

# Carbon Literacy Guide



## Section Three: Food

Where emissions come from and how to reduce them

2018

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“

*How could I look my grandchildren in the eye and say I knew what was happening to the world and did nothing.*

”

David Attenborough



## Where do emissions come from - food

It may not seem obvious how the food we eat creates carbon emissions, but food is responsible for over a fifth of the average Scottish carbon footprint. In the case of food, we are concerned with the ‘embodied emissions’ – that is the carbon emissions created in getting the food onto the supermarket shelves. Unlike travel and energy, the emissions associated with our food are not entirely captured in the reports about Scotland’s emissions because much of our food is not grown here.



**Agriculture and production:** A large proportion of emissions come from the agriculture and production phase. Emissions are produced from using fossil fuels to power machinery (carbon dioxide), producing and using fertilisers (nitrous oxide) and from the digestive systems of ruminant animals such as cows and sheep (methane).

**Processing:** A lot of food is processed, for example, washed, turned into juice, canned, frozen, turned into a ready meal, etc. Emissions are created from the energy used to do this, or from the refrigerant gases used.

**Packing, transport and retail:** Emissions are created in the energy used to produce packaging, from getting the food to the shop by road, rail, ship or air (often referred to as food miles) and from heating, lighting and refrigeration in the shop.

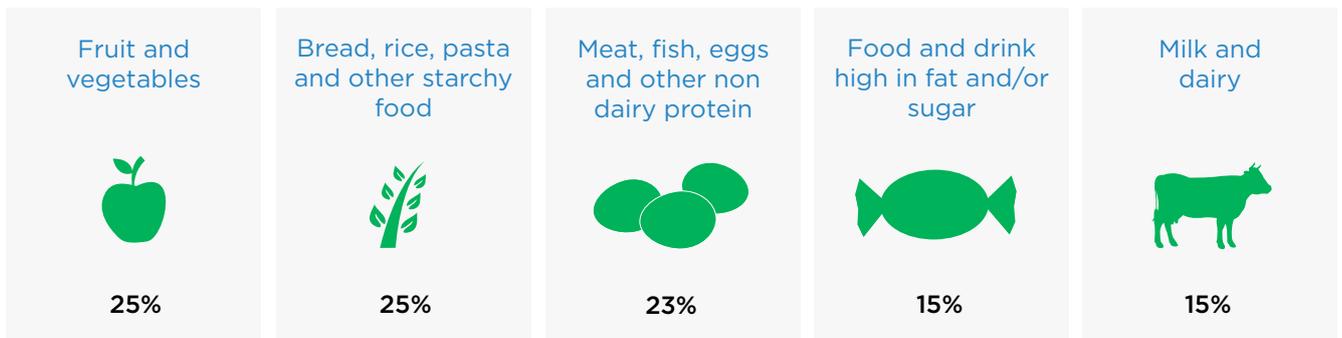
**Storage and cooking:** Some emissions are produced in the home during storage and cooking food.

**Disposal:** Some emissions are produced from the transport and decomposition of waste food.



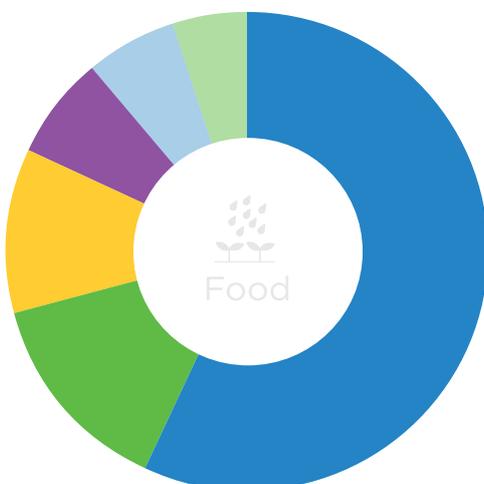
## What do we eat?

When discussing what makes up a diet, nutritionists talk about the proportion of different food groups. Below you can see the approximate contributions of different groups to the average UK diet (National Diet and Nutrition Survey, 2001).



