



Integrating Economic Approaches in IRBM in Mediterranean Countries:

What does the WFD teach us?

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Preview

- **The European Water Framework Directive (WFD): Economic aspects of Integrated River Basin Management (IRBM)**
- **What is the practical implementation procedure?**
- **Functions of economic instruments**
- **Typology of economic instruments in water management**
- **Relevance of WFD concepts for Med islands**
- **Discussion**



“Background questions”

- **What can/should economics contribute to water management?**
- **“hard” vs. “soft” science**
- **“taking better decisions” without forgetting social, historical, cultural etc. background**
- **what are the political games behind all this?**



The European Water Framework Directive

- re-orders European water legislation;
- imposes the Integrated River Basin (Water Shed) Management Approach
- thus affects administrative structures and
- reduces the importance of frontiers in Europe
- introduces/reinforces the use of economic concepts in water resource management (cost recovery, polluter pays etc.).

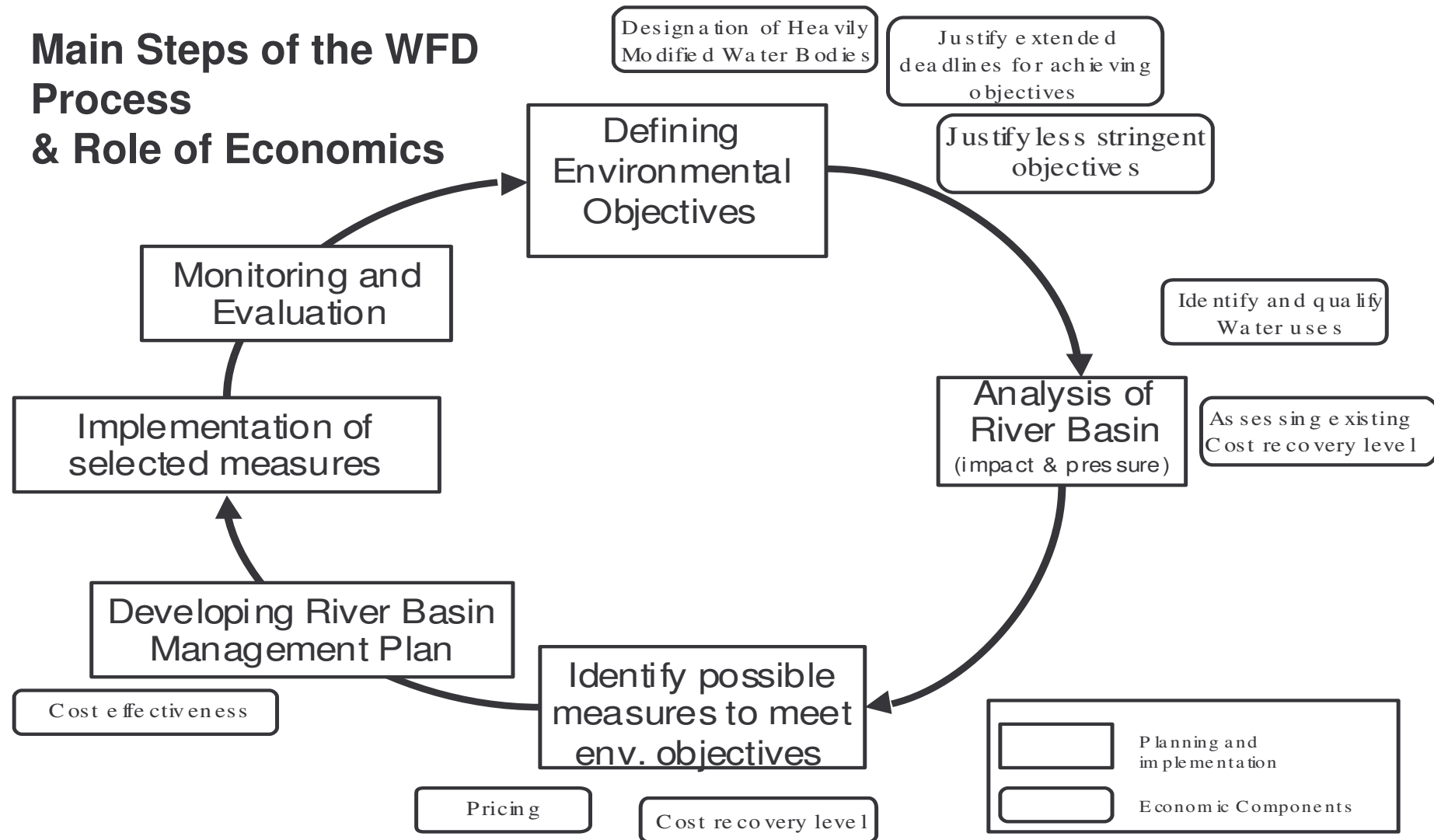
--> Chances and difficulties!



