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The economic requirements of the Water Framework Directive

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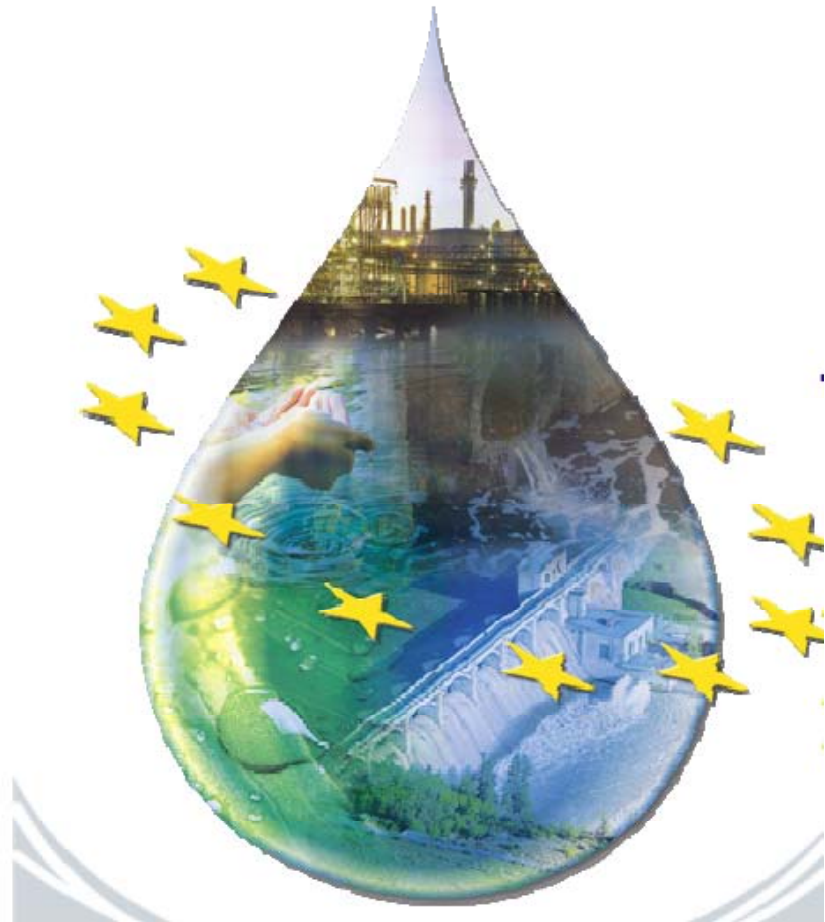


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How to use Environmental Economic
results in Water Resource Planning.
Training course. Kaunas January 13-14
2010

Overview

- The objectives
- The articles and what they require
- Important issues
 - different costs
 - scaling; time and space
 - Some experiences so far from the commission
- Links to the next lectures
- Discussion points



The waterbody objectives



- Each waterbody in river basin district will have an objective
- Default objective:
 - Achieve good status by 2015.
- Alternative objectives:
 - Extended deadline (2021 / 2027),
 - Less stringent Objective.
- Reasons for use of alternate objectives:
 - Natural Conditions,
 - Technically infeasible,
 - Disproportionately expensive.

