

The Economics of Ecosystems and Biodiversity (TEEB)

TEEB for Policy Makers (D1)

Workshop

Aligning Today's Subsidies to Tomorrow's priorities

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Discussing the reform of irrigation subsidies

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Irrigation subsidies: Setting the picture

- Resource affected: Water
- Sector affected: Agriculture
- Type of Subsidy:
 - Lack of full cost recovery (off-budget/implicit)
- Negative environmental impacts: several
 - Wastage
 - Groundwater depletion
 - Pollution
 - Soil salination
 - Reappearance of virulent forms of malaria
 - Biodiversity loss
- Often associated to other EHS
 - Eg. preferential tariffs for electricity used to pump water for irrigation

■ Example: Spanish farmers

- Water prices are not quantity related
 - Pay for cost of water distribution, maintenance of infrastructure, control, administration & other fixed costs » fixed cost are computed by hectare
 - Water as such is considered a public good and no price is attached to it: the land holding determines the annual availability of a maximum amount of water. But as the price of water is virtually zero, there is no incentive to consume less than the maximum amount allowed.
 - Water farmers pump themselves tend to be charged at a nominal fee
- This subsidy is often joined by preferential tariffs for electricity used to pump water for irrigation
- Water-intensive crops in areas without abundant water supplies: cotton is produced in the Southern part of the country

Key aspects of a reform strategy

1. Level of the approach?

Ideally the approach should be at a global level, allowing the selection of cultures to be done according to water availability in the area

But the way forward might be easier at European level due to the existence of a specific framework for the discussion, namely the Water Framework Directive

From an European perspective, the approach should be at EU level

Since...

- It is not a 'Southern Europe problem'
- A national approach could raise competitiveness issues in the future

- Cultures subsidised vary between South and North
 - However irrigation subsidies are common to most EU countries (farmers across the world **seldom pay more than 20 % of full cost**)
- ... as well as their impacts
 - There is a clear north-south divide in the impacts and it is particularly an issue in Southern Europe (where water stress is higher)
 - Certain impacts are common among southern MS and relatively absent in the north (eg salinisation)
 - Others occur in most countries but are generally more severe in the south than the north (eg nutrient pollution, erosion, habitat loss and degradation)
 - However, in the longer term, climate change could increase the severity of drought periods and aggravate resource pressures in many regions of Europe
 - Irrigation water demand tends to be more than 80% of total consumption
 - Particular crises in water availability are predicted for Spain, while in more northern MS (France, the UK and Germany) the frequency and severity of periodic drought is expected to increase, potentially driving a greater economic need for irrigation.

2. Compensatory measures?

2. Compensatory measures might be necessary

- Lack of financial capacity to implement/deal with the change
 - In agriculture there is a significant elasticity of water demand on prices, therefore, increase of water prices is due to lead to more efficient irrigation practices
 - However, the adoption of those practices might require significant investment
 - The most recent drip systems tend to be more efficient in their use of water but they are often far too costly to be within the means of the majority of small irrigators in the south
 - Thus the adoption of the most efficient water use systems tends to be concentrated in regions where farms are 1) relatively large businesses, 2) crops are high-value and/or 3) water pricing is well established (eg Netherlands, UK, some regions of Spain and Italy)
- Drop of farmers' income
 - In the absence of such elasticity, small increases of water prices might have an important effect on
 - the prices of agricultural products
 - the competitiveness of farmers
 - the income of farmers (maybe decrease by ~40% before water demand decreases significantly)
- Reduction in the number of crops available for farming can lead to greater technical and economic vulnerability of the agricultural sector
- Devaluation of land
 - Cheap surface water, cost recovery rates of 10–20% and lavish farm subsidies explain why 2 M ha of irrigated land has a market value that doubles or triples that of dry-land in Spain
- Employment is likely to be affected (directly & indirectly on processing facilities)

However...

- Designers need to put themselves in the role of the recipient and think through how they would respond to reform
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- There must be a careful assessment of the relevance of financial compensation since it might not be necessary or sufficient
 - Necessity: There are alternatives
 - Substitution of cultures with less water intensive ones (eg. from rice to wheat)
 - Replacement of irrigation systems (eg. from flooding to spraying and dripping)
 - Sufficiency: In some countries evidence showed
 - The adoption of improved irrigation technologies does not depend significantly on water price level but on structural factors, agronomic conditions and financial constraints (Spain, Varela-Ortega *et al.*, 1998)
 - Technology choice may be driven by water price in some locations, but mostly it critically depends on land quality and crop type (California, Green and Sunding, 1997)
 - The probability of adopting drip irrigation technologies increases with higher water prices, although land quality and environmental considerations seem to play a more important role in technology choice (California, Caswell and Zilberman, 1990)
 - Moreover, adoption of drip irrigation does not necessarily lead to water savings (Howes and Mutziger, 2001)

3. It will be important to keep in mind regional differences economic/environmental /social impacts vary sensibly depending on location

4. Environmental services provided to the community and introduction of irrigation systems with high reutilization rates may be taken into account whilst correcting the water price

- It might facilitate the acceptance of the reform process
- It would reduce the need for compensatory measures
- At EU level, this solution would be opposed by the Water Framework Directive, since it allows three tiers of water prices (households/industry/agriculture)

5. Since these are implicit subsidies the communication strategy is crucial to get the support of the community, otherwise the *CAP syndrome* might work as obstacle to reform