

Carbon footprints and measuring carbon in community projects

Methods, learnings and reflections from the Community Climate Action project



Background

The Centre for Sustainable Energy (CSE) has been a core partner in Bristol's Community Climate Action project, funded by the National Lottery's Community Fund. This was a pioneering & bold five-year project (2021-25), championing fair community-led climate action across the city. It was coordinated by Bristol Climate Nature Partnership, in collaboration with CSE and Bristol City Council (for further information see: <https://bristolclimatenature.org/projects/community-climate-action/>).

A key part of our role in the project was to provide community carbon footprints for the 18 communities in Bristol that were a part of the project and undertaking carbon monitoring of 'demonstrator projects' undertaken by four of these organisations.

In this resource we share our approaches and methods, as well as some reflections and lessons learned. We hope this will inspire other organisations undertaking community-based climate action to use community carbon footprints and carbon tracking.



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Carbon footprints

What are carbon footprints?



Carbon footprints tell us the total amount of greenhouse gas emissions released due to an activity or action. They are often communicated as CO₂e, or carbon dioxide equivalent. This is a standard unit for expressing the climate impact of various greenhouse gases, allowing for a single, comparable metric.



A carbon footprint can be captured and communicated for a single product, individual or building, as well as a spatial area (e.g. community-scale or national carbon footprint).



For an area-based carbon footprint, this could be a 'consumption' footprint or a 'territorial' footprint. See overleaf for an explanation of these two types.

Territorial vs consumption carbon footprints

- A **territorial** carbon footprint is about geographical boundaries. It includes all emissions that are generated within a defined geographical area, including those from industry, agriculture and transport activities.
- A **consumption**-based footprint is about the residents of an area. It includes upstream and downstream emissions from residents' consumption of manufactured goods, food and their own transport activity, regardless of where the emissions occur.

Benefits of carbon footprinting

Why can carbon footprinting be useful for community climate action?

- Carbon footprints are a concept which most people are now familiar with, and they can be a good way to kick start conversations and thinking.
- A carbon footprint gives you a baseline against which you can track progress.
- A carbon footprint reveals which activities bring with them the greatest carbon impact, and this can be useful in engagement activities and to guide your decision-making on where you want to prioritise action.
- Territorial footprints can show where there may be big carbon emitters in the community (e.g. businesses), and therefore larger stakeholders who may need to be engaged.
- Carbon footprinting can be a useful tool to give people agency and hope in the face of a crisis that can feel out of their hands.



Disadvantages of carbon footprinting

Whilst carbon footprinting is important for understanding impact and tracking progress, it also has potential negative aspects which should be considered:

- Individual carbon footprints have the potential to shift focus away from the supply chain and the necessary system-wide change required and focus responsibility on the individual and their consumption choices. However, the capacity of individuals to make the scale of change required is severely constrained by systems within which they live – and in the Global North, these are often very carbon-intensive systems.
- Focussing only on carbon means the negative consequences of carbon reduction approaches (e.g. resulting in social injustice or environmental degradation) can be overlooked.
- There is a danger of prioritising short term carbon reduction over other benefits (such as community resilience, nature conservation and long-term sustainability).
- Measuring and tracking carbon is complex. And as with any data-driven approach, it will never be perfect and a number of assumptions have to be made.

Community carbon footprinting tools

If you would like to have a carbon footprint for your community, there are a couple of freely available online tools:

[Impact Tool](https://impact-tool.org.uk/) : a digital visualisation tool developed by CSE. It helps you understand your community's carbon footprint. It works for parishes, wards and local authority areas (covering the UK). You can look up any geographical area to view online or generate a report, and you can compare your area with others (and against the household-average for your local authority area). CSE used this tool to create the carbon footprints for the 18 Community Climate Action communities. <https://impact-tool.org.uk/>

[Place-Based Carbon Calculator](https://www.carbon.place/) : a neighbourhood carbon footprint tool developed by the Centre for Research in Energy Demand Solutions (CREDS). It provides mapped outputs (covering England) on carbon, as well as other related topics, such as transport accessibility, EPC ratings, and gas and electricity consumption. <https://www.carbon.place/>