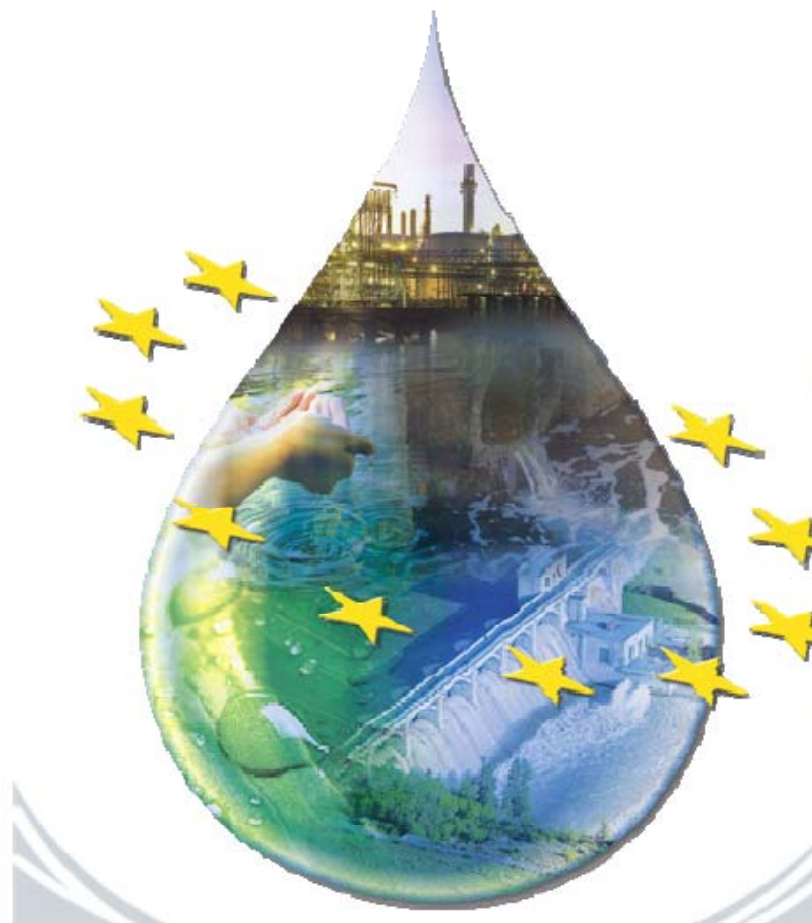


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The articles



Economic aspects of the WFD

Article 4: Environmental objectives :

- *Applying exemptions from achieving the objectives justified by disproportionate costs*

Article 5 / Annex II & III : Economic analysis, Economic assessment of water use

Article 9 : Water Pricing policies

- *Economic instruments for sustainable water use*

Article 11 / Annex III / Annex VI Part B : Programme of measures

- *Article 9 & Cost-effectiveness of the programme of measures*
- *Supplementary measures – financial incentives*

Article 13 / Annex VII : River Basin Management Plans

- *Commission statement - Cost-benefit assessment of the WFD*

Paragraph 4.3 : Heavily modifications

Member States may designate a body of surface water as artificial or heavily modified, when:

- (a) the **changes** to the hydromorphological characteristics of that body which would be necessary for achieving good ecological status **would have significant adverse effects** [...].'
- (b) **the beneficial objectives** served by the artificial or modified characteristics of the water body **cannot**, for reasons of **technical feasibility or disproportionate costs, reasonably be achieved** by other means, which are a significantly better environmental option. Such designation and the reasons for it shall be specifically mentioned in the RBMPs required under Art. 13 and **reviewed every six years.**'



Exemptions from the environmental objectives, paragraph 4.5



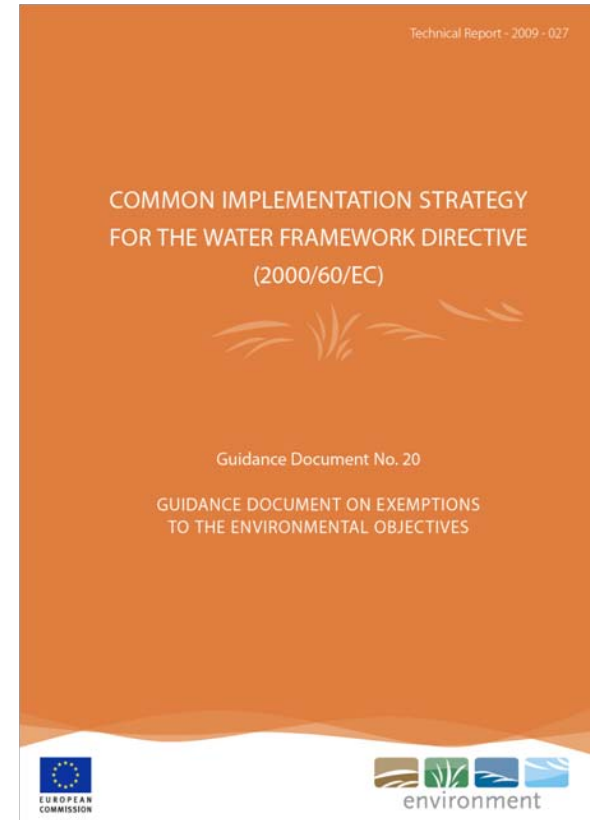
- Less stringent environmental objectives for specific bodies of water when they are so affected by human activity, (etermined in accordance with Art. 5.1), or their natural condition is such that the achievement of these objectives would be infeasible or **disproportionately expensive**

