

Good Food for planet and people

What makes a healthy and low-carbon diet?

The good news is that research is consistently showing that a healthy and sustainable diet can be the same thing! Here are the three main ways to make a positive change to your eating:

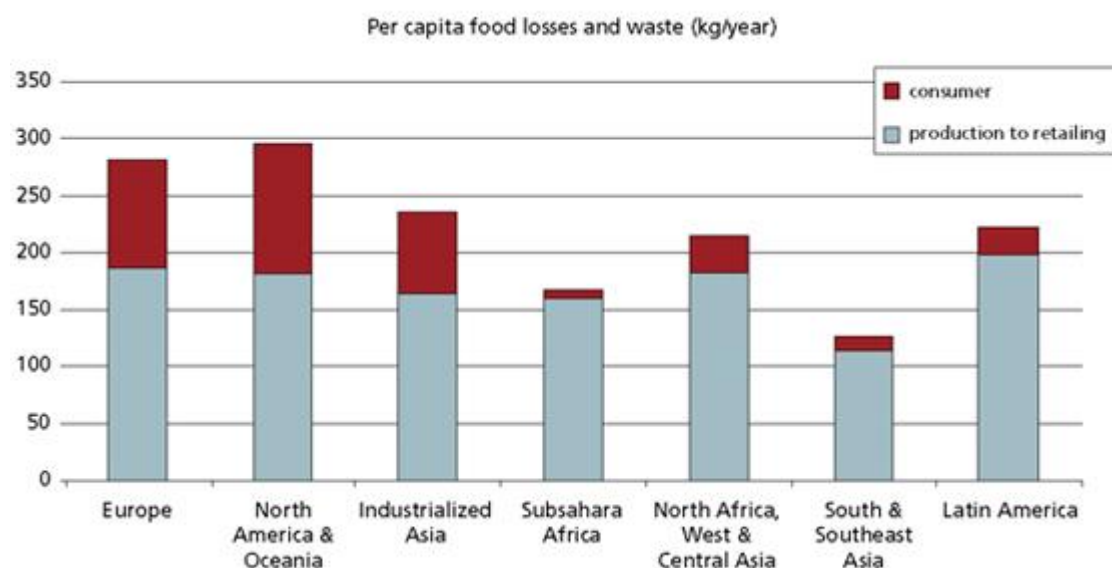
1) Eat fewer animal products and more plants

Recent dietary studies consistently indicate that low animal product/high plant diets are better for health and environment than high animal product diets. ‘Health’ is normally measured by diet-related diseases, such as coronary disease, type II diabetes, cancer, and by general mortality rate; ‘environmental impact’ is normally measured through greenhouse gas emissions and land use. On a global level, the potential impact of dietary shift is enormous; a study published this year concluded that ‘[t]ransitioning toward more plant-based diets that are in line with standard dietary guidelines could reduce global mortality by 6–10% and food-related greenhouse gas emissions by 29–70% compared with a reference scenario in 2050’ (Springmann et al. 2016). Such a diet would ‘represent a significant improvement on the quality of the average British diet today.’ (Garnett 2014)

2) Waste less

Roughly one third of the food produced in the world for human consumption every year — approximately 1.3 billion tonnes — gets lost or wasted. Developed countries wasted almost twice the amount of food as developing countries, and developed countries waste more food at retail and consumer level, due to supermarket quality standards and consumer behaviours. Household waste makes up 70% of the UK post-farm-gate total (WRAP 2016), costing the average household £470 a year, rising to £700 for a family with children (Love Food Hate Waste 2016).

We can waste less food by challenging food businesses on their purchasing standards and waste, and by wasting less at home through meal planning and better food storage.



(Food

and Agriculture Organisations of the United Nations 2016)

3) Eat less and better

A third of UK children are overweight or obese, as well as nearly two-thirds of adults. The average daily calorie intake is 3450, much higher than the recommended 2000 for women and 2500 for men (Food and Agriculture Organisations of the United Nations 2008). Eating the recommended reduces greenhouse gas emissions and land use by around 15%. (Blake 2014)

Research from the British Heart Foundation suggests that portions have consistently increased over time, vary between manufacturers and that there is ‘no meaningful understanding of what is an appropriate portion size.’ (British Heart Foundation 2013).

