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Water Management 6.9



26/03/2020



Water consumption in developing and developed countries

L.O: To know the proportion of water used by agriculture, industry and domestically in developing and developed countries.

Starter: Match the key words to their definitions

**Agricultural
usage**

Domestic usage

Industrial usage

Use of water by
households

Use of water by factories
or the companies that
produce energy, it also
applies to water used in
offices or schools

Water used by
farmers to water
their crops or
feed animals



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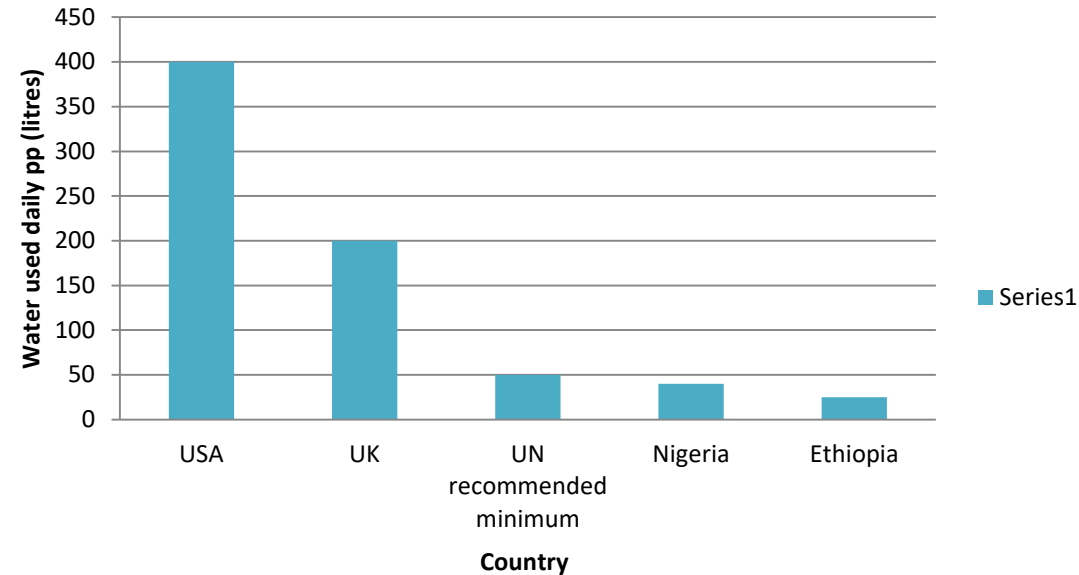


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Water consumption in developing and developed countries

Global daily water usage



Describe what the graph is showing you.

Is there a difference between developing and developed countries?

Water consumption in developing and developed countries

Read the information and decide if it links to a developed or developing country? Add a title to each box

Agriculture	Where rainfall is low irrigation systems will be used, these require a lot of water. An automatic spray system can use 75 litres of water per second.	Due to low levels of technology there will be minimal irrigation systems. Irrigation systems used only give out 2 litres of water per second.
	Businesses are often small scale with more businesses run from home or small self build units which do not use much water. However, due to large multi national companies moving their production to these countries water usage in industry will increase rapidly. It takes 3 litres of water to produce 1 litre of Coca Cola. Coca Cola have 24 manufacturing plants in India, They have come into conflict with local people because of their over usage of ground water sources in the area.	Industrial usage of water is on a massive scale with companies using millions of litres of water. E.g. Walkers Crisps factory in Leicester use 700 million litres of water.
Domestic	Used for many different purposes e.g. showering and laundry. Also increased use of water for car washing and filling swimming pools.	Many people do not have piped water to their homes although the number who do is increasing. Many people especially women spend hours every day collecting water. Their use of water is restricted by how much they can carry

Explain the differences in water usage between developed countries and emerging and developing countries (4 marks)