All the following conditions should be met:

- (a) the environmental and socio-economic needs served by such human activity cannot be achieved by other means, which are a significantly better environmental option not entailing **disproportionate costs**;
- (b) the highest ecological and chemical status possible is achieved, given impacts that could not reasonably have been avoided due to the nature of the human activity or pollution;
- [...] (d) the establishment of less stringent environmental objectives, and the reasons for it, are specifically mentioned in the RBMP required under Art. 13 and those objectives are reviewed every six years.'

First important question

- *How do we measure disproportionate costs?*
- No concrete guidance, but:
- " Disproportionality should not begin at the point where measured costs simply exceed quantifiable benefits;
- The assessment of costs and benefits will have to include qualitative costs and benefits as well as quantitative;
- The margin by which costs exceed benefits should be appreciable and have a high level of confidence;
- In the context of disproportionality the decision-maker may also want to take into consideration the ability to pay of those affected by the measures and some information on this may be required."



Article 5, Economics of water use



- Paragraph 5.1 'Each Member State shall ensure that for each RBD or for the portion of an international RBD falling within its territory
 - an analysis of its characteristics,
 - a review of the impact of human activity on the status of surface waters and on ground water,
 - and an economic analysis of water use is undertaken according to the technical specifications set out in Annexes II and III
- and that it is completed at the latest four years after the date of entry into force of this Directive.'



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Article 6: Register of Protected Areas



- Protection of surface water, groundwater or for the conservation of habitats and species directly depending on water.
- The register shall be completed the latest four years after the date of entry into force of this Directive.
- The register or registers [of protected areas] shall include all bodies of water identified under Article 7(1) and all Protected Areas covered by Annex IV [i.e. ...areas designated for the protection of **economically significant aquatic species...**].'
- **This can require valuation**



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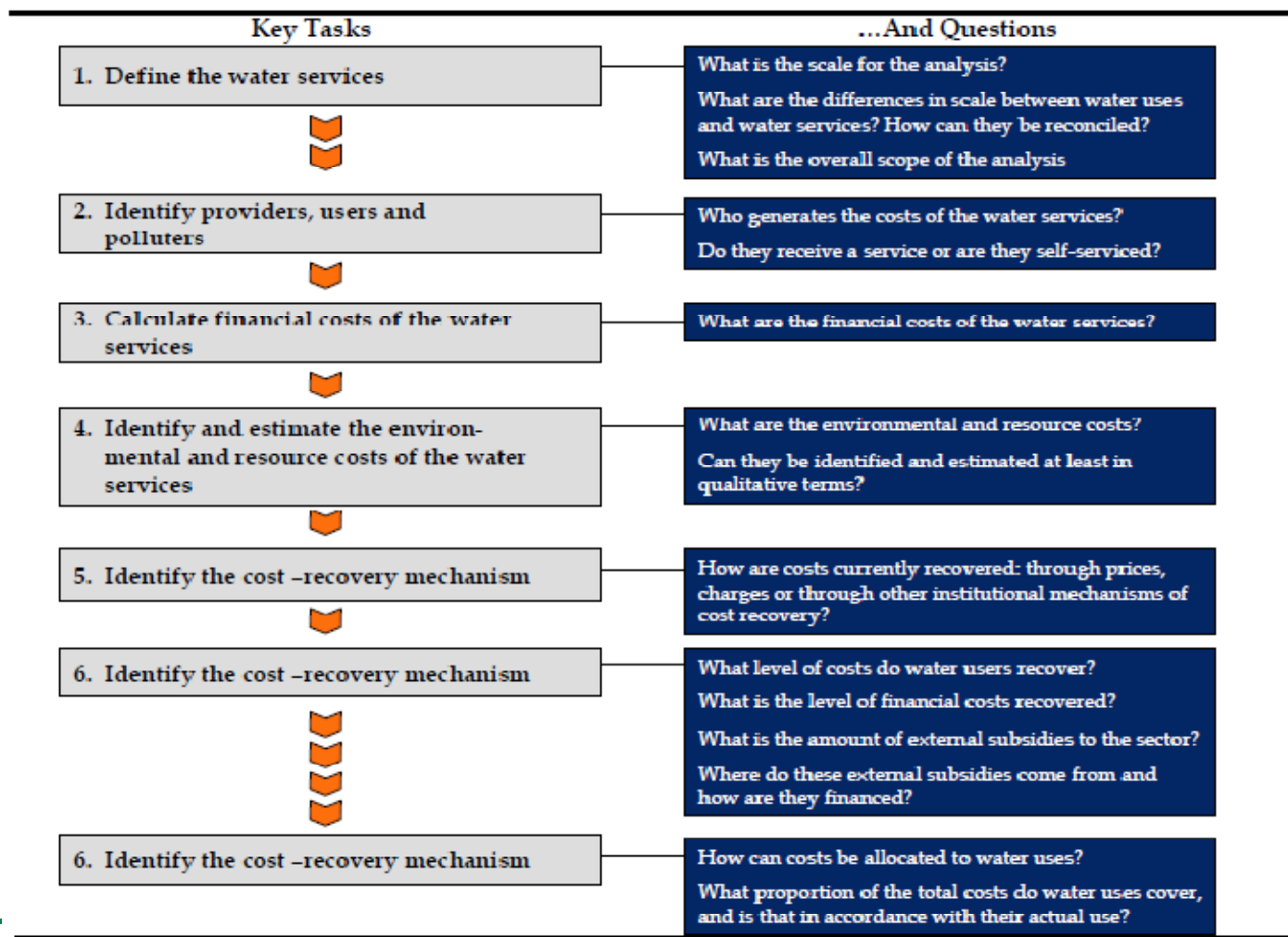
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Article 9: Cost recovery