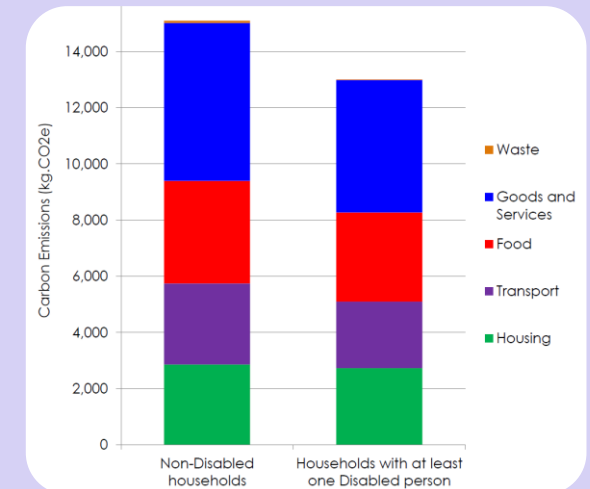
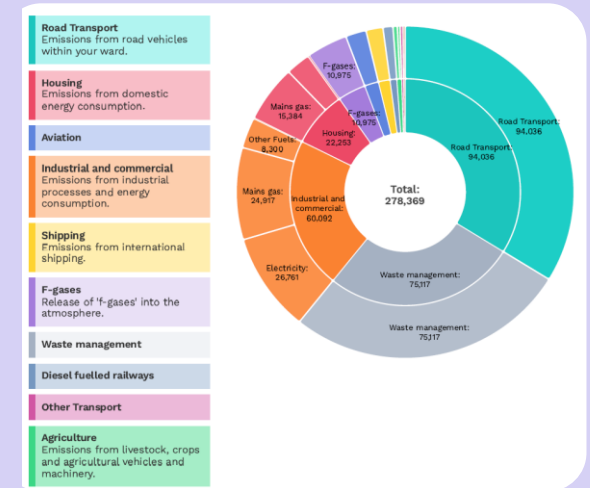


Bristol's Community Climate Action project

CSE developed community carbon footprints for all the communities engaged in the CCA project. These formed a part of each community climate action plan.

The footprint information was used in engagement activities, feeding into community conversations and prioritisation of activities. Information was visualised – through graphs, maps & infographics – to support engagement activities.

A key aspect of the community carbon footprints was that they demonstrated that the communities had a lower-than-average climate impact as compared to other more affluent areas of the city. Whilst there was concern this would lead to a disincentive to take action, it supported the project's focus on quality of life improvements as it's primary focus, and also provided evidence to feed into city-wide conversations around the importance of ensuring a fair distribution of costs and benefits in the city's net zero transition (in line with the city's [Just Transition Declaration](#)).

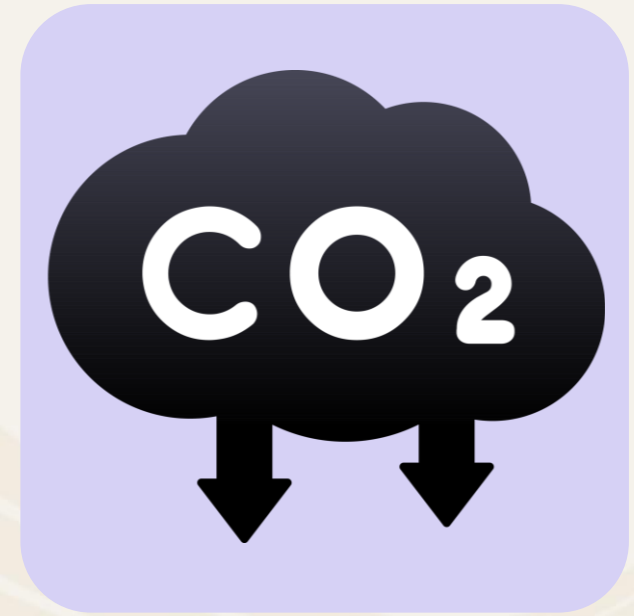


Measuring and tracking carbon savings

Why monitor carbon savings in your project?