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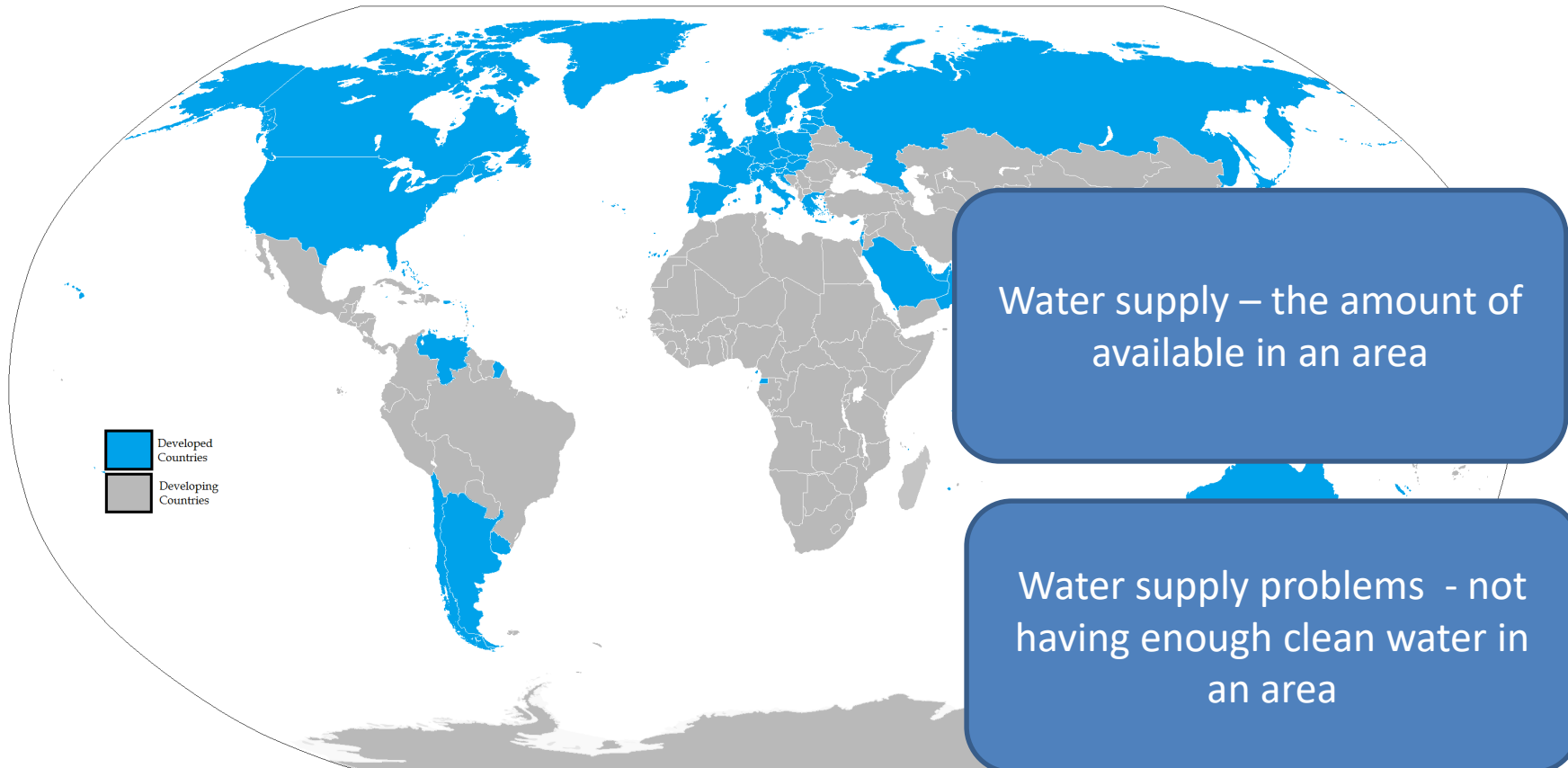


