Worksheet 4.2: Water footprints

Product water footprints

Visit the water footprint website [here](http://www.pearsonhotlinks.co.uk/url.aspx?urlid=70877). Click on ‘Water footprint’, then ‘Product water footprint’.

Question

**1** What is the average global water footprint for the following products? Fill out the table below. *[6 marks]*

|  |  |
| --- | --- |
| Product | Global water footprint |
| apple | 822 |
| barley | 74 |
| beef | 15415 |
| bread | 1608 |
| cheese | 3178 |
| chicken meat | 4325 |
| coffee – cup | 132 |
| coffee – roasted | 18900 |
| cotton shirt | 2495 |
| eggs | 196 |
| hamburger | 5521 |
| maize | 1222 |
| millet | 4478 |
| milk | 255 |
| rice | 2497 |
| sugar cane | 1782 |
| tea – cup | 27 |
| tea – kg | 8860 |
| wheat | 1827 |

Comparing water footprints

Compare the case studies of water use in China with water use in Spain.

From the home page, click on ‘Resources’, then ‘National water footprint explorer’. First click on China on the map, then on Spain.

Question

**2** Write a short paragraph comparing water use in the two countries. *[4 marks]*

In Nigeria, their total water footprint is 160000 million m cubes per year and a per capita of 3400 litres per day. In the UAE, there is only 10000 million m cubed per year, yet 76% are imported due to them having very little rain and little source of water to use.

Some definitions

From the home page, click on ‘Water footprint’, then ‘Glossary’.

Question

**3** Define the following terms:

* **Blue water**: Fresh surface and groundwater (i.e. the water in freshwater lakes, rivers and aquifers).
* **Green water**: The precipitation on land that does not run off or recharge the groundwater but is stored in the soil or temporarily stays on top of the soil or vegetation.
* **Green water footprint**: Volume of rainwater consumed during the production process.
* **Virtual-water balance**: The virtual-water balance is defined as the net import of virtual water minus the gross export of virtual water. A positive virtual-water balance implies net inflow of virtual water to the nation from other nations. A negative balance means net outflow of virtual water.
* **Virtual-water content**: The freshwater ‘embodied’ in the product, not in real sense, but in virtual sense. It refers to the volume of water consumed or polluted for producing the product, measured over its full production chain.
* **Cubic metres per capita per year**: A measure of the volume of water consumed, on average, by each person per year. *[6 marks]*

National water footprints

Check out the water footprint for the countries in the table below.

From the home page, click on ‘Resources’, then ‘National water footprint explorer’. Click on various countries on the map.

Questions

**4** Calculate a national water footprint in cubic metres per year *per capita*. *[8 marks]*

| Country | National water footprint / cubic metres per year *per capita* |
| --- | --- |
| Your home country | 10000 |
| Angola | 14000 |
| Brazil | 360000 |
| China | 1400000 |
| Ethiopia | 78000 |
| India | 1100000 |
| Italy | 130000 |
| Japan | 170000 |
| Russian Federation | 270000 |
| Saudi Arabia | 39000 |
| South Africa | 57000 |
| Spain  | 100000 |
| Switzerland | 11000 |
| UK | 75000 |
| USA | 820000 |
| World average | 1240 m3 / cap/yr |

**5** Describe the geographical variation in global water footprints. *[5 marks]*

a lot of variation. Some areas where there is a lot of rain and water such as a rainforest in central Africa and use their own water. While in desert countries, like the UAE, there is little rain so they must import most of their water from other countries to compensate. The larger countries with the higher populations are the ones that have the highest footprint such as India and China.