instruments indicates that there are still significant shortcomings and challenges in the field of policy integration. The introduction of a nitrogen surplus levy for the agricultural sector seems particularly urgent.

Cost-effective combinations of measures

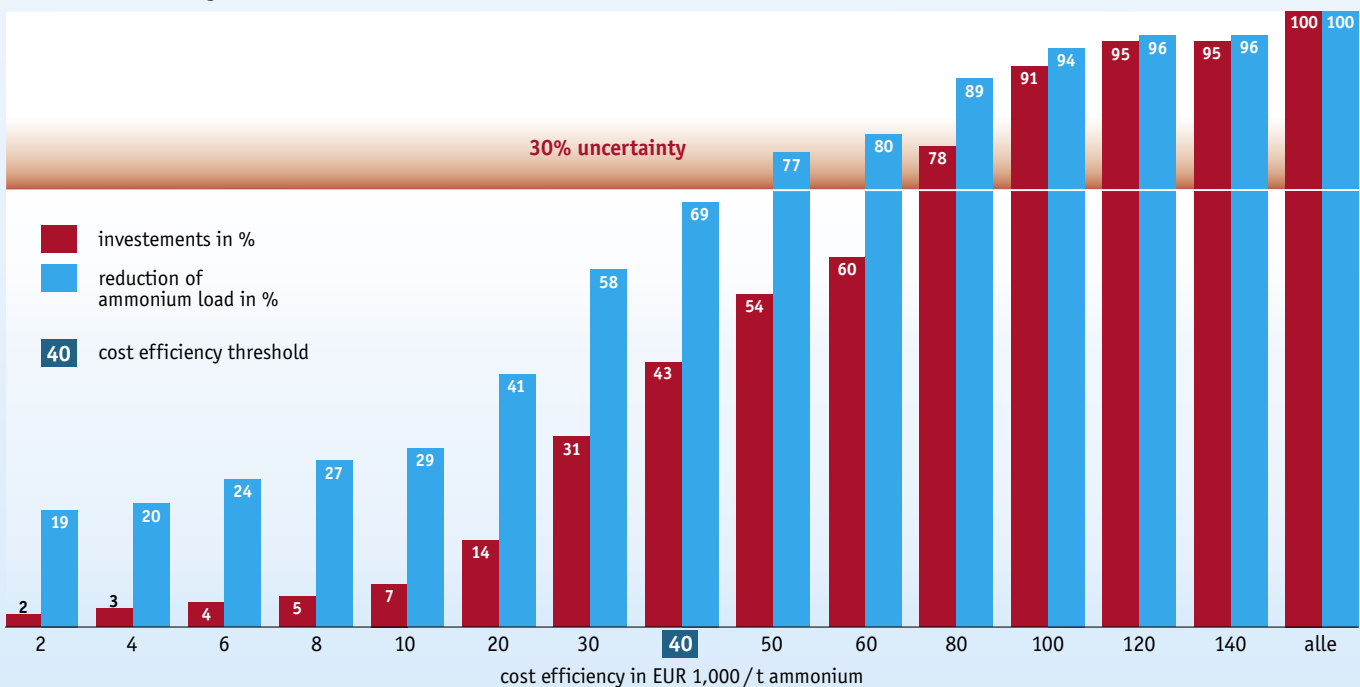
Systematise empirical approaches to cost efficiency and make better use of opportunities.

Although there are relatively few details relating to the cost-effective combinations of measures in the RBMPs, GRÜNE LIGA has assumed that the efficient deployment of funds for water management is an important fringe condition in view of the scarcer availability of funding and more ambitious targets. Moreover, it is believed that this fringe condition has been part of the RBMP planning process and played an important role in prioritising the measures.

Nevertheless, there may still be considerable potential to improve the ecological efficiency for the deployment of funding by using systematic approaches. Reduced maintenance of water bodies or maintenance better adapted to the respective use can help to save costs. Where possible, after technical installations and infrastructure have reached the end of their lives, it must become standard to verify if conservation of these structures is still necessary, whether or not the underlying use satisfies the Directive's criteria and/or if an alternative solution is available, which is less damaging for the water body.



measures for reducing ammonium



In Thuringia, cost efficiency thresholds for measures to reduce P- and N-loads were defined in order to select measures for the first management cycle. This was based on an evaluation of 6.500 potential measures from wastewater concepts regarding their respective costs and potential effect. As a result, thresholds for a permanent reduction of pollution loads were defined at EUR 150,000 per ton for phosphorous and EUR 40,000 per ton for ammonium.