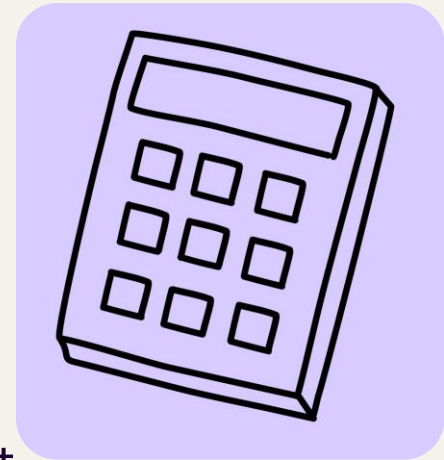
Tracking the carbon savings from community climate action projects has many benefits:

- Being able to demonstrate and quantify the activities which are leading to the greatest carbon reduction can guide decision-making on the future direction of your climate action project.
- With a growing number of funders prioritising climate change mitigation, being able to demonstrate the tangible impact your project is having on carbon reduction can prove value to your funder, as well as be strong evidence with which to engage with other stakeholders across your area (e.g. your local authority). It can also be critical in leveraging further funding.
- Monitoring the carbon savings of the activities you are delivering in your community can give people agency and hope in the face of a crisis that can feel out of their hands.



Measuring carbon: carbon factors

- Carbon factors (also known as emission or conversion factors) form a key component of any method to track carbon savings. They indicate the amount of greenhouse gas emissions (carbon dioxide, methane, and nitrous oxide) released as a result of an activity or process.
- A carbon factor is multiplied by 'usage' or quantity to calculate the amount of CO₂e (carbon dioxide equivalent) emitted when, for example, a certain amount of fuel is burned, electricity is used, distance travelled by a vehicle, £ is spent, and so on.
- Every year, the [Department for Energy Security and Net Zero](#) update the national set of carbon factors. Note that the Department for Environment, Food & Rural Affairs publish 'spend-based' factors, so if you're looking for carbon factors relating to £ spent these can be found in the [UK and England's carbon footprint statistics](#).
- A first step in tracking carbon savings is understanding what's in these two datasets, to flag where it is and isn't possible to track carbon savings from your activities.



Measuring carbon: what is possible?

When you're tracking carbon savings, you're doing this for a change in consumption practice, process, or land use. Below are some examples of outcomes of community climate action where it's possible to track the carbon savings:

- ✓ Where there's a reduction in kWh of gas / electricity usage.
- ✓ Where there's a change in how food waste is managed (e.g. composted vs landfill).
- ✓ Where there are dietary shifts (e.g. from meat-based to vegetarian or vegan).
- ✓ Where there's a change in transport behaviours (e.g. reduced car miles).
- ✓ Where there's an increase in biodiversity (e.g. where land is converted from grass lawn to wildflower meadow, or orchard).
- ✓ Where the purchase of new items is avoided (e.g. where broken electrical items are fixed, where second-hand clothing is provided, where compost is made rather than purchased).

Measuring carbon: what isn't possible?

Below are some examples of activities where it's more challenging to track carbon savings. This is predominantly where it is challenging to know or monitor the outcomes of the activity:

- ✓ Where training is delivered
- ✓ Where engagement activities are undertaken on a particular topic
- ✓ Where information has been shared (e.g. energy advice leaflets)
- ✓ Where items are distributed with a potential to lead to carbon reduction (e.g. plug-in electricity monitors)

Measuring carbon: making assumptions

When you are calculating carbon savings, in most cases you will need to make assumptions to be able to do this. For example, this may be in relation to ongoing behaviour changes, or changes in consumption practices. When making assumptions it is important that you are transparent about these in your reporting.

Overleaf are two examples from the Community Climate Action project of community activities for which we have calculated carbon savings. We outline our method and the assumptions that we have made in each case.