Sourcing better quality food can also reduce your carbon footprint. Reducing imports from outside Europe of meat, fruit and vegetables can lower greenhouse gas emissions by 8 – 13%. (Blake 2014). Buying local will generally result in a lower carbon footprint, unless food has been produced in a carbon intensive way, such as heated greenhouses. Buying seasonally and low impact or organic is the best bet.

How do different diets compare?

Zero Carbon Britain have compared the environmental and health impacts of thirteen diets, and those with a higher proportion of plants consistently have the best ratings. The light-lacto vegetarian diet and carbon minimiser diet also score well, showing that reduced and sustainably sourced animal products can have a place in sustainable and healthy eating.

Summary of all ranking

Rank	Ordered by energy	Ordered by protein	Ordered by NPS	Ordered by GHG emissions	Ordered by land use
1	Vegan	Vegan	Gorilla	Vegan	Gorilla
2	Light lacto-vegetarian	Light lacto-vegetarian	Vegan	Junk food vegan	Junk food vegan
3	Carbon minimiser	Substitute vegetarian	Light lacto-vegetarian	Carbon minimiser	Vegan
4	Junk food vegan	Carbon minimiser	Glutton	Light lacto-vegetarian	Light lacto-vegetarian
5	Ideal	Ideal	Carbon minimiser	Gorilla	Substitute vegetarian
6	Substitute vegetarian	Livewell	Ideal	Ideal	Carbon minimiser
7	Livewell	Health conscious but high meat	Health conscious but high meat	Livewell	Livewell
8	Health conscious but high meat	High meat and dairy	High meat and dairy	Health conscious but high meat	Ideal
9	LINDNS	LINDNS	Substitute vegetarian	Substitute vegetarian	Glutton
10	High meat and dairy	Current average	Junk food vegan	High meat and dairy	Health conscious but high meat
11	Current average	Glutton	Livewell	Current average	High meat and dairy
12	Glutton	Junk food vegan	Current average	LINDNS	Current average
13	Gorilla	Gorilla	LINDNS	Glutton	LINDNS

Table 13: A summary of all results ranked by energy, protein, Nutrient Profile Score (NPS), GHG emissions and total land use.

KEY

Future scenario diets

The 'glutton' (high calorie) diet aims to show the impact of eating too much.

The 'high meat and dairy' diet aims to show the impact of eating more meat and dairy than recommended, but otherwise following nutritional recommendations.

The 'health conscious but high meat' diet aims to show the impact of generally eating healthily, but with large quantities of meat.

The two vegetarian diets – 'substitute vegetarian' and 'light-lacto vegetarian' – aim to show the impact of dairy produce (by removing meat from the diet, but keeping in line with nutritional recommendations).

The two vegan diets – 'junk food vegan' and 'vegan' – aim to show the impact of eating healthily or not within a no meat and dairy diet.

The 'gorilla' diet shows the impact of a diet based purely on fruit and vegetables.

The 'carbon minimiser' diet shows the impact of eating foods in line with nutritional recommendations and with the aim of lowering GHG emissions – a carbon-conscious diet..

Comparison diets

The 'current average' UK diet and average UK diet among people on low incomes ('LINDNS'), taken from National Diet and Nutrition Survey (NDNS)

