



Evaluating Economic Policy Instruments for Sustainable Water Management in Europe

Choice of EPIs and roadmap for their implementation

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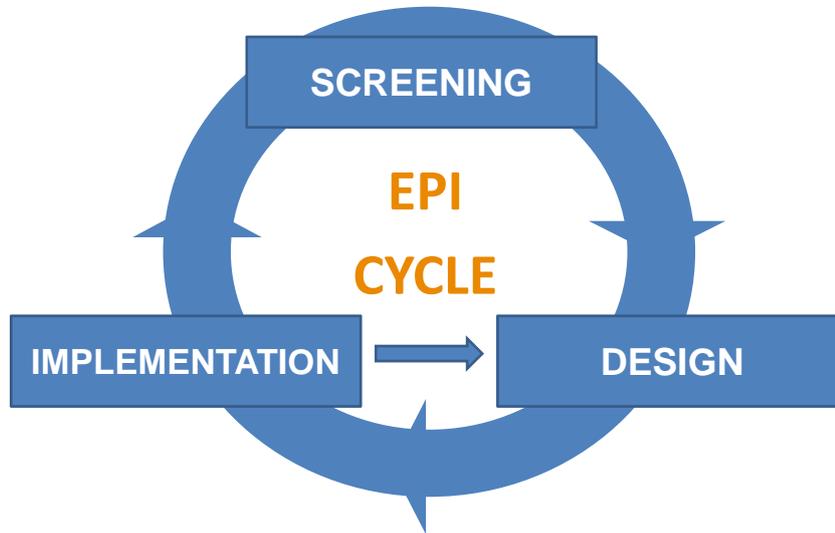
The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-2013) / grant agreement n° 265213 – project EPI-WATER "Evaluating Economic Policy Instrument for Sustainable Water Management in Europe".

Outline

- The EPI development cycle
- Screening of EPIs: When is it relevant and appropriate to use EPIs? When are there opportunities for introducing them?
- Designing EPIs: how do EPIs work, how to set their delivery mechanisms?
- Implementing EPIs: how to make it happen?
- A guidance on the use of EPIs in water management

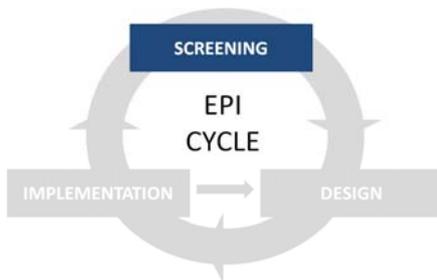


The EPI development cycle



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Screening



Very early phase of an EPI development process.

It is about explaining why and when it is relevant to use any given EPI/s, including when it is appropriate (or inappropriate) to use a particular EPI and when there is an opportunity the EPI may contribute to address.

Water policy challenges (keeping in mind path dependence)

