

A Low Carbon Route Map

Guidance for communities applying to the
Climate Challenge Fund



Food

It's our future



Foreword

All over Scotland and beyond, people are working together in communities to reduce CO₂ emissions. These are early days and there is still much to learn about what works – and lots of new approaches and ideas to be tried and explored. Any community thinking of developing carbon reduction projects will be at the forefront of the journey to a low carbon society. This means that while there is much to learn from others' successes (and occasional failures) some of this is uncharted territory in which you'll be pioneers.

The Route Maps aim to help you and your community develop projects that are relevant, engaging and have maximum chance of success. Most of the Route Maps cover four areas to help you start your community's low carbon journey:

Surveying the landscape: Before starting any new journey it's important to learn as much as possible about what lies ahead. Here you'll find an introduction to the topic, relevant carbon emissions and how they can be reduced.

Choosing your particular route: There are many ways communities can reduce CO₂ and many different routes to success. Here you'll find information to help you think through different approaches and to choose ones that are right for your community and, ideally, not only reduce CO₂ but have other benefits as well.

Planning your journey: Here you'll find advice to help you make the detailed plans for your journey – and how to keep track of where you are so you know if you're making progress.

Signposts: To sources of further information and advice.

There are currently six Low Carbon Route Maps covering Project Planning, Energy, Travel, Food, Community Buildings, and Feasibility Studies.

Two warnings:

- The Route Maps don't replace the detailed Climate Challenge Fund guidance on completing an application – read that as well
- Not all the measures mentioned are eligible for funding from the Climate Challenge Fund – but they help present the bigger picture, and you may want to include them in a project with funding from other sources.

Every community is different. The aim of the Route Maps is not to tell anyone the 'best' way to do any project (because there is no one 'best' way) but to help you develop projects that work for your community.

Good luck – enjoy the journey!

The *Low Carbon Route Maps* have been researched, written and designed by Footprint Consulting Ltd; Environmental and Resource Economics Limited; and Alan Speedie Associates Ltd for the Climate Challenge Fund, July 2009.

Surveying the landscape

Food projects are some of the most interesting types of low carbon projects — everyone needs food and everyone has opinions on it, so it's something that people are often keen to get involved with. There are many different sorts of projects — from growing food to changing shopping choices, from simple steps an individual can take, to large projects involving a whole community.

At the same time, the relationships between food and climate change are complex. There are many reasons for this — there are so many sorts of food (from lamb to lettuce, from bread to bananas), each can be produced in different ways (lettuce in heated greenhouses in winter or in your garden in summer) and in different places (lamb from a hill farm a few miles away to lamb from New Zealand). And of course, even food produced a long way off can be transported in different ways — by air freight or by sea. When one starts to consider not just CO₂ emissions, but also other environmental and social issues such as pesticides and fair trade it can become even more complex.

In this Low Carbon Route Map we'll try to keep things simple — and focus on practical actions that community projects can do, and provide the information you need to have confidence that your projects are making a difference:

- In this first section we help you survey the landscape of your low carbon journey — so you can see how growing, distributing, cooking and even wasting food, all contribute in different ways to greenhouse gas emissions.
- In the next section you'll find more detailed information about possible low carbon food projects to help you choose your route.
- In the third section, planning your route, you'll find ways to estimate and record the CO₂ so you can make plans for a successful project.
- Signposts, the final section, lists reports and websites for further information and inspiration.

How food contributes to greenhouse gas emissions

Almost every action from growing food to processing it, transporting it and disposing of the waste, releases gases that cause global warming.

Carbon dioxide (CO₂) is the best known 'greenhouse gas' but methane (CH₄) and nitrous oxide (N₂O) are also powerful greenhouse gases produced by agriculture. In this Route Map we often use 'carbon' or CO₂ as shorthand for 'all greenhouse gases'. When we need to refer to a particular gas we write out the full name.

The total emissions associated with the food we eat add up to around 160 million tonnes of CO₂e¹ - this accounts for around one fifth of UK greenhouse gas emissions. The largest share of those emissions (7.6% of total) is from agriculture — how the food is produced on the farm. The next biggest shares are from food manufacturing (2.3%) and food transport (2.3%). The disposal of waste food accounts for 0.3% of emissions — although we can reduce emissions by much more than this by not wasting food in the first place.