The contribution of each food group to our carbon footprint is shown below:

### Relative contributions to emissions<sup>1</sup>



- 57% Meat, fish, eggs, baked beans and other non-dairy sources of protein)
- 14% Milk and dairy
- 11% Fruit and vegetables
- 7% Other misc
- 6% Bread, rice potato and other starchy foods
- 5% Food and drinks high on fat/sugar

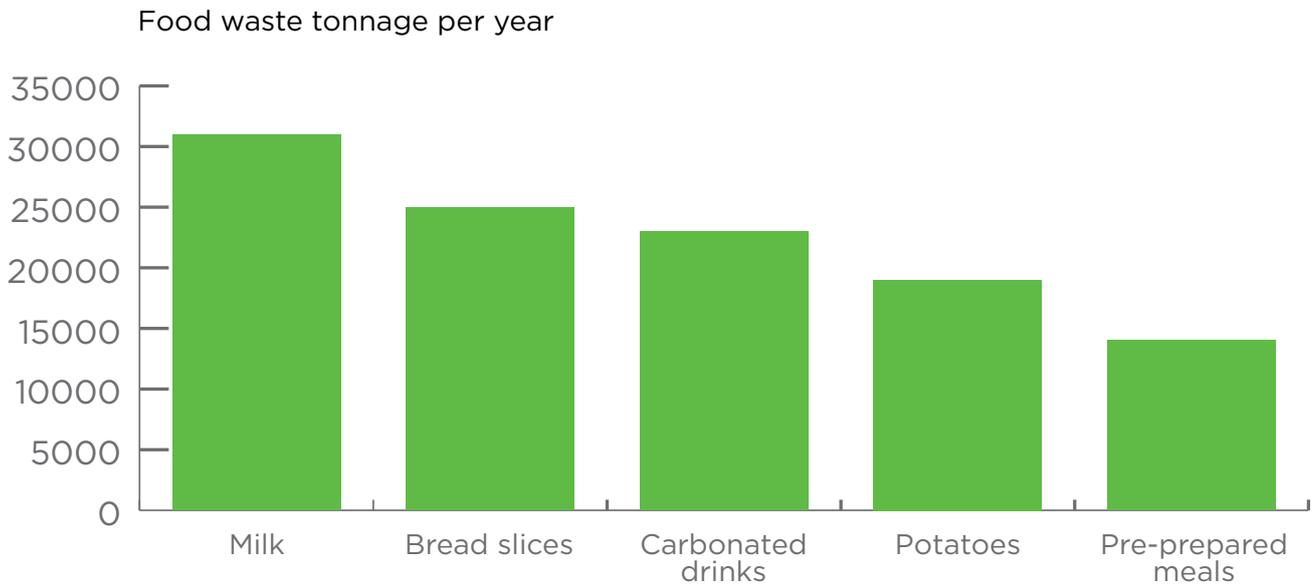
<sup>1</sup> WWF 'Livewell: a balance of healthy and sustainable sources.

[http://assets.wwf.org.uk/downloads/livewell\\_report\\_jan11.pdf?\\_ga=2.24760826.1737301772.1512647210-453019917.1511884243](http://assets.wwf.org.uk/downloads/livewell_report_jan11.pdf?_ga=2.24760826.1737301772.1512647210-453019917.1511884243)

## Doing it less: food

If we buy food and then don't eat it, then all the 'embodied emissions' in that food are created for nothing. In Scotland we throw away 20% of the food we buy – that means 1/5th of food emissions are created for nothing.

Therefore, one significant way we can make an impact in terms of carbon emissions is to reduce food waste. This, of course, means we should need to buy less food to feed ourselves and our families a healthy, nutritious diet. The graph below shows the top 5 wasted foods in Scotland.



[www.zerowastescotland.org.uk/content/how-much-food-waste-there-scotland](http://www.zerowastescotland.org.uk/content/how-much-food-waste-there-scotland)

[www.greenerscotland.org/food-waste/food-waste-facts](http://www.greenerscotland.org/food-waste/food-waste-facts)



Food gets wasted for a variety of reasons. 'Love Food, Hate Waste', detail five keys ways to reduce food waste:

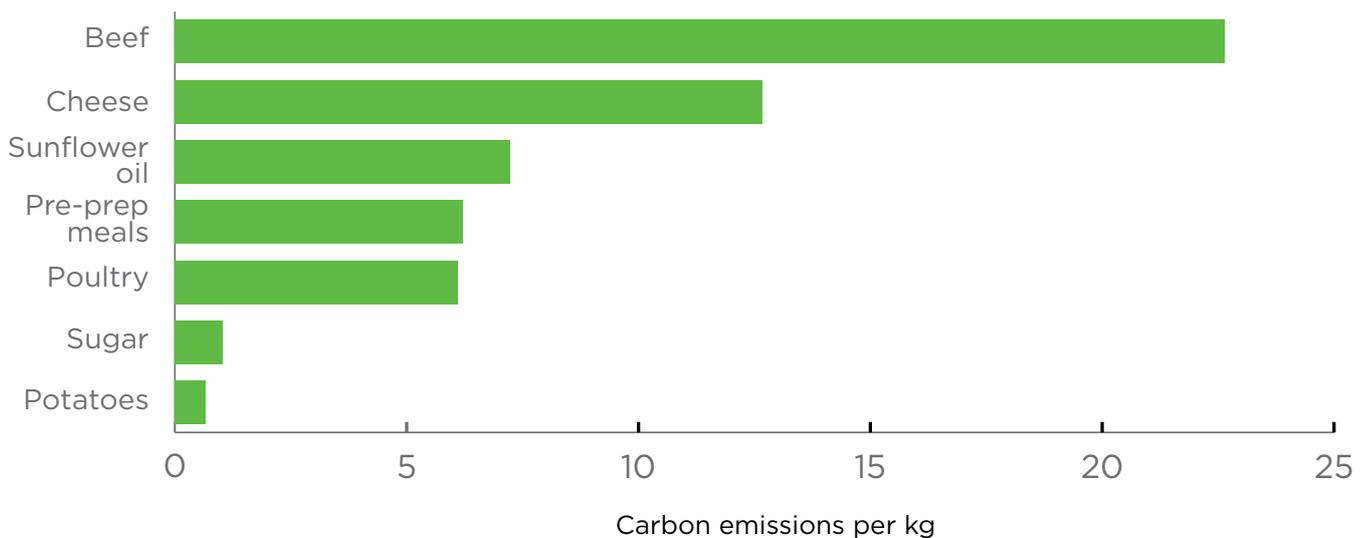
1. Plan your meals: plan what to buy when you go shopping and only buy what you'll use.
2. Understand dates: best before, display until and use by all mean different things. If food is best its best before or display until date it may still be perfectly safe to eat, but many people will throw this food away.
3. Store food correctly: this helps food last longer – e.g. keeping potatoes in a dark cool place. Many foods can be frozen.
4. Portion control: only cooking what you'll eat so none goes to waste.
5. Cooking with leftovers: if you do end up with leftovers there are many ways to turn them into tasty meals.

## Doing it differently: food

So, what about the food we eat? As we have seen the majority (81%) of emissions come from the processes that as consumers we do not have direct impact, so how can we make a difference? If we consider how our food is produced and where it comes from, then we can make lower carbon food choices. 'Doing it Differently' with food means changing our diet.

From the diagram on page 5 showing the contribution of each food group to our overall food emissions you can see that different foods, weight for weight, have different embodied emissions. The diagram below shows the carbon intensity of some typical foods.

Carbon emissions per kg of food



The table below shows steps we can take to choose a diet with lower carbon emissions. As the majority of carbon emissions arise from food production on the farm, these steps will have the largest impact.

Stage	Doing it differently
Agriculture and production	<b>Eat more fruit/vegetables and less meat and dairy</b> - Producing 1kg of meat requires up to 7 kg of feed. This means producing meat is an inefficient way of feeding ourselves. Cattle and sheep also produce methane.
	<b>Eat food when it's in season</b> - food grown out of season requires more inputs to make it grow (e.g. tomatoes in heated greenhouses).
	<b>Grow your own</b> - home or allotment grown food can help you reduce food carbon emissions if this food displaces higher carbon bought foods.
Processing	<b>Cook foods from scratch</b> - heavily processed foods are often high in carbon emissions.
Packaging	<b>Avoid heavily packaged foods</b> - cooking from scratch helps with this!
Transportation	<b>Eat food when it's in season</b> where you live so it is less likely to have travelled as far.
	<b>Choose locally grown and produced food</b> - farmers markets and veg box schemes are good for this, but by checking labels you can even do this in the supermarket. You'll often find UK apples on sale next to apples from half way around the world.
	<b>Grow your own</b> - home grown food has the lowest food miles as long as you don't drive to the allotments!
Disposal	<b>Compost unavoidable food waste at home</b> or use local authority food waste bins (this waste is usually composted or used to produce energy through anaerobic digestion) both disposal methods avoid methane emissions from landfill.