(Source: RBMP Thuringia)

Benefits of water protection for society and the environment



Keep sight of the economic and social benefits of ecological improvements of water resources, rivers and lakes and enhance ecosystem services.

On the whole, the *economic and social advantages* which are offered by implementing the requirements of the WFD are not discussed in the RBMPs in Germany – neither in terms of the monetary advantages of ecological improvements nor with regard to the wider benefits that arise from providing ecosystem services.

Whilst the WFD explicitly requires the benefit of increased river protection for the environment and society to be considered related to the non-deterioration cases, only, not losing sight of the social benefits is in the general spirit of the Directive. The opening recital (1) is clear evidence of this “Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such.”

Peter Gammeltoft (EU Commission, Environment DG at the EEB Water Conference in Barcelona 2010: “Water is not there for the benefit of one economic sector, but for the benefit of society.”

Economic benefits of increased water protection arise, for example, from the following:

- ▶ Cost savings for water users, e.g. through reduced maintenance
- ▶ Commercial gains as a result of improvements to the recreational value of landscapes (bathing waters, experiences of nature, angling) and increased tourism
- ▶ Cost savings by discouraging environmental damage, which would otherwise cause external costs, e.g. through diffuse agricultural pollution of drinking water resources
- ▶ Cost savings due to positive externalities
- ▶ Cost savings by reducing CO₂ emissions using measures with particularly low avoidance costs, e.g. in the case of restoration of peatlands and bogs
- ▶ Supporting economic benefits derived from water-dependent ecosystems and biodiversity.

Ever since the TEEB (The Economics of Ecosystems and Biodiversity) Study was published, the immense economic benefits of ecosystems and biodiversity have become a prominent topic in environmental policy. The aim should be to give greater prominence to such benefits in the field of water protection. Protected areas relevant to the WFD serve as a direct starting point. According to article 4, water management must support the achievement of the conservation objectives in these areas. Thus it also makes a contribution towards fostering associated economic benefits.

Example: CO₂ storage functions of bogs

Besides considerable nutrient loss, drained fens also emit up to 24 tons of CO₂ per year per hectare when used for conventional agricultural purposes. As an alternative, they can be used for the production of black alderwood. The ALNUS Project investigated the conditions for growing alder wood on fens in Mecklenburg-Western Pomerania and showed that black alderwood production can be environmentally and economically sustainable. Positive effects for wetlands, water bodies and climate are linked to economic advantages. CO₂ avoidance costs of between zero and four Euro per ton CO₂ were calculated.

The portrayal of associated ecosystem services can supply supporting arguments with regards to the issue of acceptance and support for ecological improvements. One explicit criterion is the ecological and social benefit when evaluating exemptions in accordance with article 4.7. In so doing, the benefits are considered with regard to the prevention of further deterioration.

Economic assessment of sustainable flood protection measures on the River Elbe (According to a study conducted by the German Federal Agency for Nature Conservation in 2010)

As part of a feasibility study, researchers from the TU Berlin developed a methodical basic framework for evaluating environmentally sustainable flood protection measures, such as dyke relocation, reclamation of natural floodplains and the revitalisation of wetlands, and applied these to the River Elbe as part of a case study. The researchers selected an economic approach in order to estimate the cost-benefit relationship of environmentally sustainable measures on the River Elbe. **A value higher than one represents an economic advantage.** The most comprehensive of the dyke relocations that were investigated – where around 35,000 hectares of floodplain were reclaimed from the Elbe – achieved a **positive score of 3.1**. In the case of transport projects, such a favourable score would classify them as an „urgent need“.

A similar programme would result in annual costs of EUR 18 million. The calculated benefits are three times as high and are derived, amongst other things, from avoiding damage caused by flooding (on average **EUR 6 million p.a.**) and cost savings through reducing

the dyke lines that need to be maintained (**EUR 5 million p.a.**). Additionally, there are savings that result from measures to reduce the Elbe's mineral load (e.g. by agricultural usage restrictions or improved purification at sewage works), which would otherwise have been necessary elsewhere and are required to achieve the stated objectives of the WFD – amounting to **EUR 16 million** each year. Moreover, the researchers also took into account the population's desire to maintain natural wetlands by recording their willingness to pay. This amounted to an annual figure of **EUR 30 million**.



Conclusions of GRÜNE LIGA:

To date, economic cost-benefit calculations have not been included in the RBMPs. Cost-benefit analyses should be a standard instrument for water management planning and be used regularly, even for flood protection measures.

Improved water protection creates economic benefits and adds to quality of life!

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