A Low Carbon Route Map: Food

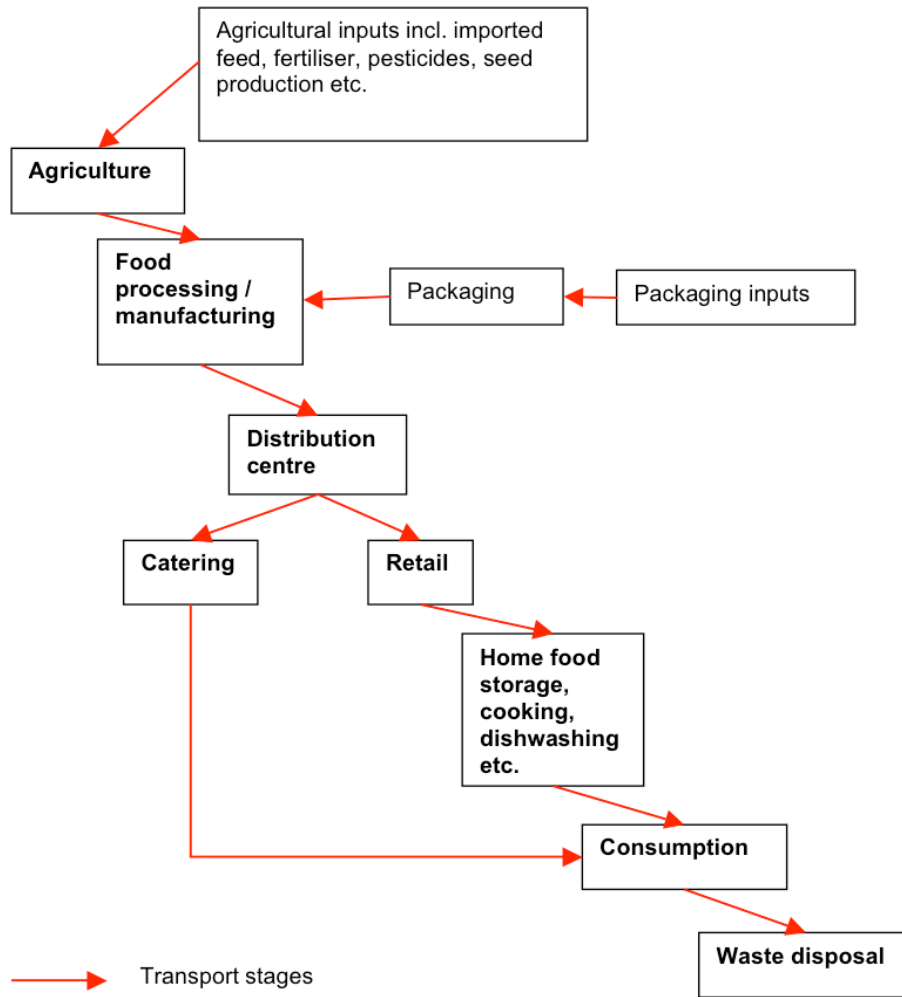


Figure 1: Greenhouse gases are emitted at every stage in the food chainⁱⁱ

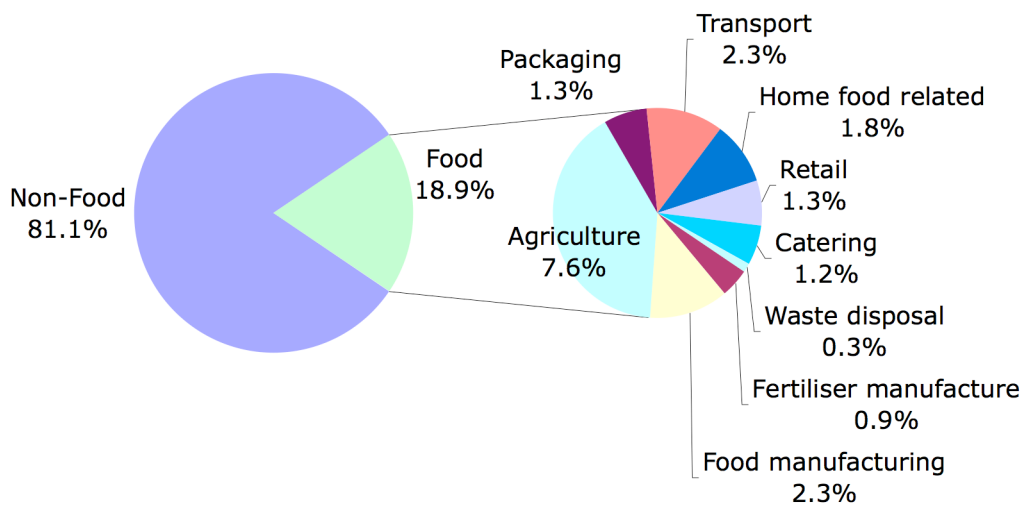


Figure 2: The contribution of food to UK greenhouse gas emissions

On the farm

Greenhouse gas emissions on the farm come from three main areas: methane (CH₄) from ruminant livestock (cattle and sheep in the UK); nitrous oxide (N₂O) which is caused by fertiliser use and associated with animal dung; and CO₂ that is released by working the soil, especially the ploughing up of new land. CO₂ from fossil fuel use for energy on the farm is relatively minor in comparison. Figure 3 shows that over 40% of food emissions are caused by livestock production for meat, milk and eggs, while growing crops accounts for around 5%.