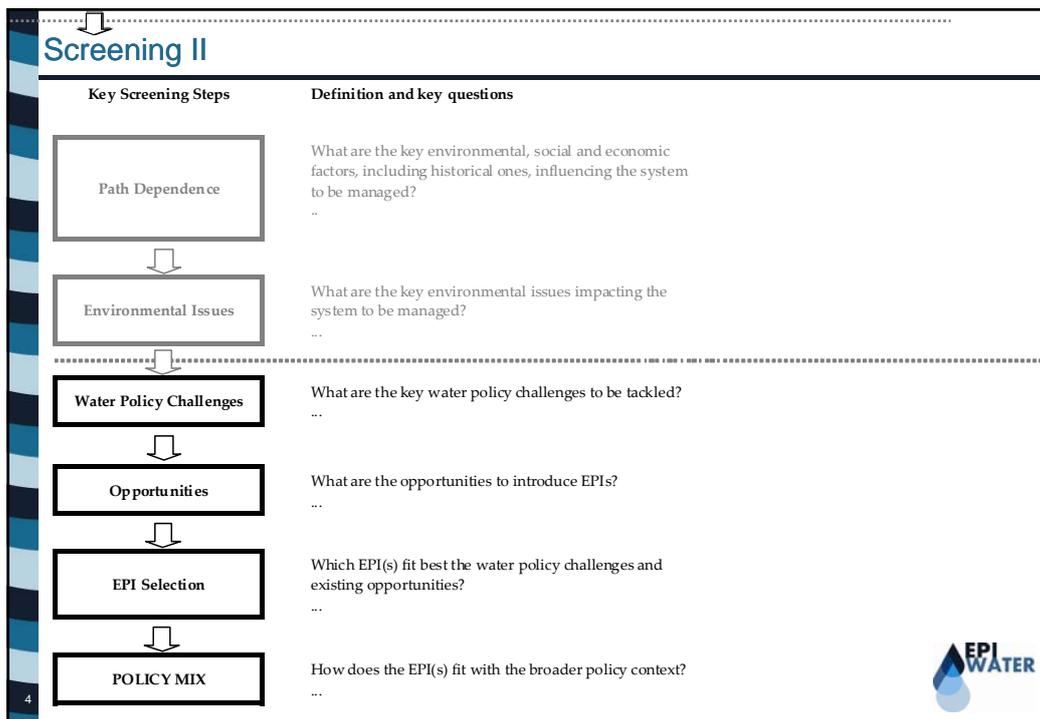
Highlight EPIs Opportunities

- ▶ Potential for adopting a co-ordinated approach between uses
- ▶ Scope for improving technical efficiency
- ▶ Willingness to pay for environmental services and reliable water supply
- ▶ Possibility to exploit existing environmental and technological assets

Taking into account the policy mix



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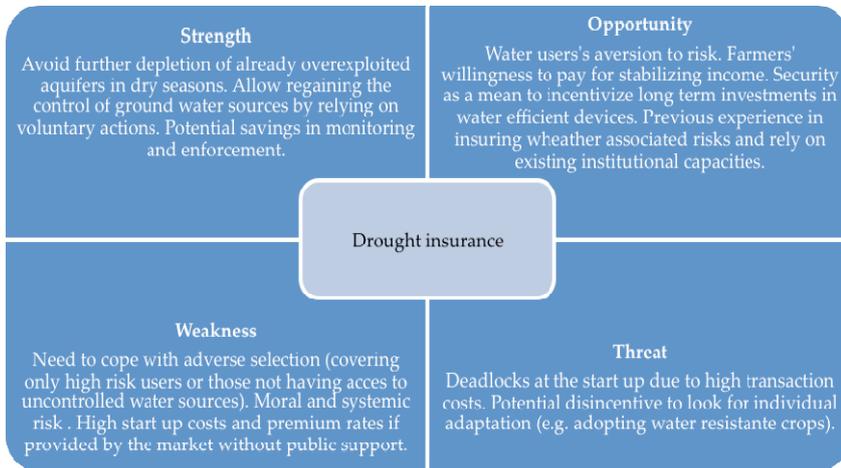


Screening - Linking water policy challenges, opportunities and EPIs

Water policy challenges	Opportunities	EPI	EPI-Water case-study
Improving water quality	Willingness to pay for environmental services	Nitrate tax Voluntary agreements Trading schemes	Denmark (WP3&4) UK (WP3) USA (WP3)
Restore damaged ecosystems	Willingness to pay for environmental services	PES	France (WP3&4)
Responding to water scarcity and increased drought risk	Potential for a coordinated response to scarcity and drought risk Willingness to pay for reliable supply of good quality water Technical efficiency gap	Water markets, drought Insurance pricing schemes	Spain (WP4)
Reducing flood risk	Potential for a coordinated response to flood risk Willingness to pay for environmental services	Compensation payments for flood water storage	Hungary (WP4)



key strengths and weaknesses of EPIs, and the opportunities and threats



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Which pre-conditions are necessary for implementation of water markets?

Water trading can only work if:

- There is high variability among marginal returns from water among uses and places (i.e. profits obtained from water use), and when infrastructures can transfer water at a competitive cost;
- Water use efficiency and the contribution of water to social welfare can be substantially improved;
- There is a proper definition and enforcement of water use rights.



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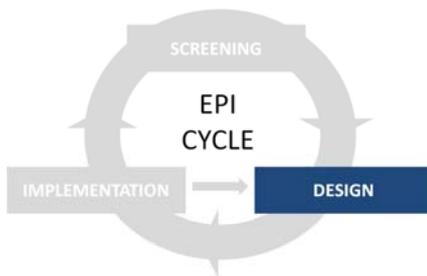
Question for discussion: Should EPIs fit or change the policy mix?

