CEPS Task Force
Which economic model for a water efficient Europe?
Brussels, 5 March 2012

Water use in agriculture and industry:
What experience with water efficiency and pricing?

Presentation by:
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Water demand
Global (Source: OECD; 2011)

- Agriculture: 70%
- Public water supply: 10%
- Industry: 20%

EU (Source: Lutter, S. et al.; 2011 & EEA; 2009)

- Agriculture: 45%
- Public water supply: 22%
- Industry: 12%
- Energy sector: 21%
Figure 5: Water abstractions for different sectors in three European regions (million m³/year) in the period 1997-2007.

Source: Lutter et al., 2011
Abstraction in industry in EU

Stabilised/decreased since 1980s, a.o. because of:

• the general **decline** in water-intensive heavy industry

• due to **technical developments** such as:
  – on-site recycling of wastewater and reusing water
  – changing production processes
  – using more efficient technology

• prevention of **increased waste water charges** over time
Water Pricing
Tariff structure

Price level

Social & equity issues

Price elasticity

Incentive pricing

Water price

Cost recovery

Polluter-pays-principle

Source: adapted from Interwies et al., 2006
## Tariff structure: large heterogeneity

<table>
<thead>
<tr>
<th></th>
<th>Industry</th>
<th>Agriculture</th>
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<tbody>
<tr>
<td><strong>Self supply</strong></td>
<td>• Volumetric</td>
<td>• Free of charge</td>
</tr>
<tr>
<td></td>
<td>• Flat or variable rate e.g. based on area of industrial estate</td>
<td>• Volumetric:</td>
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<tr>
<td></td>
<td></td>
<td>- Usually /m³, per hour (capacity)</td>
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<td>- Above threshold</td>
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<td></td>
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<td>- $\neq$ level and structure</td>
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<td>- In a few cases mixed tariff: volumetric + fixed (GW/SW) or area-based (SW)</td>
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<tr>
<td><strong>Provision</strong></td>
<td>• Volumetric</td>
<td>• Volumetric still rare</td>
</tr>
<tr>
<td></td>
<td>• Fixed fee &amp; volumetric (esp. Northern &amp; Western E)</td>
<td>• Area based charge: BG, EL, FR (gravity fed), CY (small river systems), ES,</td>
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<td>• Decreasing block tariffs + fixed fee (esp. Western E e.g. B, FR, UK)</td>
<td>IT, PL, PT</td>
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<tr>
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<td>• Increasing block tariffs + fixed fee (esp. Southern E)</td>
<td>• Mixed systems i.e. fixed per ha &amp; volumetric (Northern &amp; Western E)</td>
</tr>
<tr>
<td><strong>Metering</strong></td>
<td>Well developed</td>
<td>In development, essential for volumetric</td>
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### Price level: large heterogeneity

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<tr>
<td><strong>Self supply</strong></td>
<td>• GW &gt; SW</td>
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<tr>
<td></td>
<td>• GW: 0.01 – 0.15 €/m³ (10 MS)</td>
<td>• Often well below 0.01 €/m³</td>
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<td>• SW: 0.01 – 0.04 €/m³ (10 MS)</td>
<td>• Some regions/RB have higher tariffs, esp. in case of limited availability</td>
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<tr>
<td></td>
<td></td>
<td>• Free of charge</td>
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<tr>
<td><strong>Provision</strong></td>
<td>• Esp. pressurized drinking water</td>
<td>• Esp. irrigation water</td>
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<tr>
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<td>• 0.55 - 2 €/m³ (10 MS)</td>
<td>• Modest level, e.g. 0.06 – 0.25 €/m³</td>
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<tr>
<td><strong>Cost recovery</strong></td>
<td>• Efforts made to increase cost recovery through tariffs</td>
<td>• Large investment in irrigation infrastructure (also modernisation)</td>
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<td></td>
<td>• O&amp;M costs of WSS generally covered</td>
<td>• often subsidised</td>
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<td>• Limited margin for renewal investments</td>
<td>• For at least 30% of the MS, O&amp;M costs for the provision of water are only</td>
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<tr>
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<td>• ERC/PPP through rel. high waste water charges (OECD, 2010)</td>
<td>partly recovered</td>
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<td>• Some MS working on including ERC (e.g. ES, CY)</td>
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<td>• Difficulty to internalise diffuse pollution costs (ARCADIS &amp; al., 2012)</td>
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Self-supply: exemptions of pricing for agriculture or for irrigation

Source: ARCADIS et al., 2012
## Efficiency

<table>
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<td>Well developed (esp. driven by high waste water charges)</td>
<td>In development</td>
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**Distorting factors**
- Decreasing block tariffs
- Low price elasticity
- Subsidies (rebound effect)
- Per hectare flat rate tariffs
- Illegal abstraction
- Low price elasticity
- Significant role of electricity prices

**Stimulating factors**
- Esp. technological solutions
  - Reverse osmosis
  - Closed loop water recycling
  - Measures to reduce leakage
  - Etc.
- Esp. managerial solutions
  - Deficit irrigation
  - Irrigation technology: drip, spray
  - Conveyance efficiency
  - Reduction of leakage in distribution networks
  - Daily water balance – crop requirements
  - Timing of irrigation
  - Drought resistant crops
  - Application of treated wastewater to agricultural land
Conclusions
Conclusions

Industry

• Large heterogeneity in structure and level of prices

• Increasing waste water charges have stimulated technical developments, leading to decoupling in certain sectors

• Environmental water policy has been an incremental policy, so industry has been able to adapt to it over time.

• Decreasing block tariffs in e.g. Western Europe ≠ incentive pricing
Conclusions
Agriculture

• Even larger heterogeneity in structure and level of prices
• Generally, a lack of incentive pricing:
  – Sometimes no charges (even in water stressed areas)
  – Low tariffs (often below 0.01 €/m³)
  – Area based systems e.g. water intensive crops pay less
Conclusions

Agriculture

• Good practices:
  – Volumetric tariffs: water intensive crops pay more
  – Pricing taking into consideration scarcity of the resource and/or volumes
  – (Penalty) charge for exceeding quota
  – Alternative water sources e.g. cheaper tariffs for treated effluent
• Metering = prerequisite to volumetric pricing!

Challenge of finding and introducing the ‘right price’:

- Step by step approach
- Specific temporal & spatial characteristics
- Without a substantial impact on farm income
- Providing incentives to conserve water
- Recovering a larger share of costs
- Not masked by subsidies
Further information

The role of water pricing and water allocation in agriculture in delivering sustainable water use in Europe

EC DG ENV 070307/2010/579624/ETU/D1

http://ec.europa.eu/environment/water/quantity/water_agri.htm

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Thank you for your attention!