CO₂ emissions from fossil fuels are more significant where crops, typically salads and Mediterranean vegetables such as aubergines, are grown in greenhouses heated and lit by non-renewable energy.

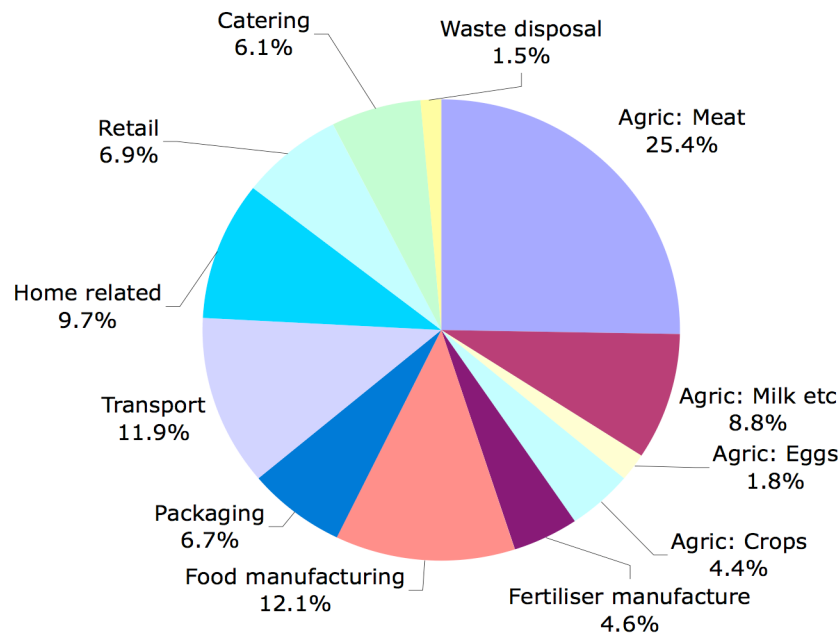


Figure 3: The contribution of activities along the food chain to GHG emissions from food consumption.

Transport

The transport of our food accounts for about 19 million tCO₂. This is over 2% of UK total emissions. How this is split between different modes of transport as shown in Figure 4.

Food miles have attracted a lot of attention and the transport of food accounts for 2.3% of the UK's CO₂ emissions. This includes transporting imported food in the country where it is grown; importing to the UK; distributing food to shops within the UK; and food shopping trips made by car.

A small proportion of the food imported into the UK comes by air – less than 1%. However, this 1% accounts for 11% of all food transport CO₂. It's worth noting that 13% of food transport related emissions is caused by shopping by car. This is an area we could reduce by shopping more locally on foot and reducing the number of car trips.

A Low Carbon Route Map: Food

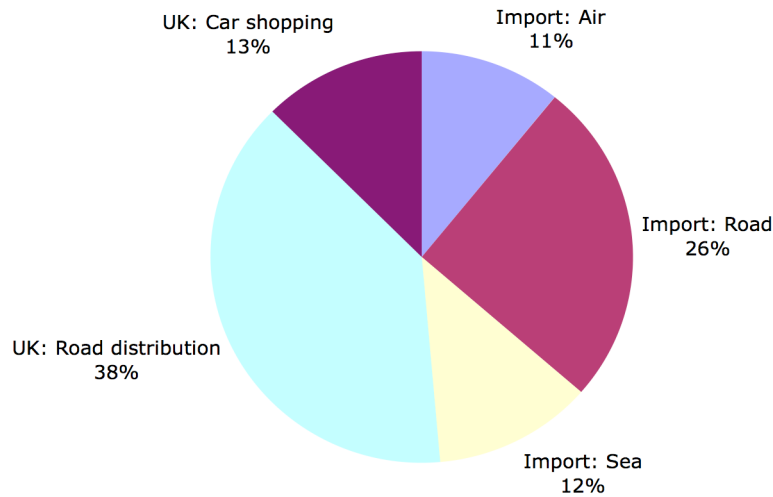


Figure 4: Emissions from importing and distributing food and from car shopping.

Refrigeration

Food refrigeration is also an important source of emissions throughout the food chain. This includes the storage, distribution, retailing and home storage of perishable foods including fruit and vegetables, chilled products and frozen goods. It is estimated that the ‘cold chain’ accounts for around 15% of total food chain emissions. (This 15% is not shown separately in the pie charts – it’s already included in food manufacturing, retail and so on.)

In the home

Activities in the home account for around 7% of food emissions. This includes cooking, refrigeration, freezing and washing up – all of which use energy. Emissions from these activities can be reduced by making sure you have energy efficient equipment and not using it more than you need to. This is covered in the Route Map on Energy.