- EPIs are not substitutes but should be understood as an option to complement or renew the existing policy mix to achieve certain objectives.
- When screening how EPIs will interact with the whole policy mix, watch out for:
 - What type of supply-side, command-and-control, voluntary and economic instruments are already in place helping the achievement of the water policy challenge?
 - Broadly, how effective are they and why?
 - This should give an indication of whether it is best to replace existing instruments or keep them in, or rather to adapt prevailing EPIs that might not perform properly, or propose new EPIs.



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Design



- The effectiveness of the EPI not only depends on the EPI itself but also on the way that specific EPI are designed in a particular structure to make it deliver its expected outcomes.
- Understanding this “delivery mechanism” is crucial to assess the effectiveness of an EPI. For example, flat-rate pricing is ineffective to change consumption in agriculture but marginal pricing could be more effective.
- This is the stage where the specific design of an EPI should be adjusted to the local context.

Setting the right delivery mechanism which will trigger the intended behavioural change on the ground

Depends on the EPI: level of volumetric pricing, type and length of contracts in water trading, etc

Needs accounting for

- ▶ **Specific environmental, social and economic context**
- ▶ **Evaluating baseline**
- ▶ **Assessing impacts, etc.**



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What is a delivery mechanism?

- is the mechanism that triggers a behavioural change on the ground.
- It does not connect the EPI with the objective (e.g. reduce scarcity, improve the ecological condition of water bodies, etc.) but only to the intended change in behaviour (e.g. lower consumption, reduced water abstraction, less pollution emission).
 - *A subsidy to reduce the use of fertilisers. This subsidy could be implemented through a number of different delivery mechanisms such as: a code of practice that has to be applied in order to get the funding, investments in technology, or mandatory training to be eligible for funding.*

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key steps for designing water markets

- On the basis of hydrological balances, defining and quantifying a quantity of water (allowing for variance) that can be obtained from surface and/or groundwater, by time and place.
- Excluding environmental flows (e-flows) that are necessary to uphold or attain the good ecological status of water bodies, according to the Water Framework Directive; that is to say, the quantity of water that nature needs for the good ecological status to be achieved and the provision of ecosystem services to be maintained.
- Defining water entitlements and rights. This includes how they relate to the physical resource and how to ensure a sustainable yield (temporally and spatially) that can be subject to trade.

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Designing payments for ecosystem services

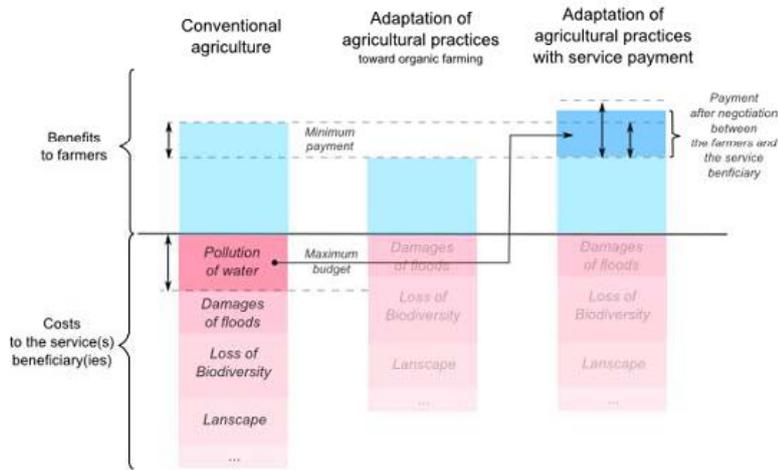


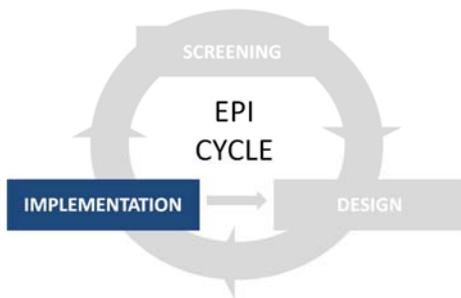
Figure 3-1 – The logic of payment for one environmental service

Source: Authors, adapted from Engel et al., (2008).