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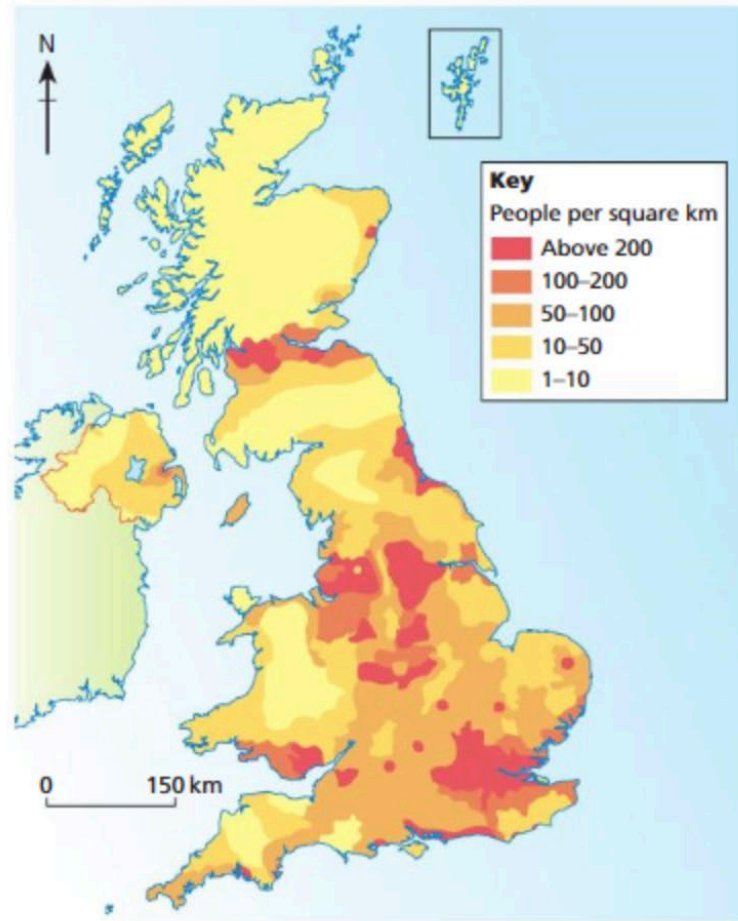


Water supply problems in countries at different levels of development

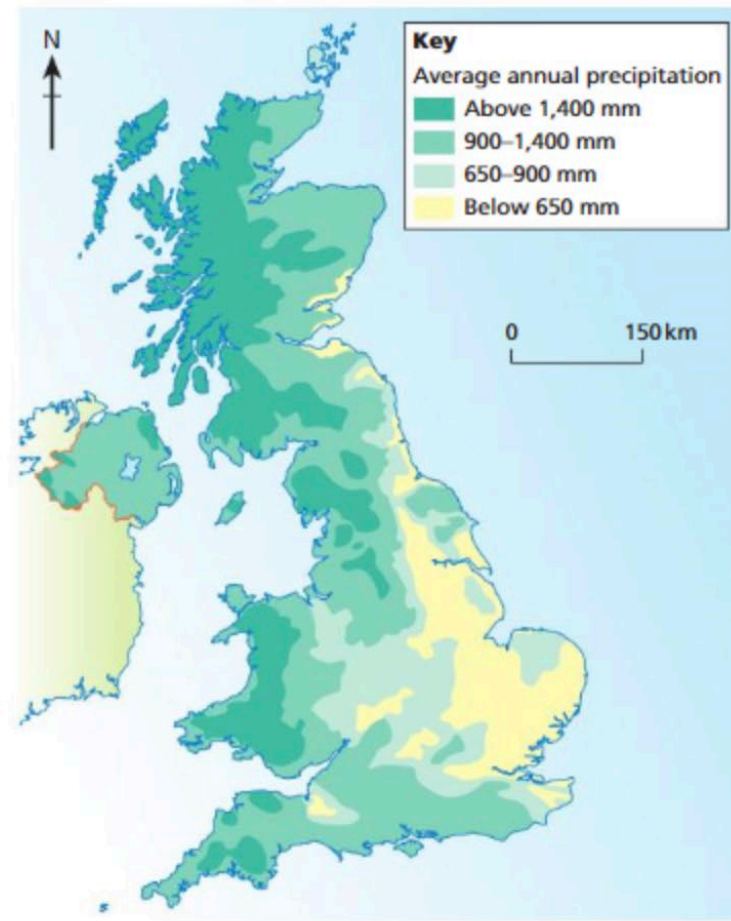
How may a water supply problem be different in a developing country from a developed country?