Waste

Around 20 million tons of food is wasted in the UK every year – about a third of this is household food waste. This contributes to CO₂ emissions in two ways. When food waste is sent to landfill it degrades and can generate methane. This accounts for about 0.3% of the UK’s greenhouse gas emissions. A much bigger impact comes from all the emissions associated with producing the food in the first place. This is sometimes referred to as ‘embedded’ CO₂. If we didn’t have to produce the food wasted by households about 2% of total UK greenhouse gas emissions would be avoided.

What is climate friendly food?

If we pull together what we know about food and greenhouse gas emissions we can see that some food is more climate friendly than others. We need to consider two things:

- Emissions up to the ‘farm gate’: the emissions from growing the food on the farm including the inputs, especially fertiliser.

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- Emissions after the ‘farm gate’: the emissions from transporting, storing, processing and selling the food. (Everything in Figure 1 after ‘agriculture’.)

Up to the farm gate

Up to the farm gate the main sources of emissions caused by rearing livestock are methane from cattle and sheep and nitrous oxide emissions from soil and fertiliser production. A further source of emissions that is likely to be high, but is not included in the UK figures, is the soil when forests and savannah overseas are ploughed to grow feed for UK animals. Because of this, all livestock products can be considered to have high CO₂ emissions when compared weight for weight with other foods. Figure 5 shows the emissions, up to the farm gate, for some foods produced in the UK. Note the emissions from glasshouse grown tomatoes.

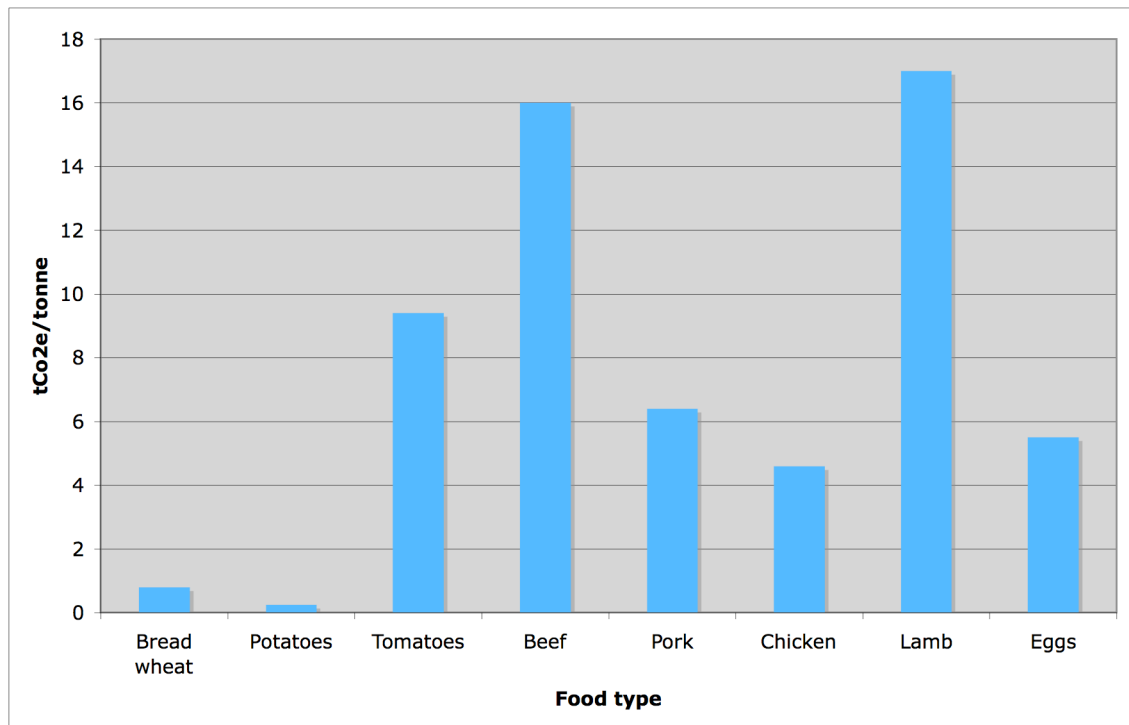


Figure 5: Greenhouse emissions per tonne of selected foods produced in England and Walesⁱⁱⁱ

For most crops, up to the farm gate, the emissions are fairly low (weight for weight). The main exception is crops grown in greenhouses heated by non-renewable energy – here the emissions from burning gas can put the crops in to a medium category.

Producing food organically can mean lower emissions on the farm. Recent research^{iv} by the UN Food and Agriculture Organisation suggests that the main benefit from organic farming – and similar methods – is that it locks up CO₂ in the soil. This is because organic farming relies on natural methods of increasing soil fertility – not artificial fertilisers. Organic products will tend to have lower emissions than equivalent conventional products – up to the farm gate. (This approach is not unique to organic agriculture, but as a consumer it is currently difficult to know if the method is being applied in other farming systems.)