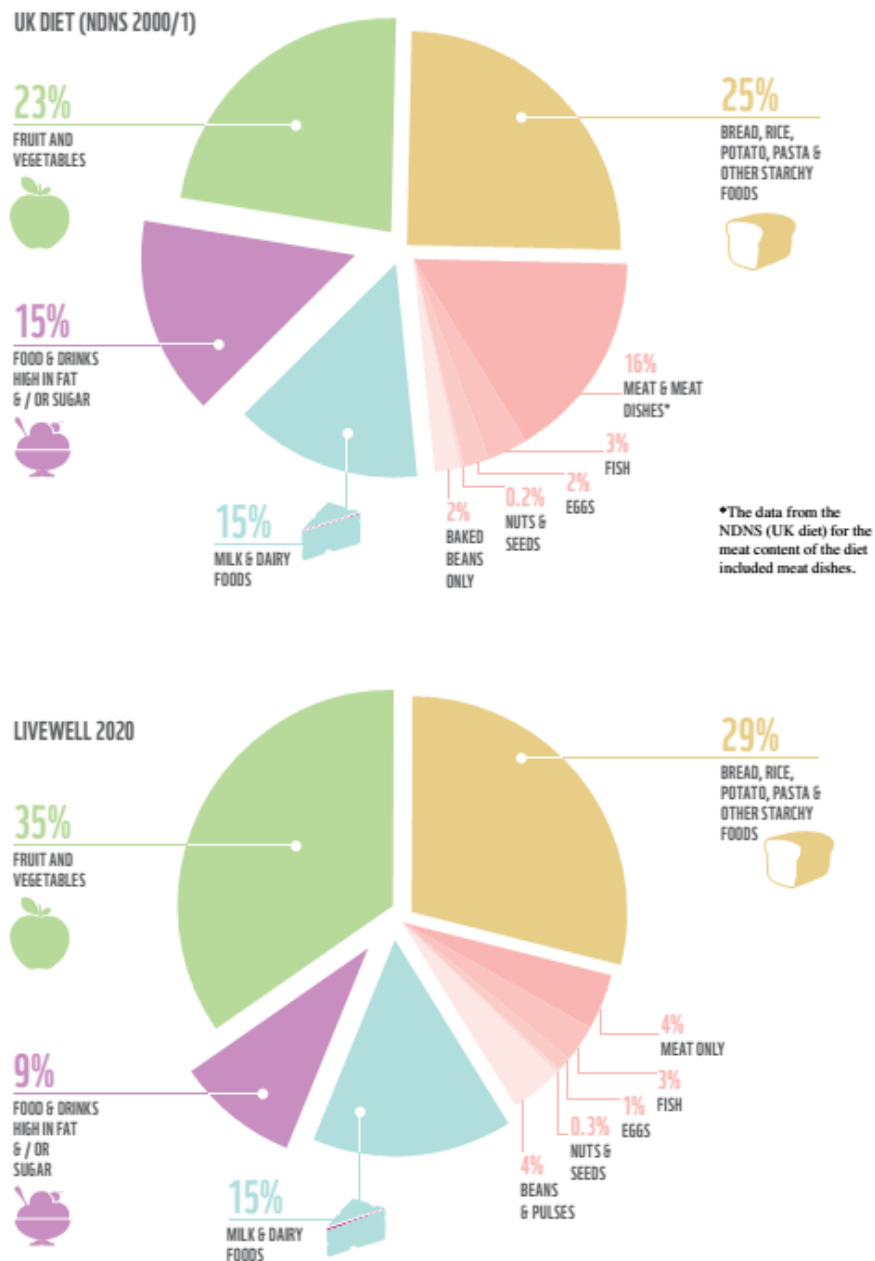
The 'Livewell' diet (taken from MacDiarmid et al, 2011) which aims at keeping food preferences similar to the UK average diet today, but lowers GHG emissions in line with UK government targets for 2020. (Blake 2014)

Resources

Livewell Plate

A report commissioned from the Rowett Institute of Nutrition and Health at the University of Aberdeen by World Wide Fund for Nature (WWF), maps current eating habits, government 'Eatwell Plate' dietary guidelines and an alternative low-carbon 'Livewell plate'.

Figure 5: The Livewell 2020 plate compared with the UK diet based on the Eatwell plate



Barilla Centre Double Pyramid

Visual aid for identifying food we should eat most often and lowest impact foods, both based around the Mediterranean diet.