WFD-Central economic aspects: Overview

- **cost recovery** (including internalisation of environmental and resource costs of water use)
 - **economic incentives** for rational water use
 - **selecting the most cost-effective** set of measures to reach the environmental aims
 - **[justifying derogations from objectives]**
- > issues of importance for water deficient regions!**

Main Steps of the WFD Process & Role of Economics



WFD-economic aspects: cost recovery

- „Member States shall **take account** of the principle of recovery of the costs of water services, including **environmental and resource costs** [...] and in accordance in particular with the polluter pays principle.
Member States shall ensure by 2010
 - an **adequate contribution** of the different water uses, disaggregated into a least industry, households and agriculture, to the recovery of the costs of water services“ (Art. 9 (1)).



WFD: „social“ cost recovery

“Member States may in so 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” (Art. 9 (1)).

--> important, realistic restriction of the cost recovery principle: danger of misuse? (political consensus through transparency!)



WFD-economic aspects: incentives

“Member States shall ensure by 2010

- that water pricing policies provide adequate incentives for users to use water resources efficiently, and thereby contribute to the environmental objectives of this Directive” (Art. 9 (1)).**



WFD-economic aspects: measures

[...] (b) make judgements about the most cost effective combination of measures in respect of water uses to be included in the programme of measures under Art. 11 based on estimates of the potential costs of such measures (Annex III).

Ambitious aims:

how can they be achieved?

--> Information as a first step!



Requirements of the WFD for 2004

For each river basin:

- 1. analysis of characteristics**
- 2. review of the impact of human activities on water bodies**
- 3. economic analysis of water uses**

(according to Article 5, Annex II, III and V)

Economic Analysis of Water Use

(required until 2004!)

Contain enough information for :

- calculations for taking into account the **cost recovery** principle
- [judgments on the most cost-effective combination of measures]
- calculations for **water pricing** policies giving incentives for the efficient use of water



Economic Analysis in the WFD

- One of the most interesting, powerful, difficult (and controversial) **new element** introduced to European water management through the WFD!
- Issue of **moving** from historical (Federal States) to “Ecological” boundaries (River Basins) and from chemical to ecological objectives!
- **Increasing role** of economic instruments (and economists)
- **what about the (potential) results?**



Practical implementation

- Guidance document on economic aspects of the WFD prepared by the WATer ECOnomics working group (**WATECO**) , part of the “Common Implementation Strategy” (CIS)
- **endorsed** by the Water Directors meeting in Sevilla in June 2002
- National implementation has started (in form of guidance for administrations, pilot projects etc.) , “**first try**” facing many restrictions

The WATECO guidance

Based on overall 3-step-approach:

- **Step 1 (2004): economic analysis of water use, establishing trends for 2015 (baseline scenario, for the Med: seasonal dimension important)**
- **Step 2 (2005?): Assessment of “risk” to fail environmental objectives**
- **Step 3 (2007-8?): Choosing cost-effective measures, assessing derogations, “approaching” cost recovery**



The WATECO guidance

- **WATECO-work focussed on the information basis needed by 2004 (required economic analysis!)**
- **not a lot on cost-effective sets of measures (use of instruments), will be focus of WATECO work after 2004**
- **only first thoughts on practical calculation of environmental and resource costs (mitigation?)**