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After the farm gate

Emissions after the farm gate are more varied and a bit more complicated. The two main sources are transport and refrigeration. Emissions depend on how far the product has travelled and by what mode of transport, and if it has been refrigerated, how cold and for how long.

Transport

Comparing like for like, food that has travelled furthest – by the same mode of transport – will have highest emissions. Over the same distance, products transported by air have the higher emissions, then train, then truck and then sea. Many products will involve a mixture of modes – truck to ship, ship to UK port, truck from port to retailer – and so on.

Most food labels show where the food was produced but it's often difficult to tell how it was transported. Some retailers do label air freighted food. However, even where fruit and veg are sold loose, you can usually tell where it's from by looking at the label on the box.

The cold chain

Generally the longer produce is kept frozen or refrigerated and the colder it's kept, the higher the emissions – comparing like for like.

Some foods are obviously refrigerated or frozen but we may not realise that lots of fruit and vegetables are kept in cold stores – often for several months. Produce that is perishable and easily damaged – e.g. salad crops, Mediterranean vegetables such as aubergine and soft fruit – is likely to have been refrigerated if it's not local. Chilled pre-prepared fruit and veg such as fruit salad bowls and prepared vegetables will usually have higher emissions than the same products brought whole because they are more perishable and need to be kept cooler for longer.

In season

One way to eat fruit and veg that has lower emissions is to choose fresh, seasonal produce – produce that is grown in this country without the use of extra heating. The less distance it's travelled, the lower the transport emissions. No heating means less emissions and fresh means less refrigeration emissions. See Signposts for details of the Eat Seasonably website which tells you what's in season when.

Choosing climate friendly food

It's not always easy to say which foods are more climate friendly because there are so many factors to take into account. How do you choose between, for example, carrots conventionally grown from a local farm and organic carrots from Holland? Later on in this Route Map you'll find some ways of estimating the difference – but in fact where field grown vegetables are concerned, the biggest climate impact will come from any meat in your meal.

The simple rules of thumb for climate friendly food are:

- Eat less meat, especially beef and lamb, eat fewer dairy products and choose local produce
- Eat fruit and veg that is local and in season and avoid pre-prepared fruit and veg
- For other products, less processed and less travelled is generally better
- In each case choose organic when you can.

Food projects can have many benefits

Food affects almost every aspect of our lives. Food projects which reduce CO₂ emissions can also have other benefits – environmental, social and economic.

Other environmental benefits of food projects can include greater biodiversity through management practices that reduce pollution from pesticides, fertilizers etc, and protecting wildlife on farm. Generally, ways of growing that reduce CO₂ emissions also have other positive benefits.

Social benefits can include improved health through healthier eating and reduced exposure to hazardous chemicals for workers and consumers. Diets which are more ‘climate friendly’ can also be good for you - less meat and fat and more vegetables.

Growing more food locally creates jobs and helps boost the local economy. For example, farmers markets^v are generally welcomed by existing retailers who find that their business increases due to the extra shoppers.

Choosing your route

Possible actions

There are many approaches to reducing CO₂ emissions from food including reducing food waste, choosing to eat 'lower CO₂' food and growing food locally. Many community food projects will include a mixture of all approaches.

Reducing food waste

The food wasted^{vi} by households embodies around 18 million tonnes of CO₂e that was emitted in producing the food. That food waste also generates methane (a powerful greenhouse gas) when sent to landfill. Around a half of household food waste can't be avoided - for example, vegetable peelings, tea bags and chicken bones.

The main reasons that food is thrown away are that we cook too much and don't eat it all; and that we buy too much and don't use it before it goes off. This waste doesn't just contribute to global warming – it hits our pockets. Wasted meat and fish costs over £600 million a year in the UK and wasted bread, apples and potatoes each account for over £300 million thrown in the bin every year.

Projects to reduce food waste could include information and advice to individuals, households and members of community groups. This could range from providing simple information leaflets through to cookery classes which include advice on shopping and cooking to avoid waste and to make good use of leftovers. Successful projects will probably focus not just on CO₂ but will meet the needs and interests of people and partner organisations as well – for example, helping save money, providing opportunities for socialising and learning new skills.

There will always be some food waste. Composting it will reduce emissions compared with sending it to landfill. Projects to encourage and support home or community composting could be linked with food growing activities. Food composting, while not difficult, must be done properly to avoid health risks and attracting vermin. Larger projects may need to be licensed. For advice, see the Signposts section. Local authorities are keen to encourage food (and garden) waste composting and may be able to advise and support your project.

Choosing a climate friendly menu

Even small changes to our diets can make big changes to our emissions. Every extra day of eating 'meat free' per week would reduce emissions by 0.18 tCO₂e/yr; and eating a mainly organic diet would save 0.14 tCO₂e/yr. Eating local in-season products will also reduce emissions considerably.