Laura’s Larder is an interactive tool to analyse the health and environmental impacts of an individual’s diet. It includes charts to help an individual work out how to meet their nutritional needs in a planet-friendly way. <https://content.cat.org.uk/lauras-larder>

- Folate
- Niacin
- Riboflavin
- Thiamin
- Vitamin B12
- Vitamin B6
- Vitamin C
- Calcium
- Copper
- Iron
- Iodine
- Potassium
- Magnesium
- Phosphorus
- Selenium
- Zinc

GHG emissions (per RDA**) for calcium

Low	Medium	High	very high
Tofu (1/2)	Pilchards (3 1/2)	Okra (29)	Mozzarella (9)
Sesame seeds (2)	Haricot beans (20 1/2)	Almonds (6)	Purple broccoli (8)
Soya (fortified) (6 1/2)	Granary bread (8 1/2)	Cheddar (5 1/2)	Boiled egg (24 1/2)
Soya cheese (26)	Soya beans (16)	Anchovies (15 1/2)	
Sardines (3)	Brown bread (9 1/2)	Curly kale (6)	
	Emmental cheese (4)	Skimmed milk (4 1/2)	
	Hazelnuts (10)	Brazil nuts (10)	

() = number of portions* needed to meet RDA
*portion sizes are taken from the options in Laura's Larder **RDA = Recommended daily allowance

Calcium is important for the health of our bones, teeth and nervous system. It is also involved in cell signalling, metabolism, blood clotting and muscle movement.

Variation is important - try getting a range of these foods

Here are the results for your vitamin and mineral intake. Click on any of the circles above to see which foods we would recommend to boost intake whilst minimising GHG emissions

! You may be at risk

	High emitting foods		Low emitting foods
High protein foods	<ul style="list-style-type: none"> • Beef and lamb • Chicken and pork • Cheese • Eggs • Dairy 	➔	<ul style="list-style-type: none"> • Pulses • Lentils • Nuts and seeds • Meat alternatives (such as quorn and tofu) • Dairy alternatives
Vegetables	<ul style="list-style-type: none"> • Brussel sprouts, cauliflower and broccoli • Cucumbers and gerkins • Spinach • Green beans • Pumpkins, squash and gourds • Asparagus • Peppers • Tomatoes 	➔	<ul style="list-style-type: none"> • Cabbage • Courgette and marrow • Curly kale, spring greens and swiss chard • Peas and runner beans • Onions • Carrots, beetroot, parsnip and turnip • Sweet corn
Fruit	<ul style="list-style-type: none"> • Common tropical fruits • Exotic fruits 	➔	<ul style="list-style-type: none"> • Apples • Apricots, nectarines and peaches • Citrus fruits • Damsons, dates, greengages, plums and prunes • Pears and quinces • Rhubarb
Starchy foods	<ul style="list-style-type: none"> • Rice 	➔	<ul style="list-style-type: none"> • Grains • Bread • Noodles • Pasta • Potatoes

1

[Landshare Food Printing Calculator](#)

Interactive tool measuring diet, sourcing, cooking and waste inputs to produce their land, greenhouse gas, water and energy outputs.

1. Diet ?

kg/person/day	Organic?	1	2	3	4	5	6	Air freight?
Alcoholic beverages	<input type="checkbox"/>	0	0	15	45	20	20	<input type="checkbox"/>
Dairy	<input type="checkbox"/>	0	0	20	60	10	10	<input type="checkbox"/>
Fish	<input type="checkbox"/>	0	0	5	15	45	35	<input type="checkbox"/>
Fruit & veg	<input type="checkbox"/>	0	0	5	15	60	20	<input checked="" type="checkbox"/>
Grain & starch	<input type="checkbox"/>	0	0	15	55	15	15	<input type="checkbox"/>
Red meat products	<input type="checkbox"/>	0	0	10	40	25	25	<input type="checkbox"/>
White meat products	<input type="checkbox"/>	0	0	10	40	25	25	<input type="checkbox"/>
Eggs	<input type="checkbox"/>	0	0	10	40	25	25	<input type="checkbox"/>
Oils & fats	<input type="checkbox"/>	0	0	10	40	25	25	<input type="checkbox"/>
Other	<input type="checkbox"/>	0	0	20	40	20	20	<input type="checkbox"/>
Total								