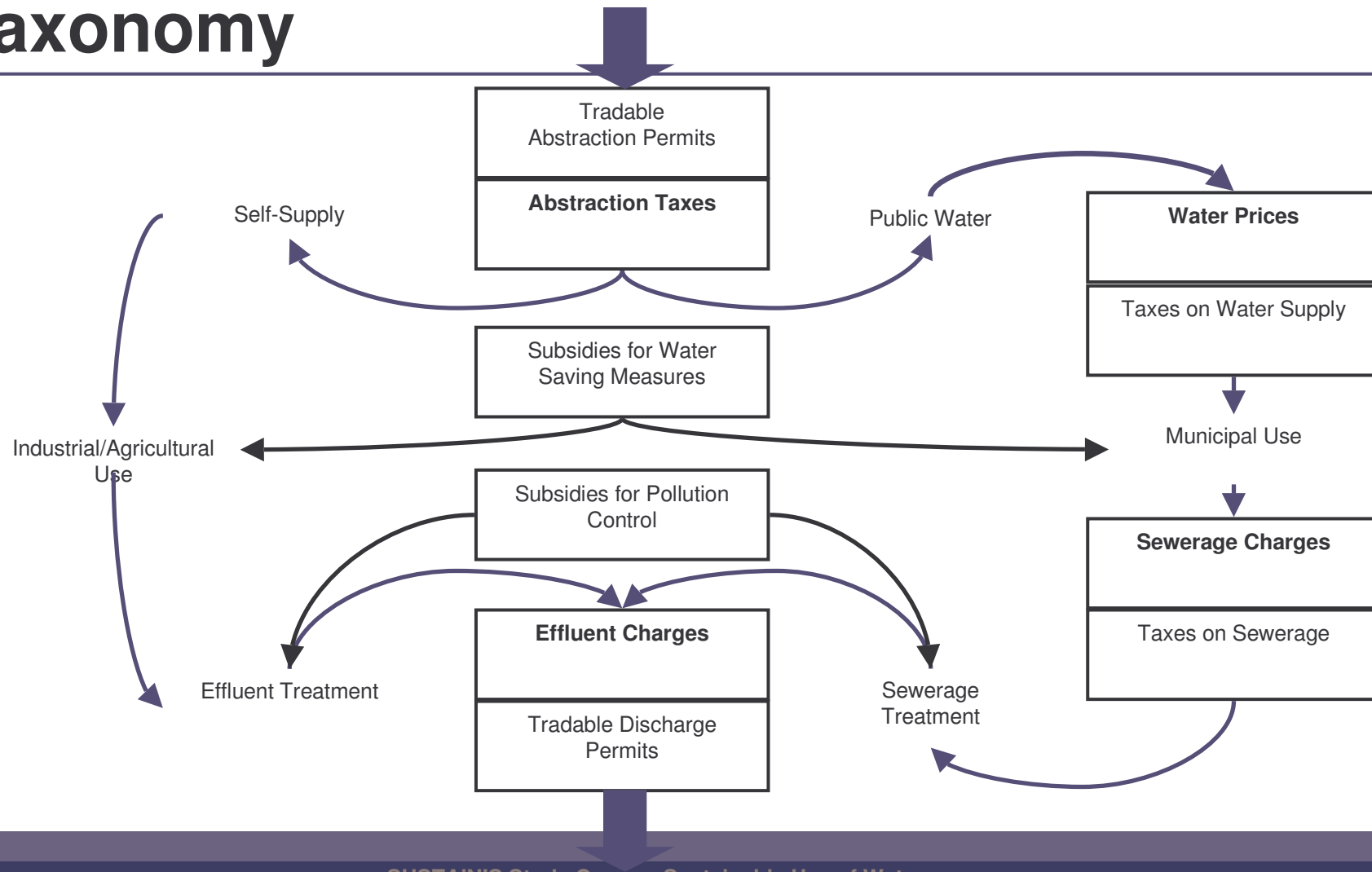


Functions of Economic Instruments

- **Incentive Function**
- **Financial function (cost recovery)**
- **Fiscal function**
(earmarking versus general taxation)
- **“Soft functions” (information, capacity)**



