Environmental Studies
FACT SHEET
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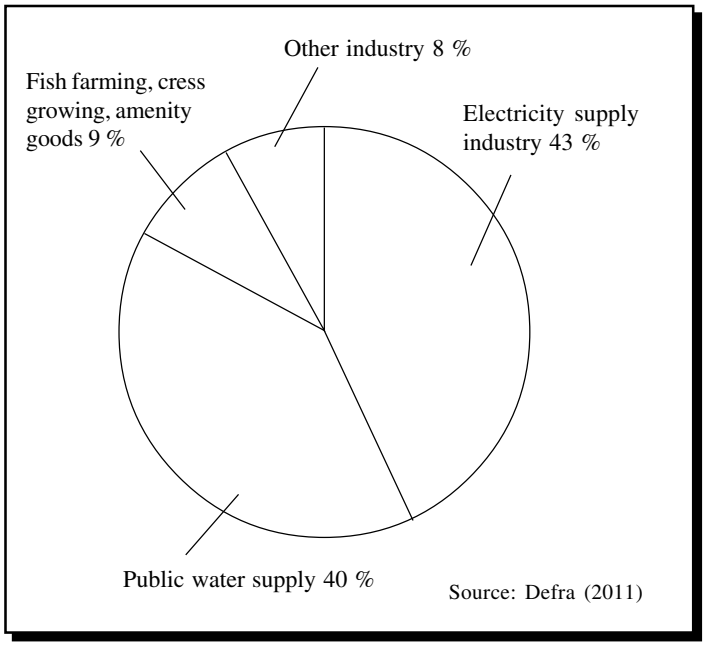
Reducing demand for water

Defra believe that our current use of water is unsustainable. The average water use in England is about 150 litres per person per day, with the average household using over 100,000 litres of water every year. This is consistently higher than the average used by people in European countries like Germany and Holland. In Germany, for example, average water use per person, per day is only 127 litres.

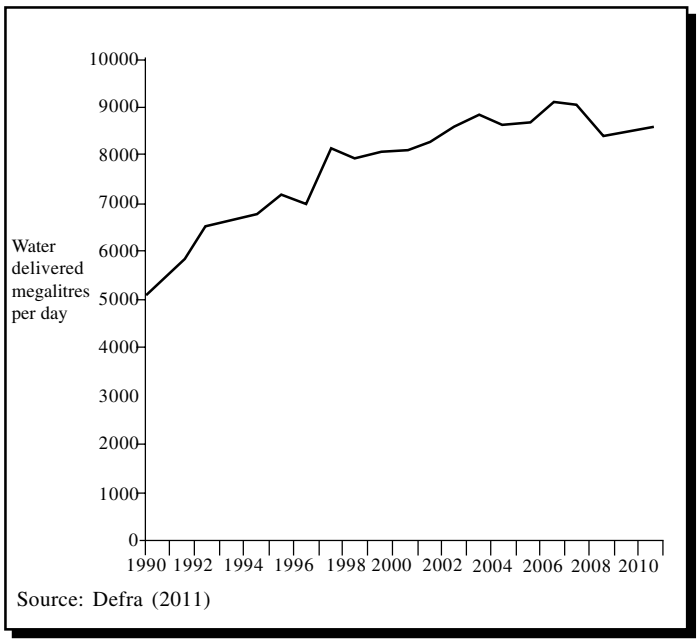
Households already consume 40% of all the water that is abstracted (Fig.1).

Fig. 1 Uses of abstracted water



Worse still, household demand is increasing (Fig.2)