- Paragraph 9.1 'Member States shall take account of the principle of recovery of costs of water services, including environmental and resource costs, having regard to the economic analysis conducted according to Annex III, and in accordance in particular with the polluter pays principle.
- By 2010: ensure
 - (i) that water pricing policies provide adequate incentives for users to use water resources efficiently, and thereby contribute to the environmental objectives of this Directive
 - (ii) an adequate contribution of the different water uses, disaggregated into at least industry, households and agriculture, to the recovery of the costs of water services, based on the economic analysis conducted according to Annex III and taking account of the polluter pays principle.
 - Member States may in doing have regard to the social, environmental
- and economic effects of the recovery as well as the geographic and climatic conditions of the region or regions affected.'

Reporting cost-recovery (from Wateco guideline)

Figure 1 - Tasks and Key Questions in Analysing and Reporting on Cost-Recovery



Article 11 Programme of measures (PoM)

- PoM shall take account of the results of the analyses required under the other articles in order to achieve the objectives established under Art. 4
- Each programme of measures shall include the “basic” measures; where necessary, “supplementary” measures.’
- “Basic” measures are the minimum requirements to be complied with and shall consist of
 - [...] (b) measures deemed appropriate for the purposes of Art. 9.
 - (c) measures to promote an efficient and sustainable water use
- ‘The programmes of measures shall be established at the latest nine years after the date of entry into force of this Directive [2009] and all the measures shall be made operational at the latest 12 years after that date [2012].’