UK Water Supply Problems



📌 **Figure 13.11** The population density of the UK.



📌 **Figure 13.12** UK average annual precipitation.

Rainfall Imbalance

Referring to the maps. READ BEFORE YOU WRITE

The highest amount of rainfall falls in the north and west of the UK.

However there is a much higher population density in the south east of the UK – one third of the UK's population live here.

Therefore we can see there is an imbalance. The areas which require the highest amount of water receive the lowest amount.

UK Water Supply Problems

Ageing infrastructure: leakage to sewage and water pipes

READ BEFORE YOU WRITE

Many of the pipes that bring water to the UK are over 100 years old. This does not affect the quality of the water but there is a problem with leaks.

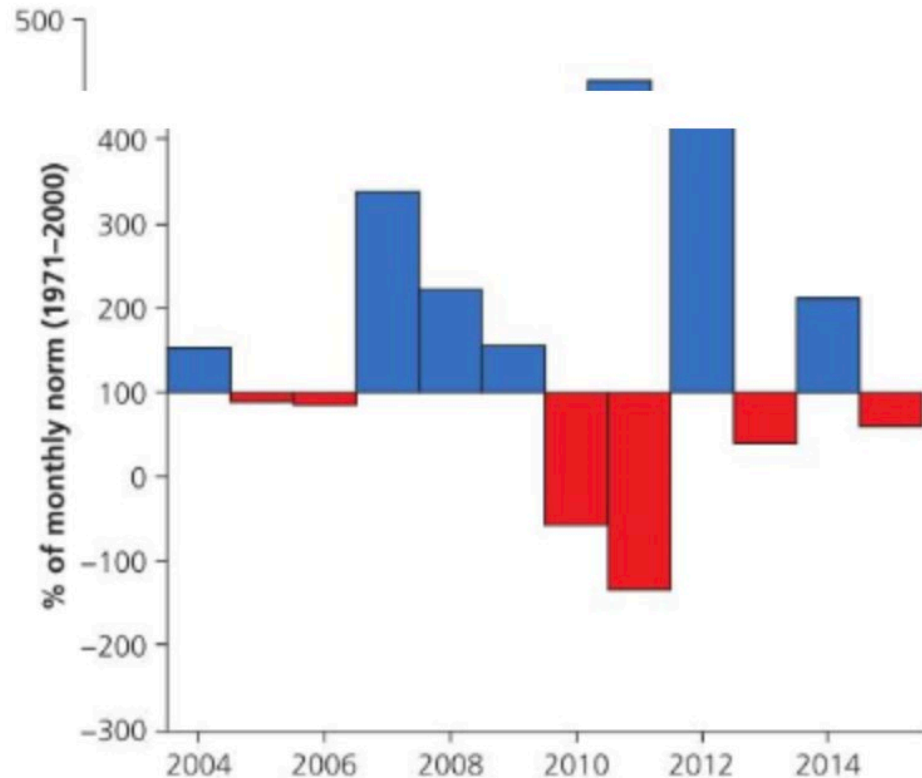
Lots of water is lost due to pipes leaking – they are being fixed but it is very expensive for water companies.

In the UK we also have an old sewage system. The sewage systems are maintained by the water companies. Sewage leaks do occur when old drains collapse due to heavy road traffic. The sewage systems were not built to withstand the weight of today's traffic (when they were built there were very few cars!)



↑ Figure 13.13 Collapsed sewer in Southport.