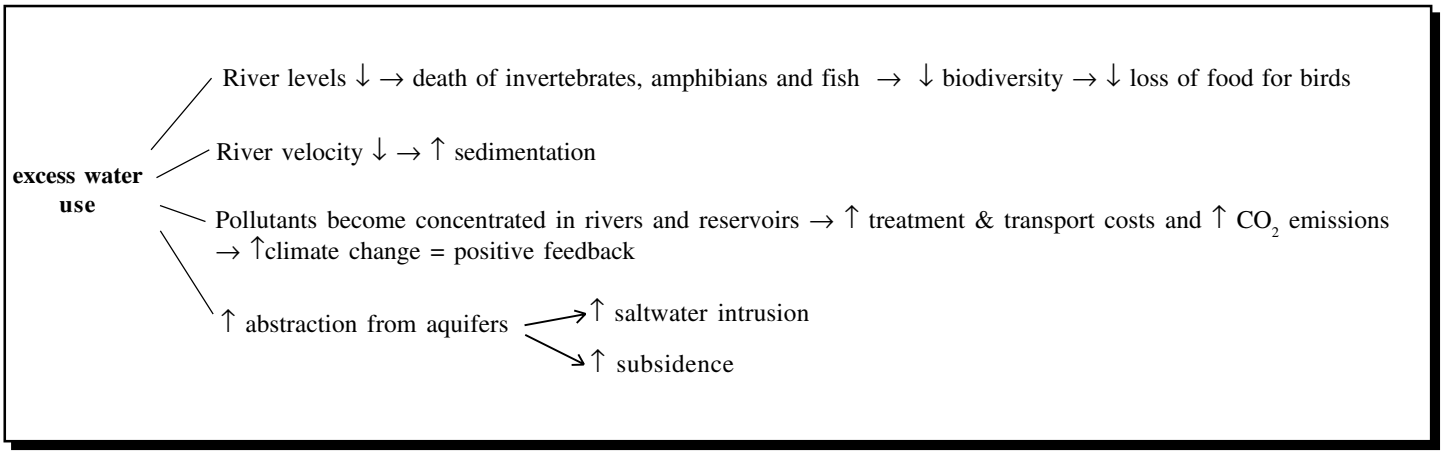
Fig. 2 Water delivered to households



Using too much water causes serious environmental problems (Fig.3)

Exam Hint:- *Drawing flow diagrams like Fig. 3 is a great way of revising.*

Fig. 3 Environmental problems from excess water use



Typical Exam Question

How can households reduce the amount of water that is treated by water companies to meet domestic demand? (6)

Markscheme

Changed behaviour

not leaving the tap running when we brush our teeth;
spending a bit less time in the shower;
waiting for a full load before putting the washing machine or dishwasher on;
shower instead of bath;
water meter/conservation encouraged by pricing;
mulch garden instead of watering;
water garden with pan/watering can instead of hosepipe;

water saving equipment

low water use dishwasher/washing machine;
fit spray/push taps;
dual flush toilet
fit hippo bags/brick in cistern;

reduced losses

domestic appliance maintenance;
install leak detectors to pipes;
repair dripping taps/leaks;

low quality uses of untreated water

dual supply;
rainwater collection for use in garden;
grey water reuse;

Water meters

37% of households in England and Wales have a water meter. They are charged according to how much they use. The other 67% are charged on the basis of the rateable value of their home. Uptake of metering has been increasing by 2% per year as householders try to save money. Some water companies are rolling out compulsory metering to try to reduce demand.

Solutions not involving conservation

Some people argue that it's a load of nonsense to say that we need to conserve water – it rains all the time in England and, anyway, we can move water from the wet areas (north west and Scotland) to the dry areas where demand is greatest (the south east) or we can build deslaination plants to remove the salt from seawater…

Here's what Defra think….

Climate change and UK water supplies

Defra expects average annual temperatures to increase, drier summers and more intense rainfall events. As a result, evaporation from reservoirs and rivers will increase, aquifers will not be recharged as efficiently and there will be more surface runoff and flooding.

Lower water levels will mean pollutants become more concentrated and the need for expensive treatment will increase.

The population is expected to increase by 10 million by 2025 with most of the increase where water supplies are already under greatest pressure. The number of small households is also expected to increase so overall demand is going to increase.

The Environment Agency predict that future shortages will affect the southwest and north of England too

Given all these factors Defra want to change the way water is abstracted, invest in new infrastructure (reservoirs) and reduce demand, possibly by compulsory water metering.

References

Defra (2011) Water for Life
http://www.official-documents.gov.uk/document/cm82/8230/8230.asp Accessed April 2012

Practice Questions

1. (a) How may the installation of a water meter affect water use? (2)
   (b) Outline three strategies, other than fitting a water meter, by which a household can reduce its water use (6)

Markschemes

1. (a) Informs people how much water they are using/ people pay according to the volume of water they use;
encourages conservation/less usage/ leaks;
(b) Fit dual flush toilet;
avoids unnecessary use/option to use less;
Fit low volume cistern/ use brick in cistern/ fit hippo bag;
to use less water;
install composting/chemical toilet;
no flush/no water use;
recycle used water for low quality use;
reduces use of treated water;

Strategy to increase supply	Problems
Desalination	Uses a huge amount of energy – increasing CO_2 emissions Expensive Generates large volume of extremely saline waste
Moving water around the country via rivers and canals	Water is heavy so pumping it long distances requires huge amount of energy - increasing CO_2 emissions
Climate change is causing more intense rainfall events, leading to flooding – why not capture the floods?	Extremely difficult, hence expensive
We have plenty of rain – just build more reservoirs to hold it	The UK is not a particularly wet country. We actually have less water available per person than France, Italy or Greece.

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