Total: 2.31 kg/person/day

Calories/ person/day: 2,258 Kcal

2. Food production ?

Food zone: 1, 2, 3, 4, 5, 6

3. Cooking & waste ?

Food waste: What % of edible food do you waste? **14%**

Renewables: What % of your energy is renewable? **5%**

Packaging waste:

Material	kg/per/day	%
Plastic	0.10	5%
Paper & card	0.25	36%
Metal	0.04	5%
Glass	0.10	17%
Total	0.49	

[The Crunch](#)

¹ ZCB, p. 44

The Crunch is an exciting year of activities, experiences and discussions about our food, our health and our planet. Good web resources and videos.

[Love Food Hate Waste](#)

Advice on portions, leftovers, storage and recipes. LFHW champions are available to attend (large enough) events.

[Master Composters](#)

The Master Composter programme aims to reduce the amount of biodegradable waste, by encouraging more people to start composting at home and supporting those already doing so. In return for free training and support, Master Composters commit to carrying out voluntary work in their local communities. They work with local groups like schools and gardening clubs as well as friends and neighbours, attend local events, promote the benefits of home composting through local media and parish magazines, and give talks to local groups.

[Eating Better](#)

Campaign for less and better meat. Partnering with Hubbub to launch a meat-free cookbook and marketing campaign aimed at men changed meat eating habit.

[British Heart Foundation](#)

Healthy eating toolkit with portion guides and recipes.

Trends

DEFRA statistics

[2011 food values survey.](#)

- more than two thirds of people consider buying British produce important and almost three quarters look to buy British fruit and vegetables;
- more than three quarters of people think animal welfare is important but only two thirds seek out free range eggs and only half try to buy free range chicken;
- 70 per cent of people say buying sustainable fish is important but only 30 per cent say that they do so;
- almost two thirds of people say that buying ethical products is important, and 30 per cent seek out Fairtrade tea and coffee; and
- the same number of people who think it's important to buy healthy produce say they do so - 80 per cent of people.

[2014 Family Food Survey](#)

- In 2014 average household expenditure on all food and drink was £41.97 per person per week (see chart). Taking inflation into account, this was 2.8 per cent less than 2013 and 3.5 per cent less than 2011.
- In the UK an average 11.1 per cent of all household spend went on food in 2014. For the lowest 20 per cent of households by equivalised income it was 15.7 per cent.
- Purchases of various household foods are on clear short term downward trends since 2011, including carcase meat and meat products, potatoes, fruit and bread. Eggs are on a short term upwards trend since 2011.

- Purchases of raw carcass meat have been on a downward trend since 2011, but rose 7.2 percent in 2014. Beef, which accounts for around half of raw carcass meat purchases, showed a downward trend, declining by 9.5 per cent on 2011, but increased 5.0% on 2013. Purchases of pork were 2.3 per cent down on 2011, and 12 per cent down on 2013.
- Total energy intake from all food and drink is on a long term downward trend.
- All vitamin and mineral intakes except potassium reached at least 100 per cent of the recommended minimum Reference Nutrient Intake, where one is set.
- The average intake of sodium is on a downward trend but was still 76 per cent above the recommended maximum Reference Nutrient Intake of 2.4 grams per day in 2014.
- Household food purchases do not generally match the Government recommended Eatwell plate proportions of the types of food which make up a well balanced diet. Both low income households and all households have a relatively similar diet in terms of the eatwell plate categories.
- While overall purchases of fruit and vegetables reduced between 2011 and 2014, consumers spent 4.4 per cent more on fresh and processed vegetables and 7.8 per cent more on fresh and processed fruit.

Future food trends. [Dissident Consultancy Research.](#)

- Generation moderation – reduced meat, alcohol, calorie intake. 1/3 of Londoners teetotal; 25% of British people expect to be eating no meat by 2025; 50% agree that full English is bad for you. 40% of young men agree that red meat is bad for you.
- Personal tech – measuring exercise, diet as well as info on food choices
- Increasingly political food on unhealthy food – e.g. sugar tax
- Food and parenting – sugar and processed meat no longer treat foods.
- Sustainability to re-emerge post-recession. Veganism becoming trendy.
- 40% of UK and 60% under 24 want to know more about food recycling

Behaviour Change Resources

[World Resources Institute: the Shift Wheel.](#)

A framework for shifting people's diets, based on proven private sector marketing tactics.