UK Water Supply Problems



↑ **Figure 13.15** UK rainfall per year as a percentage of the norm, 2004-15.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Rainfall (mm)	83	60	64	59	62	63	68	70	58	66	91	68	812

↑ **Figure 13.14** UK average rainfall per month.

Seasonal imbalances

READ BEFORE YOU WRITE

The UK receives most of its rainfall in the winter but the highest demands are in the summer.

We have an increased water supply in the winter but the water demand is higher in the summer.

The demand for water is especially high if we have a hot summer – but this is also when the supply is at its lowest.

Emerging and Developing Country Supply Problems

Access to only untreated water.

READ BEFORE YOU START WRITING



In many emerging countries such as China and India access to clean drinking water has improved.

However in many African nations people still do not have access to piped water.

Globally, at least **2 billion** people use a drinking water source contaminated with faeces. Contaminated water can transmit diseases such diarrhoea, cholera, dysentery, typhoid, and polio. Contaminated drinking water is estimated to cause 485 000 diarrhoeal deaths each year.

Emerging and Developing Country Supply Problems

Pollution of water courses

READ BEFORE YOU START WRITING



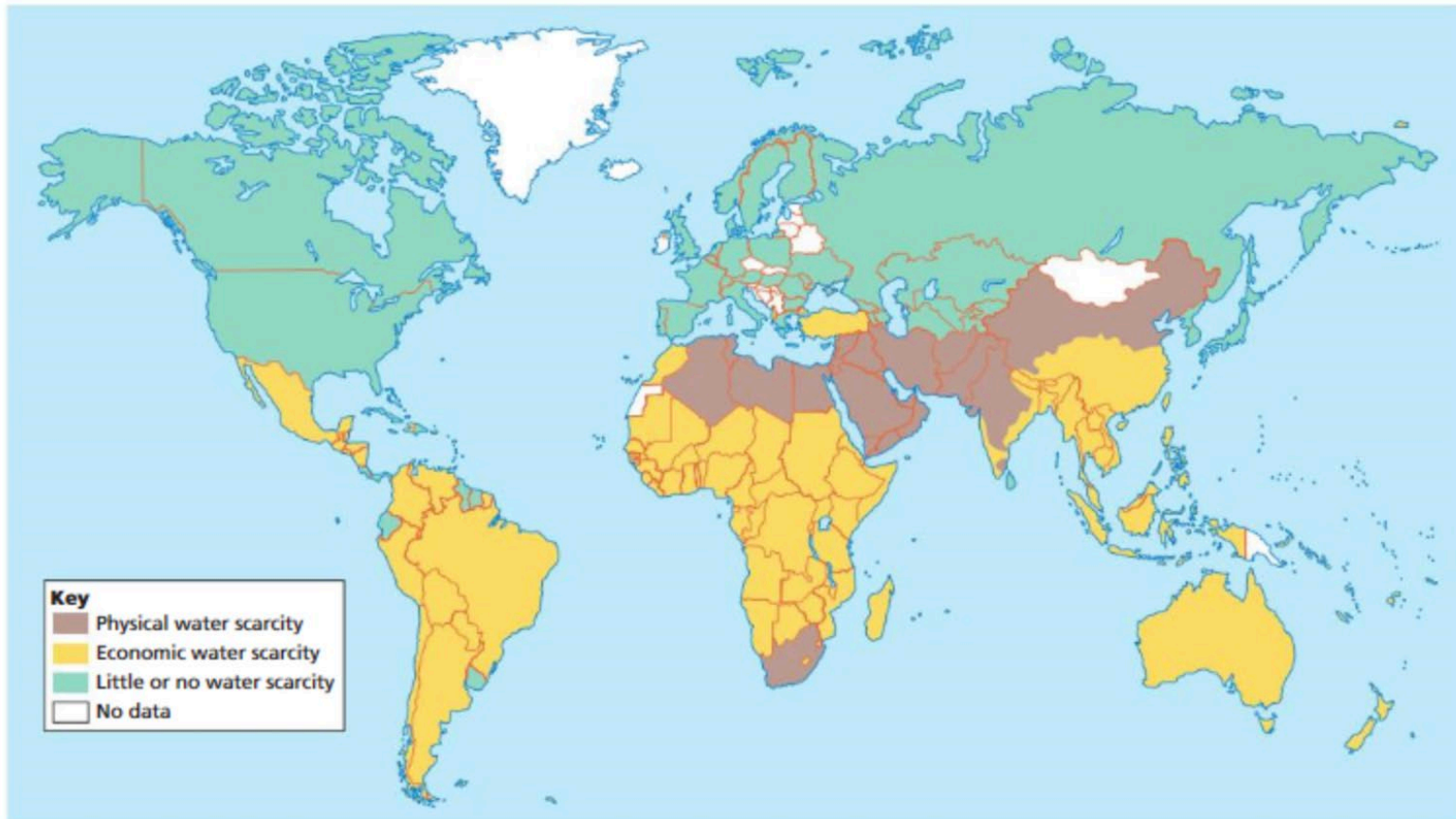
More than 840,000 people die each year from drinking water that has been polluted. Many people in emerging and developing countries still use rivers for drinking water. Rivers can be polluted in many different ways. Two have been identified below.