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Implementation



- Reflects the cost and challenge of moving from a theoretical idea to the practical application of an EPI.
- Successful implementation – including operation, monitoring and enforcement, will depend on dealing with the specific social and political context, creating the necessary technical and institutional conditions, and adequately streamlining EPIs.
- Many of these steps should not be thought of in isolation from screening and designing EPIs.
- This will improve the selection and design of EPIs, and ease the implementation process.

Across the EPI cycle:

- ▶ How to deal with transaction costs?
- ▶ How to deal with uncertainties?

Specifically during implementation:

- ▶ How to create and adapt supporting institutions?
- ▶ How to engage with stakeholders?
- ▶ How to create a good policy mix, including packaging incentives, combining with other policy instruments and sequencing?
- ▶ How to put in place effective monitoring and enforcement?



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How to deal with transaction costs?

- Transaction costs (TCs) represent the time and money involved in selecting, designing, and implementing EPIs.
- TC are the costs and resources used to define, establish, maintain, use and change institutions and organisation, as well as define the problems that these institutions and organisations are intended to solve.

Some examples of transaction costs...

TCs related to the formulation, design and development of the EPI, as measured in bureaucratic-, political- and user-man-months and the monetary costs of lobbying, studies and consultations .

TCs related to the implementation (including operation) of the EPI :

- Staffing and training costs for bureaucracy and user groups
- Property and equipment costs
- Time and money costs to integrate with existing bureaucratic and user institutions
- Time and money costs related to measurement and reporting
- Time and money costs related to monitoring and enforcement
- Users' ongoing costs of compliance



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Assessment of transaction costs – a practical example

- Subsidies for ecologically friendly hydro-power plants through favourable electricity remuneration in Germany

Type of transaction costs	Level	Specific attribution to the EPI	Likely importance of the transaction costs	Explication
Research	National	High	++	Specific studies have been carried out to support the design and implementation of the EPI.
Design of the instrument	National	Medium	+	The design phase of the EEG included a part which is specific to hydropower. It considers, however, also significant aspects which are not directly linked to the ecological criteria.
Legal process	National	Low	+	The whole legal process of the EEG amendments includes only a relatively small part on hydropower issues.
Support to implementation	National and local	High	++	Instrument specific information is provided in the form of an operational guideline as well as specific discussions in the EEG clearing house.
Administrative control	Local / Regional	Low	+	The control of the ecological measures on site forms part of the legal approval procedure for hydropower plants.
Monitoring / Enforcement	Local	High	0	As no controls are carried out after the approval process, no transaction costs occur on this step.



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How can EPIs contribute to a good policy mix?

Good example: effluent tax in Germany (WP3)

- illustrates a sound application of a policy mix, which consists of discharge permits, pollution limits and mandatory technological standards.
- water pollution is levied by volume and according to the effluent allowance granted to each wastewater plant.
- In both cases the instrument has contributed to increase water prices and to reduce water demand (paradoxically performing better as a quantity instrument)
- But, there is no way to reward (through lower charges or fees) improvements in the quality of the effluent beyond what is legally prescribed.

Watch out, the case study proves that the policy-mix has been mostly successful in meeting its objectives, but it is impossible to single out the likely effect or benefits of the tax in isolation.



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DEL 5.2: A guidance on the use of EPIs in water management

- To help government officers in the development and implementation of EPIs considering the EU legislative framework, in particular the WFD
- Structured around the EPI cycle
- Focusing on eight EPIs:
 - ▶ Incentive pricing;
 - ▶ Pollution tax;
 - ▶ Subsidies for product/practice;
 - ▶ Payment for Ecosystem Services (PES) under cooperative agreements;
 - ▶ Payment for flood risk mitigation under cooperative agreements;
 - ▶ Water trading for water scarcity/droughts;
 - ▶ Water emission trading;
 - ▶ Drought insurance.



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Rapid appraisal of specific instruments

Name of the instrument

What is it?

Which water management issues does the EPI address?

Which reference(s) in existing EU policy framework?

Can we find it in Europe?

Can we find it outside Europe?

Where can it work best?

What are the benefits of using it?

What are its potential negative side effects? Can they be addressed?

Which pre-conditions are necessary for implementation?

What are the key steps for designing it?

What are the key steps for implementing it?



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Thanks!

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