Article 13 River basin management plans

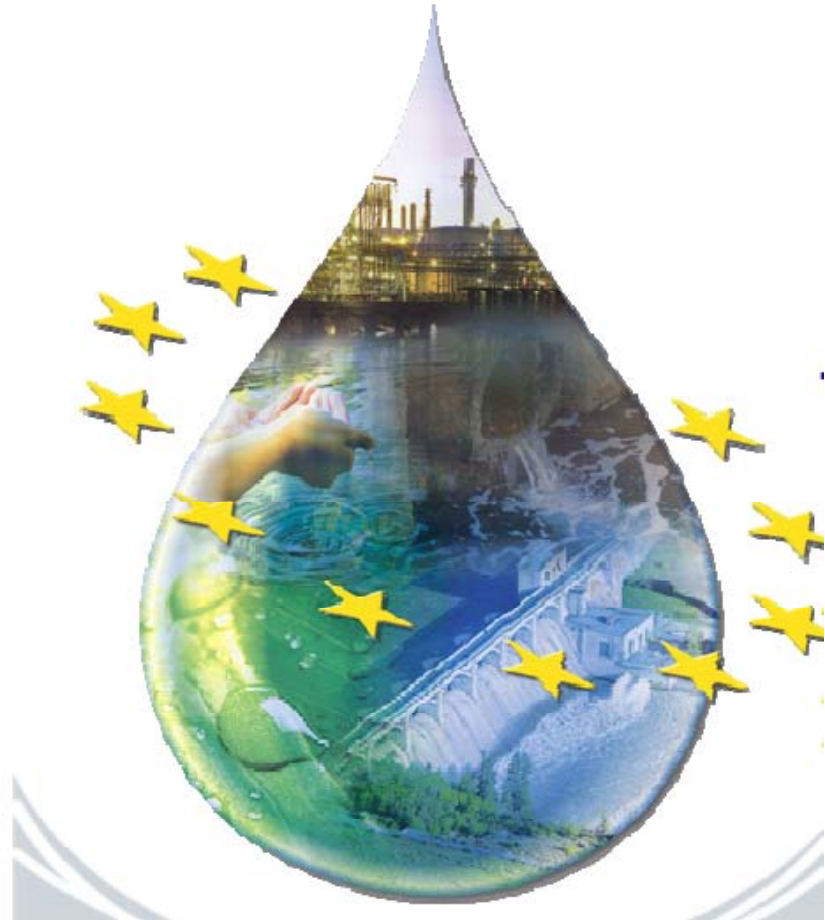


- Member States shall ensure that a RBMP is produced for each RBD lying entirely within their territory, also for international RBD.
- RBMPs may be supplemented by the production of more detailed programmes and management plans for sub-basin, sector, issue or water type, to deal with particular aspects of water management.
- Implementation of these measures shall not exempt Member States from any of their obligations under the rest of this Directive.'
- RBMPs shall be published at the latest nine years after the date of entry into force of this Directive (2009).'
- Paragraph 13.7 'RBMPs shall be reviewed and updated at the latest 15 years after the date of entry into force of this Directive and every six years thereafter.'



Costs

- Which costs to the directive deal with?