1. High levels of mercury enter streams in the Amazon region due to gold mining. Mercury poisoning can make people very sick and cause pregnant women to lose their babies.
2. Around 70% of industrial waste in developing countries is disposed of untreated into rivers where it contaminates the waters.

Emerging and Developing Country Supply Problems

Low annual rainfall

Many developing and emerging countries are in parts of the world that have a low annual rainfall. This means that, as the population increases, these countries will have a physical scarcity of water. It is estimated that by 2025, 1.8 billion people will be living in countries with water scarcity. Many of these people will be in areas with low annual rainfall.



↑ **Figure 13.18** Map of world water scarcity

Assess the water supply problems in developing and emerging countries and developed countries (8) – *Plan help*

Developed countries

- Give at least one problem in the UK – why is it a problem?
- You may decide that it is an economic issue (broken pipes are expensive to fix...)

Developing countries

- Give at least one problem in developing countries – why is it a problem?
- You may decide that it is a social issue – dirty water leading to death.

Conclusion – Are the water supply problems worse in developed or developing countries?



Stakeholder

Someone who has an interest in what occurs



Stakeholder views on water

LEARNING OBJECTIVE

To study how meeting the demands for water resources could involve technology and interventions by different interest groups.

Learning outcomes

- ▶ To know how attitudes to the exploitation and consumption of water resources vary with different stakeholders.
- ▶ To understand how technology can resolve water-resource shortages.

KEY TERMS

Desalination – the removal of minerals from salt water to make it drinkable.

Attitudes to the exploitation and consumption of water resources vary with different stakeholders



Head of Coca-Cola, India

If we are to keep our plants working efficiently and provide jobs for the local people, we need to use a lot of water. It is not our fault if this has to come from ground water sources; we have a business to run.



Government of India

The factories in our country will close if there are water shortages. We need to look after the welfare of our people and conserve water for domestic use.

I need to dam the river if I am to create enough energy. It cannot be helped if this stops the river flooding, which used to provide irrigation water for the farmers downstream.

We need to irrigate our crops so that we can make a profit and, of course, provide enough food for the people of America.



Farmer in Arizona, USA



HEP producer

If we keep using ground water supplies at the present rate there will soon be none left. We have to start to conserve our water supplies or there will be severe water shortages in dry years.



Mayor of London

They keep going on about water shortages. I cross the Thames every day on the way to work and there seems to be plenty of water in it. What about all the floods that happened last year?



London resident

Stakeholder- Someone who has an interest in what occurs. In the table on your worksheet add a couple of sentences to explain why each individual has these viewpoints – what has made them think this?

Many countries in the world are short of water. We need to conserve water and use it sensibly if there is to be enough to go round.