Taxonomy





Typology of economic instruments

- **Water abstraction taxes**
- **Water prices (and tariffs)**
- **Sewerage charges (to sewers)**
- **Effluent charges (to natural waters)**
- **Subsidies (water sector, other sectors)**
- **Tradable Permits (abstraction, discharge, resources)**
- **[Liability for (environmental) damage to waters]**

Water Abstraction Taxes

- Levied on withdrawal of water from natural water bodies, based on actual amount (volumetric) or linked to permit
- **Incentive** function if sufficiently high
- May differentiate between ground and surface water (e.g. Netherlands), or good & bad water (e.g. Hamburg)
- **Fiscal** function: Part of green tax reform in the Netherlands & Denmark; Earmarked for env. subsidies in some German Länder
- Denmark: tax led to decrease of total water consumption and of leakage from water works & pipes

Prices for Household Water Supply I

Rule: Municipalities are responsible for water supply

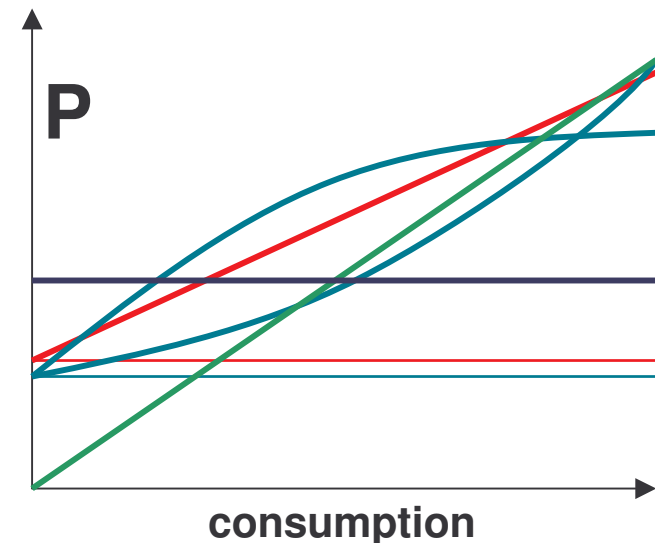
European Union and OECD countries tend towards:

- **Full cost-recovery (environmental and resource costs)**
- **Volumetric pricing (metering; user-pays)**

“High” water prices (in international comparisons) are not necessarily high in relation to per capita income

Prices for Household Water Supply II

- In most cases: Combination of fixed and variable charges
- France: many municipalities --> Great variety of tariffs
 - Two-part tariffs with linear use rate
 - Two-part tariffs with non-linear use rate
 - Flat rate (not linked to use)
 - Single linear tariff (linked to use)





Sewerage Charges

- Levied on discharge of used water into sewer systems
- General aim: **Cost Recovery** for operation & maintenance
- **Calculation of charges**
 - Most often based on metered water consumption
 - partly based on sealed surface (rainwater - Germany)
 - Non-recurring connection fees (France, Denmark)
 - Fixed components (two-part tariffs)
 - Higher charges for heavy polluters (“strength” - France, UK)

Sewerage Charges & Water Prices [1992-2000]

	Germany	Denmark	France	England & Wales	Austria	Italy
GNP (Euro/capita) (1994)	20 605	21 348	17 852	16 178	19 803	15 739
Sewerage charges per capita (Euro) (1996-1998)	109	93	68	65	154	25
Sewerage charges per household (Euro) (2000)	NA	NA	166	183	209	NA
Per capita charges in % of GNP	0,53	0,44	0,38	0,41	0,75	0,16
Water prices per capita (Euro) (different years)	72	28	54	59	60	38
Water prices per household (Euro)	130	NA	133	138	149	112
Per capita prices in % of GNP	0,35	0,13	0,30	0,36	0,30	0,24

Effluent Charges I

- Levied on the discharge of effluent into natural waters
- In place in seven EU Member States
- **General aim: Env. incentives & (earmarked) revenue**
- **Based on pollution content of effluent**
- **Measuring and metering devices required!**
- **Charge rates may differ among substances**



Effluent Charges II

Systems differ in:

- **Functional focus (incentives or revenue raising)**
- **Calculation methods and substances included**
- **Actors liable to pay (addressee)**
- **Exemptions and rate reductions**
- **Use of revenue**