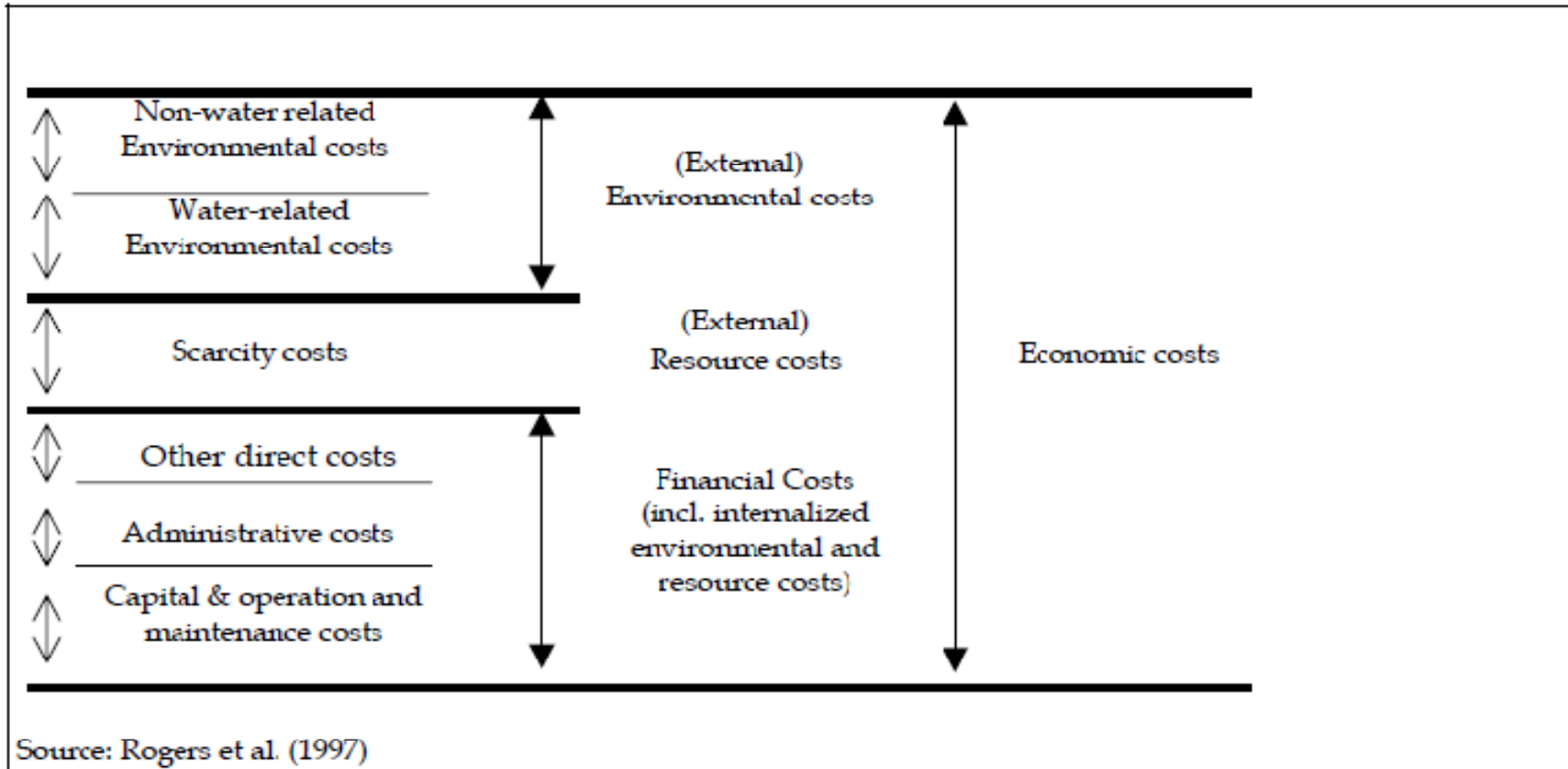
Estimating costs in the WFD:



- Estimating costs is important for several parts of the economic analysis
 - Assessing the costs of alternative options in the **designation of heavily modified water bodies** (*Article 4*);
 - Assessing the need for a derogation based on an economic appraisal of disproportionate costs (such as for the setting of **less stringent objectives or time derogation** - *Article 4*).
 - Conducting a **cost-effectiveness analysis** of alternative policy measures or projects (*Article 5, Article 11, Annex III*);
 - Analysis of water pricing and incentives (*Article 9*)
 - Taking into account the principle of **recovery of costs** of water services, including environmental and resource costs, in order to ensure that an adequate contribution to the recovery of the costs of water services is made by the different water uses, disaggregated into at least industry, households and agriculture (*Article 9, Annex III*);

Costs in the Directive

Box 1 - What are the different types of costs mentioned in the Directive?



Benefits

- Which benefits do the directive deal with?



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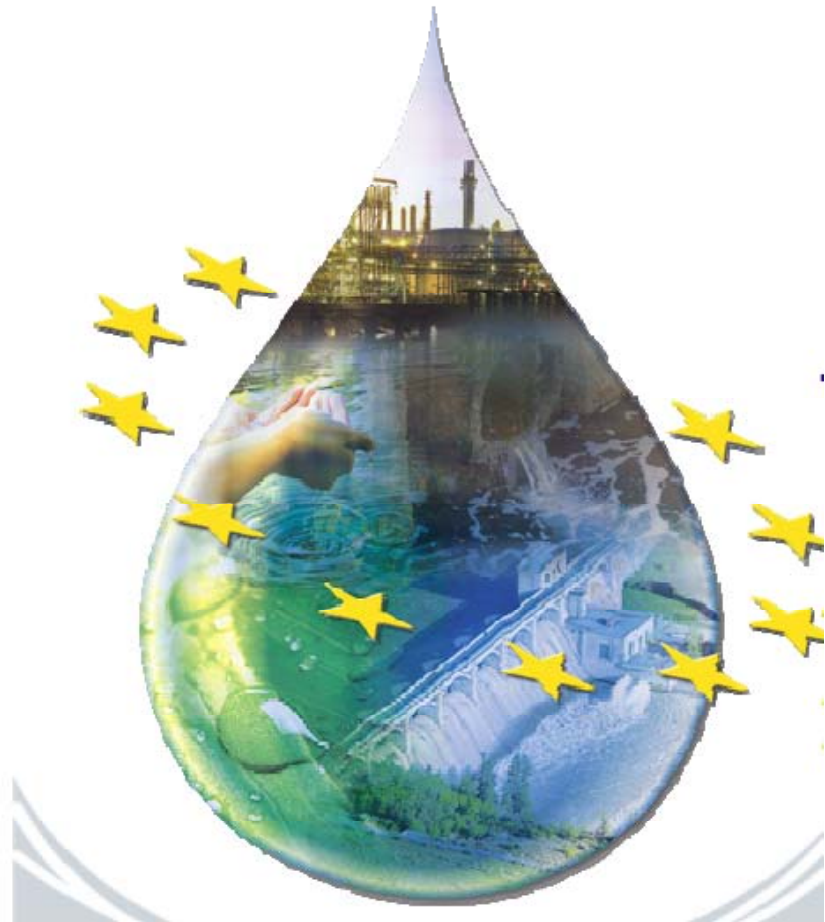
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Definitions from WATECO guideline

