



Understanding the impact of food choices

Investigating carbon and water footprints

Personal Tutorials

3 Sessions Focused on Agricultural Issues

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Specialist knowledge for teachers

This project seeks to highlight the impact of food choices for learners studying land-based subjects such as agriculture by:

- Considering personal food choices made and what those impacts are on the environment
- Calculating relative footprints of different foods and food groups
- Presenting real-life experiences through discussion of findings
- Using an evidence-based approach to discussing food
- Broadening the learners' world view on food choices
- Assessing their institution's provision of food and what impact that has on their choices and the environment

Level 2 and 3 agriculture students work closely with the land and have a symbiotic relationship with the environment but like all of us, is there an ability to link daily lives with chosen vocations?

Growers of UK food consider the impact of their own food choices

Delivery of this resource will require some fundamental knowledge about the issues relating to climate change and carbon footprinting and so, in addition to the Powerpoint, CPD on climate change and carbon literacy would also be beneficial for educators. The [Carbon Literacy Project](#) is a good place to start.

Assessing agricultural sustainability

Businesses and public organisations often preach messages of increasing their environmental sustainability, but do consumers understand what they mean?

Can we distinguish legitimate claims of enhanced sustainability concerning specific products from misleading claims known as 'greenwashing'? Might altered consumer behaviour have economic consequences on specific places (such as Morecambe Bay) where agricultural industries are located?

Individuals all make unique food consumption decisions, that collectively can have profound impacts on local, regional and/or planetary environmental sustainability. Farmers rely on selling products that address market needs, thus population-level changes in diet can lead to the establishment or decline of specific industries.

In some cases, changes in consumer choice have had actual (or perceived) environmental consequences, for example:

- Increased demand for **avocados** has created substantial and irreversible damage, as forest lands and the diverse wildlife within them have been destroyed to make space for increased commercial avocado production.
- Almonds have been criticised for contributing to droughts and water shortages in California. However, although the plants require year-round water, producing **almond milk** still uses less water and has a lower carbon footprint than producing dairy milk.

Consumers are typically presented with little or no guidance (e.g. country of origin) to inform their food choices, although front-of-package eco-labelling is being mooted by organisations such as [Foundation Earth](#).

Without such labelling, consumers rely on their own pre-conceptions that may or may not be informed by scientific assessments. ▶



► Popularising the contributions of individual food items to greenhouse gas emissions (by calculating their carbon footprint) or water usage (by calculating their water footprint) allows consumers to make informed choices by consulting websites or academic reference sources.

Interactive tools, such as those produced by **Food Emissions** or the **Water Footprint Network** can help, as can engaging with **academic research** in this area.

However, these may average out the pronounced regional or national variation in product footprints and may sometimes be counterintuitive. Thus, **roses** grown outdoors in Kenya and air-freighted to Europe have a lower carbon footprint than those grown in The Netherlands, due to the energy costs of heating Dutch glasshouses.

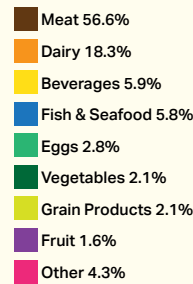
The global average water footprint of a loaf of bread is approximately double that of a British loaf, since the UK atmosphere is much more humid than in Mediterranean countries that also grow wheat. Place is thus critical in determining agricultural sustainability, and environmental impacts. While a product's carbon footprint contributes to global greenhouse gas stocks irrespective of where it is produced, a product's water footprint contributes to local water scarcity.

Even if a punnet of greenhouse-grown strawberries has the same water footprint in different parts of the world (if the production environment has the same conditions), the impacts will be greater in water-stressed (e.g. Morocco) than water-sufficient (e.g. UK) catchments.

Trade-offs may exist between different sustainability metrics, such that lower water footprints associated with greenhouse production may be offset by higher carbon footprints caused by heating the greenhouse. Should society value these different sustainability metrics equally?

Diet Emissions by Food Type

Greenhouse Gas Contributions in an Average Diet



Source: University of Michigan

Examples in practice

Take a recent meal, can you calculate the impact on the environment by calculating its carbon/water footprint? Summarise and feedback.

Go to the BBC's resource 'Calculate the carbon footprint of your food'

1. Which food group contributes most to your carbon footprint?
2. Is carbon footprint simply related to the quantities consumed, or do some products have disproportionate footprints?
3. How could you decrease your carbon footprint by 20% by eating alternative products?

Quantify the environmental impact of your dietary choices

Session 1:

Carbon footprinting

Create a menu for someone your age, including all the foods they might eat during the day at breakfast, lunch and tea (don't forget snacks!).

Go to **Food Emissions** to calculate their greenhouse gas emissions (may be difficult with processed foods, and only possible for raw ingredients).

