The price of water in southern Britain

Why raw water is badly mis-priced in southern Britain, and how this might be remedied

Oxford Strategies
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Structure of presentation

National water resources
Water grids
Water trading
Raw water pricing
Conclusions

National water resources, and government policy

1. **Few would dissent from the Environment Agency's view that water is most scarce in Southern England, followed by the eastern, Thames and south west regions; in contrast northern and western Britain have water to spare at most times of the year***

2. **Given population migration into southern England new water supplies will be needed, but**
   - **It is the driest part of the country and the EA does not want to release more water**
   - **In many areas the EA wishes to *reduce* current water abstractions to preserve river life and water tables**
   - **Water companies are examining storage schemes but these are expensive when fully costed, financially and ecologically**
   - **Desalination of estuaries or the sea is being piloted by some water companies, but**
     - This is expensive and energy-intensive
     - It only looks to be economic at absolute peak times
   - **Re-cycling treated sewage effluent would be cheaper but the idea is strongly disliked by consumers**

3. **Water could be transported to southern Britain through a national grid built at modest cost**
   - **Water companies already have extensive regional transmission grids across the UK**
   - **Consultants have estimated that the capital cost of linking these regional water grids is about £100m****
   - **This is less than two weeks worth of normal water industry capital expenditure**
   - **Inter-seasonal (winter-summer) storage would be provided at source, but also partly by better use of southern England's aquifers, when geological conditions permit**
   - **The exported water would come from *sustainable sources*, being collected in areas of high rainfall and frequently at considerable height**
   - **Immediate sources might include Wales, the Peak District, and Yorkshire, while the vast water resources of Northumbria and Scotland could also be brought into play, if the economics were right**

4. **But are the underlying economics right?**

*** See OS presentation on British policy on domestic water metering**

**** See OS presentation on British water grids and wholesale trading**

Raw water pricing: comparison of various water prices and costs

Normally prices send signals that drive desirable behaviour, but in water the cash price of the raw material is minuscule and does not reflect environmental scarcity

Cost concept	*Typical level in southern England*	*Comment*
Volumetric price of raw water (abstraction charge)	0.1-0.5 p/m^3	Standard rules set across England & Wales; by law cannot vary with environmental scarcity
Srmc of bulk treated water	3-15 p/m^3	Cash cost that varies with treatment complexity and extent of pumping, not environmental scarcity; drives short run operational decisions
Lrmc of bulk treated water	30-90 p/m^3	Incorporates some measure of environmental scarcity; in theory drives resource development, bulk supplies, and large user tariffs, but *is not a directly variable cash cost*, so use in practice is questionable
Average cost of retail water to customer	60-80 p/m^3	Contains non-variable ops & maintenance costs and includes significant sums for local distribution costs and return on (partially written down) capital stock