Bristol's Community Climate Action project

Measuring carbon savings for Heart of BS13

In the Community Climate Action project, CSE monitored the carbon savings for the demonstration projects of four community organisations. One example was the closed-loop composting system at [Heart of BS13](#). Outlined below is the approach we took.

1. **Identify what 'usage' you are tracking:** in this case, weight of food waste being composted and £ not being spent on new compost (as they were able to supply themselves with their own homemade compost!)
2. **Outline your assumptions:** in this case we assumed that the food waste that was being composted would otherwise have ended up in landfill.
3. **Find your relevant carbon factors:** in this case we were comparing the carbon factor for organic waste that is landfilled (700.2 kgCO_{2e}) vs the carbon factor for organic which is composted (8.9 kgCO_{2e}). We were also using the carbon factor associated with £ spent on garden-related goods ($0.239 \text{ kgCO}_{2e}/\text{£ spent}$).



Bristol's Community Climate Action project

Measuring carbon savings for Eastside Community Trust

Another example was calculating the carbon savings resulting from the repair cafes at Eastside Community Trust.

1. **Identify what 'usage' you are tracking:** in this case, the type and number of items being repaired. We also researched prices for a variety of items and used average price figures.
2. **Outline your assumptions:** in this case we assumed a new item would have been purchased in the absence of the broken item being fixed. We also researched the value of certain electrical items and assumed an average value per item that was fixed.
3. **Find your relevant carbon factors:** in this case we were using the carbon factors associated with new items (e.g. a lamp). This is given in relation to the £ value of the item. Outlined below is an example:



Item	Assumed Value (£)	Carbon factor category	Carbon factor (kgCO ₂ e/£)	Carbon from item (kgCO ₂ e)
Lamp	20	Computer, electronic and optical products	0.38	7.6 (20 x 0.38)

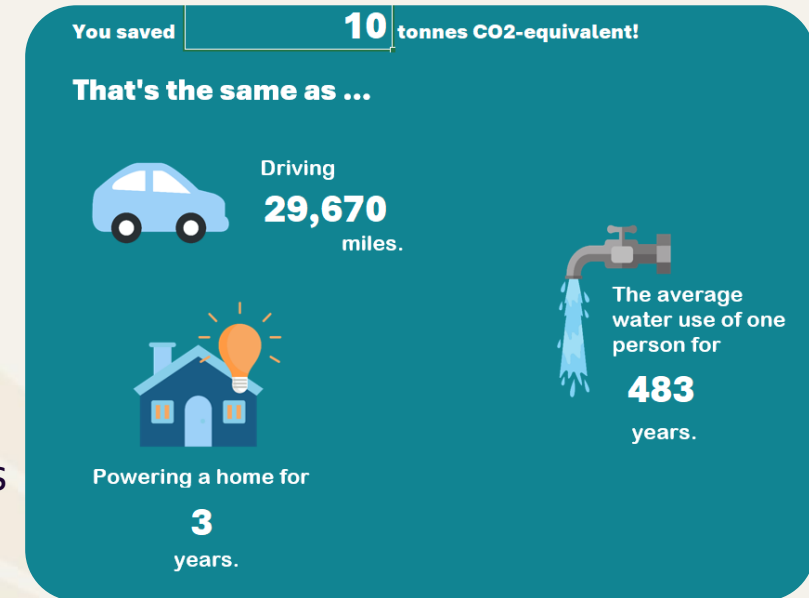
Communicating carbon savings

When you're communicating about the carbon savings of your community activities, it's important to make this relatable. For most people, tonnes of carbon saved will feel quite meaningless.

Use stories of people (especially people who community members regard as credible and relatable), the journey they have been on, and the variety of outcomes that have resulted from this (which may include carbon savings).

For the Community Climate Action project we articulated the carbon savings as equivalents to everyday activities (see image). With the development of freely available AI tools, you would also be able to create a quick infographic of your carbon savings (although the use of these tools brings with it a carbon impact!).

For further guidance and tips on effective engagement, please visit the resources section of our website: <https://www.cse.org.uk/resources/>



If you have any questions about this resource, please get in touch
with us at communities@cse.org.uk



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