A more climate friendly menu could also mean a tastier, more nutritious diet than many of us eat at the moment – and it could be cheaper too. For meat and dairy products, it could include eating less overall but choosing higher quality, higher welfare products. For fruit and veg a climate friendly menu will vary through the year, adding interest to our meals and reconnecting us to the seasons.

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Projects promoting and supporting climate friendly menus might have much in common with and could be combined with projects to reduce food waste. Projects might also be able to link in with local traditions, including reviving interest in local varieties of fruit and vegetables, building links with local farmers and growers and, of course, with growing food in gardens and allotments. They might also link with healthy eating projects – see Signposts for information about healthy eating.

Growing food locally

Growing food locally can reduce emissions, where it reduces the distance food travels – so long as extra inputs (such as greenhouse heating and artificial fertilisers) do not outweigh the benefits. Food freshly harvested from gardens and allotments will also avoid the refrigeration used when storing and transporting fruit and veg.

Gardening has a number of benefits for physical and mental well-being – local food projects could link up with projects and organisations interested in these issues. Cultivating underused or waste land can also provide opportunities for bringing the community together, as well as making the place look better.

Deciding the destination

These are just some possible food projects for CO₂ reduction. You may want to adapt one of these approaches, or some other project that you think is inspiring, or you may have some great ideas for a completely new approach. You may have several ideas for projects – and need to choose which ones to develop.

Whatever the case, before diving into detailed planning, it is worth stepping back and seeing how your possible projects match up, not just against CO₂ savings, but also against other criteria that may make the difference between a flop and success.

Take a look at ‘Choosing your particular route’ in the Project Planning Route Map which provides more detailed information.

Planning your journey

Here we aim to provide the information you need to estimate the CO₂ emissions associated with your project and to help you think through how you might actually measure and report the savings as the project goes ahead.

For all food projects we suggest using the ‘activity’ approach to estimating savings – this means thinking about how each change reduces emissions: for example reducing food waste by 1 kilogramme is equivalent to reducing emissions by 4.5 kg CO₂e. This approach means you don’t have to worry about what people’s food related emissions actually are – which is lucky because unlike electricity you can’t just read the meter at the beginning and end of the project to see what has been saved! See the Project Planning Route Map for more information.

See Signposts for the sources for all the figures in this section and details of how they have been calculated.

Key data

Reducing food waste by 1 kg saves	4.5kg CO ₂ e
Composting 1 kg of food waste instead of landfilling saves	0.45kg CO ₂ e
Average Scottish household produces:	
Total food waste	270 kg/year
Avoidable food waste	140 kg/year

Table 1: Food waste data

Action	Reduction in emissions
Eating ‘meat free’ an extra 1 day a week for a year saves	180 kgCO ₂ e/person/year
Eating a vegetarian (meat-free) diet saves	720 kgCO ₂ e/person/year
Eating a vegan (no animal products) diet saves	1,040 kgCO ₂ e/person/year
Eating an all-organic diet saves (100% organic means <i>all</i> food <i>and</i> drink)	230 kgCO ₂ e/person/year
Eating mainly (60%) organic food saves	140 kgCO ₂ e/person/year
Eating partially (20%) organic food saves	50 kgCO ₂ e/person/year
Eating no air freighted food saves	34 kgCO ₂ e/person/year
Reducing consumption of imported food (all modes) by 50% saves	76 kgCO ₂ e/person/year
Eating only UK food saves	151 kgCO ₂ e/person/year

Table 2: Choosing a ‘climate friendly’ menu.

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Action	Reduction in emissions
A very productive, well managed standard 200m ² allotment saves	240 kgCO ₂ e /year
A standard allotment with a less experienced grower saves	120 kgCO ₂ e /year
A very productive, well managed vegetable garden saves	1.2 kgCO ₂ e/m ² /year
A vegetable garden with a less experienced grower saves	0.6 kgCO ₂ e/m ² /year
A person <i>completely</i> self sufficient in fruit and vegetables (no exotics like bananas etc!) <i>all year round</i> saves	480 kgCO ₂ e/year

Table 3: Emissions reductions from growing your own food.

Estimating potential savings

This example outlines how you can estimate the savings from a food waste project. The process is similar for other projects.

The key data on food waste is summarised in Table 1. You could simply estimate how many kilograms each participating household might reduce waste by – but as people don't tend to think about the weight of food waste, the idea of reducing food waste by, say a quarter, is easier to grasp. This is the approach we outline here, and it's done in three stages:

First: Estimate by what percentage your project might reduce food waste. Remember that around half of food waste is not avoidable – i.e. it's peel, bones etc – so you can't assume to reduce waste by more than 50%. In this example we'll assume 25%.