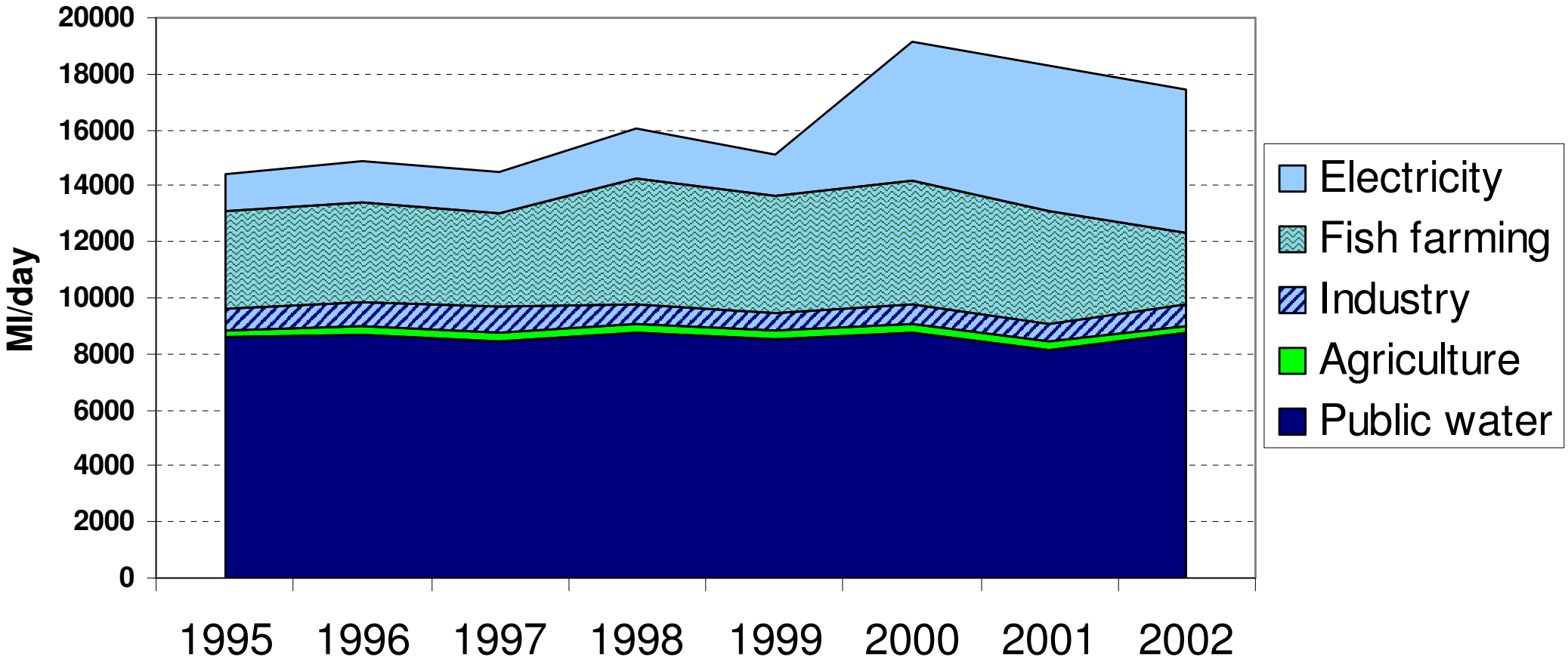
Sending the right price signals

- **So raw water is sold for a tiny fraction of the costs that drive decisions in water companies**
- **Raw water is also sold by a public body, the EA, to private abstractors for a price well below its shadow environmental value in southern England**
  - **If this is untrue, the EA should release far more raw water than it currently does**
- **This is a major negative public externality**
  - **Sale of a public good that distorts private sector resource allocation in water-using industries**
- **If raw water were sold at the right shadow price reflecting its environmental scarcity**
  - **Water companies would be cash-incentivised to reduce leakage where water is scarce**
    - They would also be strongly cash-incentivised to re-optimise their entire operational use of water sources if EA charges varied (as they should) seasonally, by type of source (surface/ground), and by locale
    - They would face strong cash incentives to import water from regions where water is abundant
- **Final user water bills would also rise significantly**
- **But wastewater bills should fall by a comparable amount:**
  - **the EA should pay all private operators who put good quality water back into the environment at comparable rates to those it charges for removing it in the same location**
  - **so the EA should pay wastewater companies for good treated effluent returned to rivers according to raw water's scarcity value and the quality of the water received from the private sector operator**
- **Selling and buying raw water at its true shadow prices would**
  - **Strongly incentivise *all* intermediate water users to re-optimise all their operations**
  - **The effect on end-users' water bills could be designed to be minimal**
  - **Obviously such a policy must be announced in advance and held for the long term**

- **Who in principle would be affected by such a policy?...**

Who abstracts water in the driest regions of England?

Non-tidal water abstractions in the Southern, Eastern, Thames and South West EA regions



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Summary conclusions

1. **Water is scarce in southern Britain, and likely to become scarcer**
   - Supplies are limited and demand is rising due to population migration

2. **A national treated water grid could probably be built for a few hundred million pounds**
   - This was roughly costed 6 years ago, and could rapidly be re-estimated
   - Oxford Strategies urges public bodies to commission a study of the costs and benefits

3. **More bulk trading of water between water companies – bilaterally and through wholesale markets – would follow the establishment of a national grid**
   - Providing sustainable new water resources for southern England
   - Promoting national resource optimisation between regions, and
   - Permanently improving our national security of supply

4. **Bulk trading and national economic efficiency could be further improved if raw water were sold at a price reflecting its environmental scarcity value**
   - In principle abstraction charges should vary regionally, by type of source, by locale, and seasonally, according to the raw water's environmental scarcity value
   - Comparable scarcity payments should be made to all operators who contribute good quality waters to inland rivers or lakes – i.e. to dischargers of good quality treated wastewater
   - This would strongly incentivise all intermediate water value chains to re-optimise their operations, but leave final users' bills largely unchanged
   - There would probably be a modest net gain to the Exchequer (via the EA)
   - A major public sector distortion of the economy would be eliminated