Effluent Charges: 3 Textile Finishing Firms

	Factory A	Factory B	Factory C	Factory C->B	Factory C->A	Factory B->A
Effluent treatment standard	BAT	preliminary treatment	no treatment	no treatment -> preliminary treatment	no treatment -> BAT	preliminary treatment -> BAT
Effluent charge	in EUR / year	in EUR / year	in EUR / year	difference in EUR / year	difference in EUR / year	difference in EUR / year
Belgium (B)						
B (WAL)	9,840	33,428	278,525	245,097	268,685	23,588
B (BCR): measured	18,632	6,589,234	7,487,766	898,532	7.469.134	6.570.602
B (FLA)	15,126	91,063	585,928	494,865	570,802	75,937
Denmark	19,860	87,420	1,513,066	1,425,646	1,493,206	67,560
Deutschland	14,459	103,820	1,002,657	898,837	988,198	89,361
Netherlands ²	40,527	153,774	1,383 316	1,229,542	1,342,789	113,247
United Kindom						
E&W (for river)	20,916	20,916	20,916	0	0	0
SCOT: depending on receiving waters	28,500 - 42,800	28,500 - 42,800	28,500 - 42,800	0	0	0

Subsidies in Water Management I

- **Direct versus indirect subsidies**
- **Compensation versus incentives**
- **Positive versus negative environmental effects**

Water subsidies - some EU countries:

- **Subsidies for building and upgrading of water plants**
- **Off-set in Denmark: Industrial water users can deduct water abstraction tax on their VAT-bills**



Subsidies in Water Management II

Water-related subsidies to farmers:

- **As compensation for**
 - Land-use restrictions in water protection zones (Germany)
 - Conversion of arable land to native species grassland (UK)
- **As incentives for**
 - Cultivation of nitrogen-fixing crops (Sweden)
 - Conversion of acreage to organic production



Tradable Permits I

- Allocation of shared resource among users
- Tradable water abstraction rights (trading water rights is not trading water)
- Tradable discharge permits (pollution permits)
- Tradable permits to use water-borne resources

Requirements:

- Well-defined property rights
- Transparent initial allocation
- Efficient administration (data requirements)



Tradable Permits II

- Tradable water rights exist in e.g. Chile, US & Australia
- No application so far in Europe (**unlikely**, in fact)

Chile:

- Existing water users are granted free property rights
- Unallocated rights are sold by auction
- Separate from land rights
- Rights can be transferred at freely negotiated prices



Water pollution rights/permits

Growing interest mainly in the US (“Total Maximum Daily Loads” provision revised), many (local) developments

Non-point (NP) pollution is a major issue:

- efficiency gains can be high due to lower reduction costs compared to point source pollution
- but: question of comparability to point pollution, since e.g. NP pollution depends on weather events
- complex array of other actions to reduce NP pollution needs to be considered



Possible use of economic instruments

- **“adequate”** cost recovery: change tariff structures (no average cost pricing):
be realistic, no “textbook” approach
 - **integrate** environmental costs: develop/ improve (abstraction) charges and fees
 - **water conservation** measures (look at financing)
 - **“smart”** metering solutions
 - **IMPORTANT:** think of **compensation programs** for loss in income (increase acceptability), based on long-term sustainable growth
- > find the right **“mix”**!



What use of WFD concepts?

- **Overall process of: understanding status-quo first, defining objectives and looking for “best” solutions (for whole basin!)**
- **Even if “Swiss cheese”: transparency and participation fit nicely**
- **not all Med countries are EU-States --> adjust**
- **cost recovery and incentive pricing are crucial: time to talk about agriculture (but: existing situation has a background!)**

What use of WFD concepts?

- Use WFD as **political support** “from above” for new solutions
- “Using Economics” **does not mean** “being used by Economics”
- Valuing the environment: **danger** (“money buys everything”) but also **chance** for competing with other lobbies (as industry etc.) (better: qualitative?)
- **Cost-effectiveness** concept can lead to improvement
- “**Solon-solutions**” needed, adjusting to new realities (and uses)



Thank you for listening.

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