Second: Estimate the weight of waste avoided by the households taking part in the project (say 100 in this example):

No. of households x average weight of food waste x estimated percentage reduction = weight of food waste avoided

E.g. 100 [your figure] x 270kg [from table] x 25% [your estimate] = 675 kg

Third: Estimate the CO₂ emissions avoided by reducing food waste by this amount:

Weight of food waste avoided x amount reducing waste by 1 kg saves = CO₂ emissions avoided

E.g. 675 kg [calculated above] x 4.5 kg CO₂e [from table] = 3,037 kg = 3 tonnes CO₂e

If your project has more than one strand, you will need to do this calculation for each of the strands, because it's likely each strand will reduce food waste by a different amount. For example, your project might include an information campaign (with leaflets and posters in local shops etc), cookery demonstrations at the school fair and cookery classes with an existing local group. You will need to estimate how many of the households will be exposed to or participate in each activity and what effect participating might have. You can then calculate the reduction in food waste. An example is shown in Table 4. (Note that the percentage reduction figures are plucked out the air to illustrate this example. See below for how you might choose those figures.)

A Low Carbon Route Map: Food

Activity	No. households	Waste reduced by	Food waste reduced
Information Campaign	200	5%	$200 \times 270 \times 0.05 = 2,700\text{kg}$
Demonstration at school fair	50	10%	$50 \times 270 \times 0.1 = 1,350\text{kg}$
Cookery classes	20	25%	$20 \times 270 \times 0.25 = 1,350\text{kg}$
Total			5,400kg

Table 4: A food waste project: example of activities and assumptions

In this example the total food waste saving is 5,400kg, multiplying by 4.5 (the food waste emission factor) gives a projected reduction in emissions of 24,300kg or 24 tonnes per year.

Making this calculation is fairly easy. What is more difficult – but more interesting – is thinking about how effective these different activities might be, and how long the effect of them might last. Will leaflets and posters alone really reduce food waste by 5%? And if some people do reduce waste when the campaign is running, will they keep on doing so once it stops? Is it realistic to assume (as this calculation does) that the effect of each activity will last a whole year?

It is more realistic to take account of how long the effects of the activity might last (their ‘stickiness’ – see the Project Planning Route Map). This slightly more complicated calculation would look like this:

Activity	No. households	Waste reduced by	Months reduction lasts	Food waste reduced
Information Campaign	200	5%	1	$200 \times 270 \times 0.05 \times 1/12 = 225\text{kg}$
Demonstration at school fair	50	10%	1	$50 \times 270 \times 0.1 \times 1/12 = 112\text{kg}$
Cookery classes	20	25%	4	$20 \times 270 \times 0.25 \times 4/12 = 450\text{kg}$
Total				787kg

Table 5: Reductions taking account of ‘stickiness’

The total reduction in food waste is now only 787kg, giving an emissions reduction of 3.5 tonnes CO₂e. This might feel a bit disappointing but not only is it more realistic, this calculation can give you really useful information to help plan your project. Take another look at Table 4 and Table 5. Before taking account of stickiness it seemed that the biggest reduction would come from the information campaign but it actually looks like the cookery class will have a greater effect. This sort of information can help you make sure the time, energy and money you invest in a project is being focused on the activities that will make the most difference.

A Low Carbon Route Map: Food

It's difficult to estimate the impact of different activities but it is safe to say that activities where people come together with others, such as cookery demonstrations, are more likely to have more impact than ones that don't, such as information campaigns. Activities that are repeated over long periods of time, such as a series of cookery classes, are also likely to have greater and more long lasting effect. For more information about what is likely make behaviour change projects successful see the Project Planning Route Map.

The point at this stage is not which is right or wrong but how thinking about the activities and estimating how effective they might be will help you plan a better project. This example suggests that to have a more significant impact the project should think about how to have more activities that involve people and that are repeated. Could the demonstration at the school fair be repeated at other events, could pupils and teachers be involved in the campaign through school projects exploring the amount of food waste in pupils' homes, etc?

When setting out your project plan and the calculations, you should make clear what assumptions you are making and why you believe they are appropriate. In this case for each activity you should explain your assumptions for:

- The number of households participating
- The percentage of food waste reduction
- How long the reduction will last.

An example for the cookery class is shown in Table 6.

Assumptions	Reason
20 households will be influenced by the cookery class	The cookery class has run for several years and typical attendance is 20.people.
25% reduction in food waste is expected	The course will focus on how people can eat more healthily, save money, as well as save CO2. Based on the type of food wasted (from WRAP report) we believe this is achievable.
4 months is the average time we estimate the reduction will last	The course lasts for eight weeks so we expect people to achieve high reductions initially and that this will drop off after the course.

Table 6: How the assumptions you make can be explained

Working through this process you can calculate your baseline and make a justifiable estimate of the amount of CO2 you plan to save.

(Note that the figure of 270kg of food waste is for an average household. For most projects this will be fine. However, if your project is in an area with an unusual mix of housing, for example people living alone or lots of families with children, it might be sensible to use the more detailed figures which can be found in *The Food We Waste* report by WRAP – see Signposts below for details.)