Water Aid campaigner



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Stakeholder views on water

Explain why different stakeholders have different views on water consumption (3 marks)



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Using technology to resolve water resource shortages

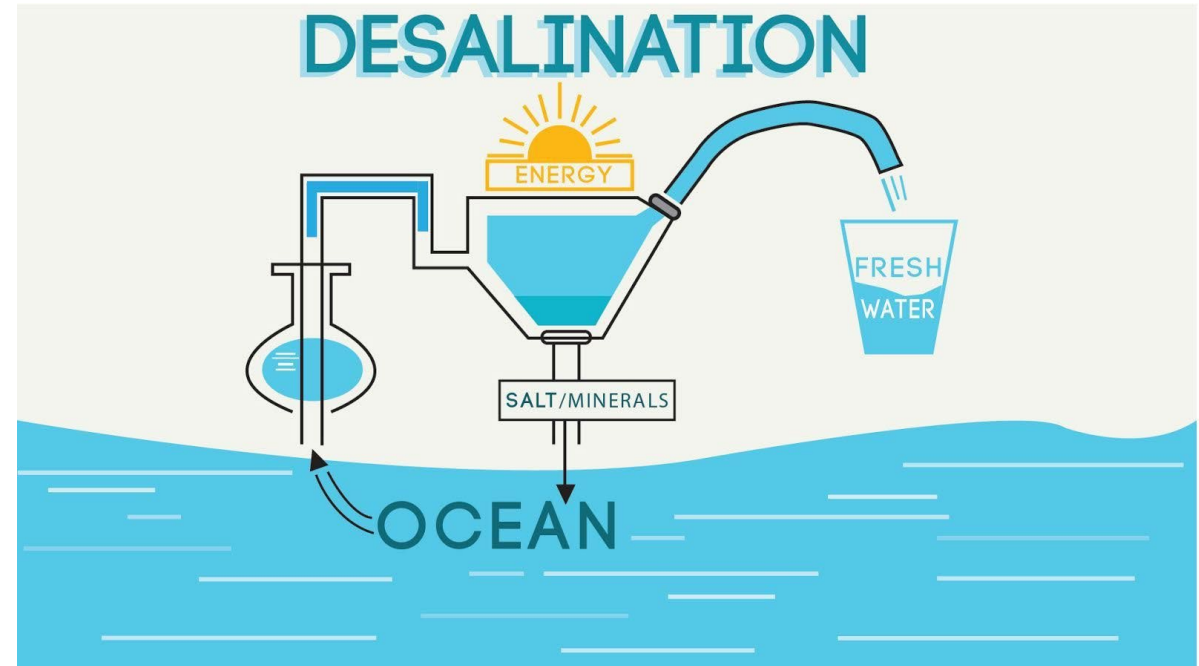


Desalinisation: the removal of minerals from water to make it drinkable

Watch the videos to learn more

<https://www.youtube.com/watch?v=vLgmFRceoVE>

<https://www.youtube.com/watch?v=3Skuk8DeXpE>



Complete the table by highlighting which points are positive/negative about desalination

Is desalinisation the answer to the world's water supply problems?



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Everyday 2 million tonnes of human waste is disposed of into water courses.

800 million people still require access to clean drinking water



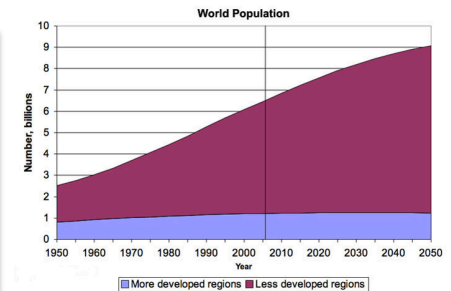
Why do water resources require sustainable management?

There is an increase in demand for meat globally which requires more water for its production.



In developing countries 70% of industrial waste is dumped untreated into rivers

World population grows by 80 million people a year. The increase in demand for water is therefore 64 billion m³ each year



Attitudes to water management