We have to balance a diet with low carbon emissions with our need to have a healthy diet giving us all the nutrition we need. WWF have produced the 'Livewell' plate – a healthy balanced diet with 25% fewer embedded carbon emissions. Compare this to the average diet at the beginning of this chapter.

### Livewell diet



### Summary

Doing it less	Doing it differently
Avoid food waste: plan your meals	Eat more fruit and veg (and less meat and dairy)
Avoid food waste: understand dates	Grow your own
Avoid food waste: store food correctly	Eat local
Avoid food waste: control portion size	Eat in season
Avoid food waste: cooking with leftovers	Cook from scratch
	Compost food waste at home or use local authority food waste bins rather than landfill

### Food: Government targets

The Scottish Government’s Climate Change Plan sets a target of a 9% reduction in emissions from agriculture. This will be achieved through supporting farmers to adopt low carbon farming practices – including increasing productivity, more efficient use of fertilisers through soil testing, and the use of renewable energy sources. The ambition is for Scotland to be among the lowest carbon and most efficient food producers in the world – meaning that choosing Scottish produce will mean choosing food with a lower carbon intensity.

The Climate Change Plan has a target to reduce food waste by 33% by 2025, and by 2030 the aim is to be in tandem with the UN Sustainable Development Goals to reduce food waste by 50%.

As much of the food we eat is not produced in Scotland, our food carbon footprint is not captured by the headline emissions from agriculture reported by the Scottish Government. This means it’s even more important for us as individuals to consider the carbon impact of our diets.

## Support for low carbon action

### Greener Scotland

Is a good starting place to find out about reducing energy use at home.

<http://www.greenerscotland.org/home-energy/using-your-home-energy-well>

### Greener Scotland

Is useful starting place to find out more about eating greener.

<http://www.greenerscotland.org/eating-greener/choosing-to-eat-greener>

### One Planet Picnic

Is a campaign to get people together to enjoy a picnic that's good for you and good for the planet.

<https://www.keepsotlandbeautiful.org/sustainable-development-education/food-and-the-environment/one-planet-picnic>

### Love Food Hate Waste

Provides information, resources and training on reducing food waste at home.

<http://scotland.lovefoodhatewaste.com/>

### The Food Assembly

Is an online platform connecting local producers to consumers across the UK.

<https://thefoodassembly.com/en> Look out for your local veg box scheme.

### Nourish Scotland

Scotland's Sustainable Local Food Network.

<http://www.nourishscotland.org.uk/>

### Community Land Advisory Service Scotland

Information on land availability and access for community growing groups.

<http://sc.communitylandadvice.org.uk/about-us-clas-sc>

### Federation of City Farms and Community Gardens

Supports community-managed farms, gardens, allotments and other green spaces, creating opportunities for local communities to grow.

<https://www.farmgarden.org.uk/your-area/scotland>

### Scottish Allotments and Gardens Society

Works throughout Scotland to protect sites, preserve gardening skills and promote the value of allotments.

<http://www.sags.org.uk/index.php>

### Grow Your Own Scotland

An initiative which seeks to create a single resource for all grow your own and greenspace organisations throughout Scotland.

<http://www.growyourownsotland.info/>

### Meat Free Mondays

Is a campaign and website with lots of ideas of how to go meat-free on a Monday.

<https://www.meatfreemondays.com/>

### Scottish Food Coalition

Is a civil society coalition looking at the whole food system. Their report 'Plenty: Food, Farming and Health in a New Scotland'.

<http://www.nourishscotland.org/wp-content/uploads/2016/03/PLENTY-final.pdf>



We support the Sustainable Development Goals.

Keep Scotland Beautiful is the charity that works with organisations and communities to help people to reduce carbon emissions, improve local areas and adapt to the impacts of climate change. It's part of our work to make Scotland clean, green and sustainable.



# Keep Scotland Beautiful

Your charity for Scotland's environment

T: 01786 471333 E: [ccf@keepscotlandbeautiful.org](mailto:ccf@keepscotlandbeautiful.org)

 [facebook.com/ClimateChallengeFund](https://facebook.com/ClimateChallengeFund)  [@CCFScot](https://twitter.com/CCFScot)

[www.keepscotlandbeautiful.org/ccf](http://www.keepscotlandbeautiful.org/ccf)



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