

## **How much water does it take to make a burger?**

The background data on water use for this activity comes from the excellent and easy to use website [www.waterfootprint.org/](http://www.waterfootprint.org/)

Activity for key stage 2 or 3

Get a picture of a burger (or an actual burger but be aware of health and safety issues) The Water footprint website uses the term 'hamburger' but is actually talking about a beefburger and shows an image of a cheeseburger.

- Divide the class into groups of 3-6
- Give them the image of the burger
- Show them a litre of water
- Set them going by asking them to suggest some ways in which water would have been used in its production, from sowing crops to ending up in your home
- Ask them to work out where and how water would have been used in the whole process. You could use CAT's *Where's the Impact?* activity to make this easier for pupils. See [www.cat.org.uk/edresources/](http://www.cat.org.uk/edresources/) for details.
- Tell them what the actual water footprint of the burger is
- Discuss why this matters
- Ask where they think the things were produced
- Discuss the impact of Climate Change on water stress in some of those areas

### **Important points**

The beef eats a lot of crops as well as grass -

*The animal consumes nearly 1300 kg of grains (wheat, oats, barley, corn, dry peas, soybean meal and other small grains),*

*7200 kg of roughages (pasture, dry hay, silage and other roughages*

<http://www.waterfootprint.org/?page=files/productgallery&product=beef>

Many of these crops will be grown abroad. Much of soy is grown on land in South America where rainforest has been cleared.

The animals themselves may have grazed on land of cleared rainforest. Even if it is labelled as though it was grown in Britain it may only be a very small proportion of the meat grown here or some processing done here.

This means that we are consuming 'other people's water' in the things we buy.

We are also using large amounts of land in other countries. Beef and dairy production have a very large Ecological Footprint for their nutritional output. This is one significant part of our Eco-footprint which contributes to the fact that if everyone lived as we do in Britain we would need 3 planets to provide for our consumption.

Beef and dairy animals also produce large amounts of methane which is a powerful greenhouse gas.

### **To do a fairly precise water footprint**

Get a beefburger, preferably with cheese

weigh the different ingredients and the packaging and calculate the water footprint using data and information from the following links on the web-

<http://www.waterfootprint.org/?page=files/productgallery&product=cheese>

<http://www.waterfootprint.org/?page=files/productgallery&product=beef>

<http://www.waterfootprint.org/?page=files/productgallery&product=bread>

<http://www.waterfootprint.org/?page=files/productgallery&product=paper>

There aren't figures specifically for the production of plastics on the water footprint site. See <http://www.waterfootprint.org/?page=files/productgallery&product=industrial> for some information.

<http://www.waterfootprint.org/?page=files/productgallery&product=hamburger>

## Hamburger

Water footprint: 2400 litres of water for one hamburger!

Most of the water is needed for producing the beef contained in the hamburger. In our hamburger we assumed there is about 150 gram of beef.

<http://www.waterfootprint.org/?page=files/productgallery&product=beef>

## Beef

Water footprint: 15500 litres of water per kg of beef.

In an industrial beef production system, it takes in average three years before the animal is slaughtered to produce about 200 kg of boneless beef.

The animal consumes nearly 1300 kg of grains (wheat, oats, barley, corn, dry peas, soybean meal and other small grains), 7200 kg of roughages (pasture, dry hay, silage and other roughages), 24 cubic meter of water for drinking and 7 cubic meter of water for servicing.

This means that to produce one kilogram of boneless beef, we use about 6.5 kg of grain, 36 kg of roughages, and 155 litres of water (only for drinking and servicing). Producing the volume of feed requires about 15300 litres of water in average.

<http://www.waterfootprint.org/?page=files/productgallery&product=bread>

## Bread

Water footprint: 40 litres of water for one slice of wheat bread.

Producing wheat costs 1300 litres of water per kg (global average).

One slice of bread has a weight of about 30 gram, which implies a water footprint of 40 litres. If the bread is consumed together with 1 slice of cheese (10g), then it all together costs 90 litres of water.

<http://www.waterfootprint.org/?page=files/productgallery&product=cheese>

## Cheese

Water footprint: 5000 litres of water for 1 kg of cheese.

To produce 1 kilogram of cheese we need 10 litres of milk.  
The volume of water required to produce this milk is 10000 litres.

Processing 10 litres of milk also produces 7.3 litres of whey, which generates more or less the same market value as the cheese.

Hence, the volume of water to produce 10 litres of milk gets divided into cheese and whey more or less equally.

<http://www.waterfootprint.org/?page=files/productgallery&product=paper>

#### Paper

Water footprint: 10 litres of water for one A4-sheet of paper.

We assume here eighty-grams paper (80g/m<sup>2</sup>). Further we assume that the paper is produced from wood.