Estimating reductions from other projects follows the same principles as food waste – and the same issues about stickiness and assumptions will need to be thought through. A few points are worth highlighting however:

A Low Carbon Route Map: Food

- Take care with units – some data is in tonnes, some in kilograms. 1 tonne = 1,000 kg.
- Check what the figure applies to – most are savings in emissions per *person* per year. A few are different, e.g. some home growing figures refer to areas of land, not people.
- Car transport – we’ve not given figures here for savings from reducing the number of shopping trips by car. To calculate this refer to the figures in the Travel Route Map.
- Avoid double counting! Make sure you only count each saving once. In particular take care with calculating emissions from home growing – don’t also count home growing as organic, vegetarian etc.
- Food waste that is composted is still food waste! Composting food waste only saves 0.45 kgCO_{2e}/kg, not 4.5kg.

Reporting CO₂ emissions from a project

If you’re investing time, enthusiasm and money into a project you will want to know if the project is bringing about the changes you want. Funders and partners will want to know and so will the people taking part. Here we continue the food waste example – this approach can be adapted for other types of project.

You’ve seen how you can estimate the saving you expect but the actual reduction of food waste as a result of your project is more difficult to work out. At one extreme you could physically measure the amount of food waste in people’s wheelie bins but this is unlikely to be realistic: there are privacy and health issues to consider and it must be very unpleasant work! WRAP used this approach to research *The Food We Waste* but this was a major project with special facilities.

More realistic approaches include surveys and diaries. With a survey you could ask people whether they feel they now throw out less food waste and to estimate how much they throw out. This could be quite simple and you could estimate how much waste reduction applies to each answer – bearing in mind that around 50% of food waste is unavoidable (stalks, bones, peelings etc). Table 7 gives an example of statements you could ask people to pick to describe the amount of food they waste – the percentage reductions are only illustrative, you might take a different approach.

Statement	Estimated reduction
I throw out or compost around the same amount of waste as before the project	0%
I throw out or compost less than before but I often still throw out food that could have been eaten	15%
I throw out or compost less than before but I occasionally throw out food that could have been eaten	35%
I never throw out or compost food that could have been eaten	50%

Table 7: Possible food waste reduction survey

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From the results of a survey with a sample of the people taking part in the project and making reasonable assumptions about the extent to which it applies to everyone else taking part, you can estimate total food waste. Taking account of the time period you can then compare this to the baseline figures and estimate emissions savings. The calculations will be similar to those for estimating reductions.

For some projects it might be useful to do surveys like this during the project, as well as at the end. You will learn what's working and what's not – and be able to adapt the project if necessary.

Signposts

GHG emissions from food

Food Climate Research Network

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

Spreadsheet of calculations used in this Route Map

<http://www.footprintconsulting.org/resources>

Composting

Waste Aware Scotland 'Love Food Hate Waste'

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

Food waste

WRAP/WI Love Food Champions

http://www.wrap.org.uk/retail/case_studies_research/report_love_food.html

WRAP (2008) 'The food we waste'

http://www.wrap.org.uk/retail/case_studies_research/report_the_food_we.html

Stuart, T, (2009) 'Waste: Uncovering the Global Food Scandal' Penguin Paperback

<http://www.penguin.co.uk/nf/Book/BookDisplay/0,,9780141036342,00.html>

Seasonal food

'Eat Seasonably' campaign

<http://eatseasonably.co.uk>

Healthy eating

Food Standards Agency

<http://www.food.gov.uk/>

ⁱ Unless stated otherwise, all emissions figures are drawn from Garnett, T. (2008) *Cooking Up A Storm; Food Climate Research Network; Report and Appendix 2*. A spreadsheet showing calculations used is available from Footprint Consulting Ltd: <http://www.footprintconsulting.org/resources> or email osbert@footprintconsulting.org

ⁱⁱ From Garnett, T. (2008) *Cooking Up A Storm*; Food Climate Research Network. <http://www.fcrn.org.uk/>

ⁱⁱⁱ Based on Williams, A.G., Audsley, E. and Sandars, D.L. (2006) *Determining the environmental burdens and resource use in the production of agricultural and horticultural commodities*. Main Report. Defra Research Project IS0205. Bedford: Cranfield University and Defra. Available on www.silsoe.cranfield.ac.uk

^{iv} Niggli, U., Fließbach, A., Hepperly, P. and Scialabba, N. 2009. *Low Greenhouse Gas Agriculture: Mitigation and Adaptation Potential of Sustainable Farming Systems*. FAO, April 2009, Rev. 2 – 2009

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^v New Economics Foundation (2005) Trading places: the local economic impact of street produce and farmer's markets.

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^{vi} WRAP (2008) The food we waste

http://www.wrap.org.uk/downloads/The_Food_We_Waste_v2__2__c9ee698e.5635.pdf