The Shift Wheel: Changing Consumer Purchasing



wri.org/shiftingdiets

 WORLD RESOURCES INSTITUTE

[Reviewing Interventions for Healthy and Sustainable Diets](#), 2015 Chatham House Research Paper.

1. Be clear what is meant by a 'healthy and sustainable diet', and be prepared to prioritize to achieve clarity.
2. More evidence is needed on interventions, particularly on cobenefit or low income interventions. Existing evidence highlights risk of unintended consequences, e.g. overconsumption of healthier foods.
3. Consider indirect and cumulative impacts. The evidence is strongest for the impact of fiscal and restrictive measures. Nudging and info not strong in isolation but scope for broad strategies combining price interventions, restrictions, nudges, and information and education strategies.
4. Consider the 'macro' context, and consider wider social, economic and political factors in interventions.

- Learn from other areas and sectors, e.g. tobacco control, alcohol reduction campaigns.

[Meat reduction behaviour change model](#), Food Climate Research Network

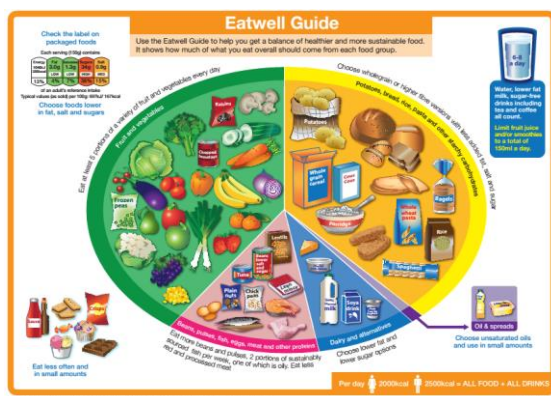
A visual model of factors that influence meat-eating behaviour based on a model of pro-environmental behaviour.



Current policy framework

UK dietary guidelines

The Department of Health is currently responsible to UK dietary guidelines. The latest 'Eatwell Plate', updated in 2016, splits the UK diet into starches, fruit and vegetables, protein, dairy/calcium-fortified foods and high fat/high sugar foods. (Public Health England 2016) There is currently no sustainability criteria included, although the plate recommends switching to non-meat protein sources for health reasons.



UK sustainable dietary recommendations

The UK's Green Food project, set up by the Department for the Environment, Food and Rural Affairs, has drafted some unofficial guideline principles of a sustainable healthy diet as follows:

- Eat a varied balanced diet to maintain a healthy body weight.
- Eat more plant based foods, including at least five portions of fruit & vegetables per day.
- Value your food. Ask about where it comes from & how it is produced. Don't waste it.
- Moderate your meat consumption, & enjoy more peas, beans, nuts, & other sources of protein.
- Choose fish sourced from sustainable stocks. Seasonality and capture methods are important here too.
- Include milk and dairy products in your diet or seek out plant based alternatives, including those that are fortified with additional vitamins and minerals.
- Drink tap water
- Eat fewer foods high in fat, sugar and salt

Swedish sustainable dietary guidelines

Currently the only national sustainable dietary guidelines in Europe. Key messages: more vegetables and fruits; more seafood; more exercise; switch to wholegrain; healthy fats; low fat dairy; less red and processed meat; less salt; less sugar (Livsmedelsverket 2015).

LiveWell for LIFE

The LiveWell for LIFE project looked at health, nutrition, carbon and affordability and demonstrated how low-carbon, healthy diets can help us achieve a reduction in greenhouse gas emissions from the EU food supply chain. It resulted in [LiveWell plate case studies](#) for France, Spain and Sweden, and a number of [sustainable diet resources](#).



(LiveWell for LIFE, n.d.)

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