Benefit Class	Benefit Category	Types of benefits and examples
Use values	Direct use	Market (Commercial: fishing, navigation, tourism) Non-market (Recreational: water skiing, fishing, swimming, boating, photography)
	Indirect use	Amenity value derived from a nice environment Benefit extracted from someone else using the environmental good (eg. Reading a fishing magazine) General ecosystem support (preserving the food chain to support fishing)
	Option value	Value derived from preserving potential direct or indirect use values in future, which depends on uncertainty over future demand and supply
Non-use values	Existence	Biodiversity, heritage and cultural values
	Bequest	Preservation of water quality for family and future generations

Sources: OECD (1999) and Timothy M. Swanson and Edward B. Barbier (1992).

Important issues



Water use and services

- **“Water services”**: means all services which provide, for households, public institutions or any economic activity:
 - (a) abstraction, impoundment, storage, treatment and distribution of surface water or groundwater
 - (b) waste water collection and treatment facilities which subsequently discharge into surface water.’
- **“Water use”** means water services together with any other activity identified under Article 5 and Annex II having a significant impact on the status of water.
- This concept applies for the purposes of Article 1 and of the economic analysis carried out according to Article 5 and Annex III, point (b).’

Scale issues

For the economic analysis, it is important to understand the level of efforts required in conducting the economic analysis in terms of:

- The spatial and temporal scale at which the information needs to be collected (coverage);
- The type of information to be collected;
- The type and the level of disaggregation of the analysis that should (or can) be performed.



Important administrative scales



- **River Basin**

- Characterising, analysing, defining and implementing programmes of measures.
- Carrying out cost-effectiveness analysis (*Annex III*) for the identification of the programme of measures (*Article 11*)

- **River Basin District**

- Carrying out and reporting economic analysis (*Article 5 and Annex III*)
- Evaluating pricing policies (*Article 9 and Annex III*)

- **Water Body**

- Determination of environmental objectives -based on cost and benefit assessment if exemption (*Article 4*), justification of deadlines extension (*Article 4*)

- **Sub-basin**

- Developing management plans (e.g. for national parts of international river basins, see *Article 13*)



Scale of cost-effectiveness analysis



- Specific scales can be attached to various environmental problems and cost-effectiveness analysis should be performed at the scale at which environmental issues and effectiveness of measures are fully accounted for in the analysis.
- Some pressures have an impact throughout the river basin, e.g. controlling flows in an upstream portion of a river basin will impact portions of downstream flows, while a dam downstream may stop migration of fish and thus impact the entire river's ecology;
- Some pressures have a local impact, e.g. abstraction into a confined aquifer, or polluted discharge into a river that will then be naturally diluted;
- and
- Diffuse pressures often need to be accounted for at the river basin scale, - the addition of all pressures taking place within the river basin that is to be investigated.



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Cost-effectiveness and scale



- Assessing the basic unit that should be investigated into the cost-effectiveness analysis requires considering:
 - The scale of water bodies themselves;
 - The scale at which pressures and impacts take place (which areas need to be targeted by measures so as to restore good water status); and
 - The scale at which measures will be implemented/will take place (see point below).