Classify these foodstuffs according to the groups provided in the **Eatwell Guide**:

- Fruit & Vegetables
- Carbohydrates = bread, pasta, rice, potatoes
- Proteins = meat, fish, eggs, legumes
- Dairy & Alternatives
- Oils & spreads
- Sugars

Individuals report the carbon footprint of their menu to the class by using the above groups (rather than individual food items to avoid possible stigmatisation according to dietary choices), stimulating class discussions on:

- Which food group contributes most to your carbon footprint?
- Is carbon footprint simply related to the quantities consumed, or do some products have disproportionate footprints?
- Where in the world are foodstuffs with high carbon footprints produced? Could they be produced in the UK & would this diminish their carbon footprint?
- How could you decrease your carbon footprint by 20% by eating alternative products?



Curriculum aims and objectives

The aim of this work is to encourage students to understand the ways in which the food choices which individuals and societies make can impact on the environment. When we make a decision about what to eat, there may be multiple factors at play:

- Our own personal preferences and tastes
- What we can afford to buy
- Our understanding of moral and ethical issues and our personal stance (e.g. vegetarianism or veganism)

Head

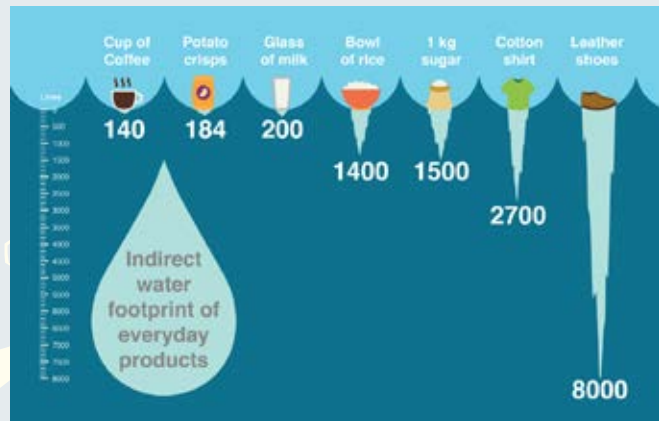
Learners are required to develop the scientific knowledge which can better inform their choices and make them aware of consequences which may not be immediately visible when purchasing.

Heart

Learners are encouraged to develop empathy and care for other people, animals and nature and not just their own preferences.

Hands

Learners use emerging skills to reflect on their own choices in their day to day lives, and longer term in their future roles in food production.



Session 2: Water footprinting

Create a menu for someone your age, including all the foods they might eat during the day at breakfast, lunch and tea (don't forget snacks!). You can use last week's data to allow for comparisons.

Go to the [Water Footprint Network](#) to indicate water consumption of the product (may be difficult with processed foods, and only possible for raw ingredients).

Classify these foodstuffs according to the groups provided in the [Eatwell Guide](#) as before. Individuals report the water footprint of their menu to the class using food classification groups (rather than individual food items to avoid possible stigmatisation according to dietary choices), stimulating class discussions on:

- Which food group contributes most to your water footprint?
- Is water footprint simply related to the quantities consumed, or do some products have disproportionate footprints?
- Where in the world are foodstuffs with high water footprints produced? Could they be produced in the UK & would this diminish their water footprint?
- How could you decrease your water footprint by 20% by eating alternative products?

Session 3: Footprinting impacts

Class/individual exercise facilitated by graphing the collated outputs of the last 2 weeks: Is there a trade-off between carbon and water footprints? Do products with high carbon footprints necessarily have high water footprints?

Group discussion/exercise: Summarise the country of origin of "avoided products" in the name of enhancing sustainability. Research UK consumption data of these products (internet activity) to understand whether "class actions" (eating the alternative products) are consistent with national trends.

Is local best? Consider the possible economic impacts of changing dietary preferences in your local area..



Adaptations to extend impact

This project is applicable and scalable across many FE related sectors and adaptable from Early Years through to HE level. Consumables other than food can be considered such as fashion or digital technology etc.

- Rather than itemise individual daily food consumption, visit a retail venue (e.g. college cafeteria) to survey/photograph meal choices & use these as inputs for sessions 1/2 footprinting exercises. This could be done at different times of day to reflect different menu offerings (breakfast, lunch or evening meal) to allow students to contrast whether sustainability impacts vary by meal.
- Visit a primary producer first instead of session 3, to understand their awareness of and perspectives on carbon/water footprinting. Understand their market perspectives – whether demand for their products fluctuates and consider possible drivers? Where is their product sold? Provides real background for sessions 1/2 to reinforce real-world implications of dietary choices.

Consideration for teachers

Food can be a sensitive topic for many people, please be thoughtful about the students you have in your class when weighing up how to deliver this material. If you are unsure about how to deliver this topic, speak to your line manager or Designated Safeguarding Lead for support.

For more support and information on Eating Disorders, you can visit the [Lancashire and South Cumbria Eating Disorder Service](#) or [Beat](#) website.