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Steps in defining scales:



- **Step 1** assess the scale at which environmental issues take place and classify these accordingly (from largest to lowest scale), based on analysis of pressures and impacts.
- **Step 2** undertake the cost-effectiveness analysis for the environmental issue that takes place at the river basin or largest scale considered, and select measures for solving this issue;
- **Step 3** assess the impact of these measures on other measures as well as on other environmental issues,
- At the end of the process, add all the costs of the measures targeted to different environmental issues.



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Upstream-downstream



- **Step 1** – Start the analysis with the most upstream sub-basin. Identify cost-effective measures for this sub-basin along with their total costs and their impact on the status of water bodies;
- **Step 2** – Assess the impact (if any) of these measures on the status of water bodies of the next downstream sub-basin; and
- **Step 3** - If the predicted water status for the downstream sub-basin is below good water status for some/all water bodies, cost effectiveness analysis is then performed at the scale of this downstream sub-basin to identify new measures, their impact, their costs



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Scale and cost-recovery



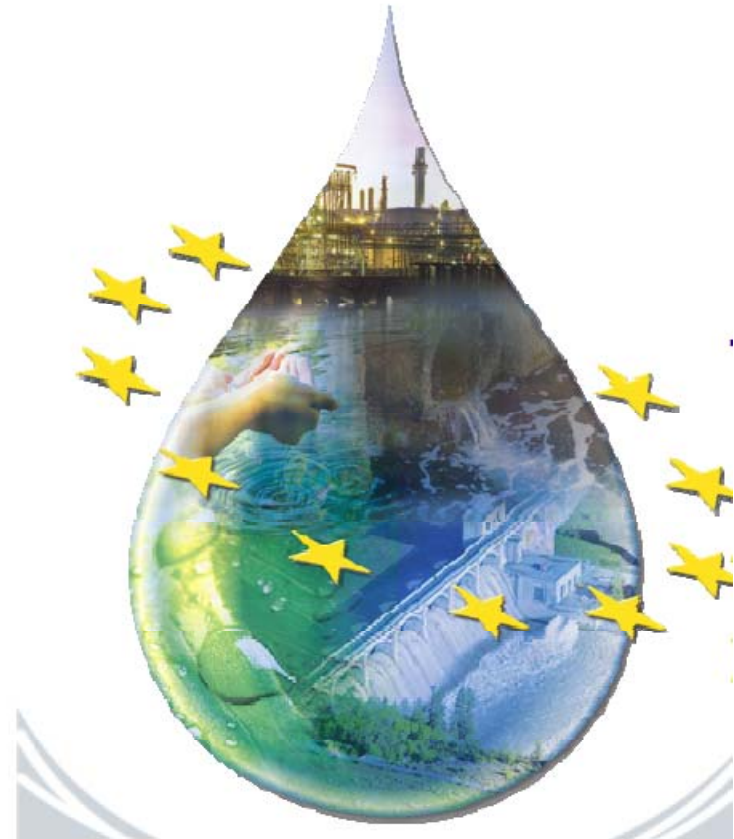
- Information on pollution, uses, financial costs and existing prices are usually collected for water service (or combined water service) areas.
- This information needs then to be aggregated at the river basin scale that appears as adequate for discussing overall financial flows and recovery issues;
- Environmental and resource costs may relate to the sub-basin or entire river basin (e.g. if a pollution created in the upstream part of a river basin has negative impact in the estuary of the same river).
- Assessing these costs requires a good assessment of the scale at which environmental impact of existing water services and uses take place.
- Costs can then be computed for each water service at the scale of the river basin;
- The WFD requests a minimum disaggregation into agriculture, households and industry. According to local circumstances and key water uses identified in the analysis of pressures and impacts, this disaggregation may be further refined



Experiences from the commission



- Maria Brättemark, the commission. Presentation at water week, Stockholm, 2009



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Discussion points for group work



- Can you mention some examples of economic problems of a water body – a river basin – a river basin district? Do you have any cases in your work, where economic assessments shall be done?
- What kind of analyses shall be made, and which do you have most questions to?
- Please formulate these questions



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