

Cutting Your Carbon Forkprint

Reflections on our E.Mission journey

Six years ago, we met up as six idealistic young people to found E.Mission, with the goal of helping people to better understand their Carbon Forkprint and more importantly empower them into action with the tools to reduce it. In that time we developed an app to help people calculate the carbon footprint of their diet, worked with numerous restaurants in the West Midlands to carbon count their menus, developed an education programme which we delivered to businesses and community groups, and developed a web plugin with the University of Manchester which used artificial intelligence to carbon count an online recipe and provide recommended substitutions. We are proud of what we achieved but lives move on, circumstances change and we have made the difficult decision to end our E.Mission journey. But before we shut the door, we wanted to share what we have learned along the way.

Carbon Forkprint isn't the full picture, but...

Carbon Forkprint alone doesn't give consumers the full picture of the environmental impact of their food, but this is where we must examine our goal. Do we want to provide the consumer with information as an end in itself, or do we want to give them the tools to reduce that impact?

There are innumerable fairly robust studies out there to provide Carbon Forkprint data, but the data for other environmental impacts is patchy at best. Water and land footprint are moderately straightforward to measure, but how they are considered in an environmental decision is entirely dependent on the local context. Water is a big issue if you are growing food in the Sahara but not so much in South Wales, whilst using land in the Sahara is a very proposition different to Singapore or Sulawesi. Without considering that context, an absolute measure like litres of water use or a hectare of land is a blunt instrument to help you make an informed decision, particularly when a product is made up of several ingredients produced in different contexts around the world. Paragraphs of prose simply aren't practical and, whilst efforts have been made to quantify water- or land-stress, it is perhaps unsurprising that none have really been able to represent the full complexity of our world. Climate change by contrast is a truly global problem, a kilogram of CO₂ has the same effect no matter where in the world it is emitted, so the Carbon Forkprint alone gives us enough information to make an informed decision on climate change.

Beyond Carbon Forkprint, water use and land use, measuring environmental footprint gets very expensive, even more difficult and increasingly meaningless. One example of this is abiotic depletion, measured in kg antimony equivalent, and one of the 16 metrics that make up the Product Environmental Footprinting guidance. Obviously we are all familiar with antimony, a silvery semi-metal used in semiconductor production, and who among us doesn't regularly handle a kg of it? But conceptualising how much of that is equivalent to the resources used in the production of a kg of cheese requires doctorates in chemistry and philosophy. Even if you just consider it as an arbitrary measure of resource use, that level of assessment, conducted regularly and robustly for each food supply chain is an unreasonable burden for very minimal benefit. For other impacts there is just a lack of measured data, usually because it is expensive to obtain. This means the assessments available are often extrapolations stretching what little data we do have beyond its useful limits. In the worst case this can lead to data which actually isn't a good representation of reality, potentially leading to erroneous results and bad decisions. This when most impacts correlate quite well to



Carbon Forkprint, perhaps unsurprising when you consider those methodologies encompass the production of all the resources required to make something and all the emissions produced throughout a product's life. It is an extraordinary challenge to calculate the Carbon Forkprint for each of the multiplicity of foods we eat, trying to get good data across a range of impacts multiplies the challenge by orders of magnitude, for a result that rarely differs. Whilst it may seem like a laudable aim to try and represent the full gamut of environmental harm, our experience has shown that this is more likely to confuse consumers, burden farmers and very rarely change the decision. Simply sticking with CO₂ equivalent will give the consumer the best chance to make the most environmentally friendly decisions!

Use real numbers

Seeing a real number builds trust.

Whilst there are inherent uncertainties in the methodology, understanding that you have actually calculated the dish's Carbon Forkprint, rather than allocating it a grade based on an opaque assessment, demonstrates rigour to the consumer and makes them feel like the brand is committed to transparency. Even if they don't understand what a kg of CO₂ looks like (and honestly even the experts don't really), it is at least a unit people are beginning to see more and more in their day to day lives. It already has their trust.

Explaining the methodology enhances this trust further, a short paragraph is the best way to increase consumer understanding and thus uptake of lower carbon food. Often, however, this can be difficult on a menu, product or even food blog, where space is at a premium and the creators are trying to keep a clean look. In an age of smartphones a simple link to a webpage explaining the methodology can provide users with that reassurance that the numbers are supported by science, but you have to recognise that a tiny proportion of the viewers will make that effort. Keeping the description where they are already looking should be a priority if you can fight for it.

There can be a temptation to use scores rather than real numbers – particularly if you want to represent more environmental issues than just climate change. People invariably struggle to understand if a high score is good or bad, and the more complex, often proprietary, methodologies are harder to understand, and constantly the source of argument (it will always be impossible to weigh different environmental harms against each other). Far from informing the consumer scores lead to confusion, a loss of faith and the consumer ignoring it. This can be improved by using letter grades, with an A being clearly recognisable as the best, but that can easily be confused with the Nutriscore being rolled out across Europe and often looks clunky. We have found a real emissions number most effective for trust and understanding if the goal is to drive the right decisions.

Never leave a number on its own

A number in isolation is a dangerous thing in a world where nobody you are communicating with is familiar with what a good Carbon Forkprint is yet. On a menu you can get round this to an extent, there are only a few options have to provide them with that context to make an informed decision, but elsewhere it is harder.

The big question any customer wants to know is whether the Carbon Forkprint is good or bad. On a carbon counted menu it can be quite easy to pick the lowest carbon meals, but you don't know if it's the best of a bad bunch or if everything is in the lower echelon. Research has shown that five- or



three-point scales are the easiest for people to digest (pardon the pun) and the most ubiquitous of these is the traffic light system. Red being a high carbon food is clear to almost everyone, but putting these three colours on menus in particular can be a challenge to integrate into a brand aesthetic. Even a clearly explained three or five icon score will cause confusion over what is good or bad. An icon like a leaf or an earth, that people associate positively with environmentalism will cause particular havoc. Where traffic lights weren't an option, we found the most effective method was pulling out the low carbon meals with text; a simple "low carbon choice" being clearest.

The universality of carbon counting makes it easy to compare the Carbon Forkprint with other things in your life, particularly those that already have an environmental connotation, like travel and energy use. We have developed tools and training resources that can provide this context to our service users, which we will make available on our website. Did you know that a latte has the same Carbon Forkprint as driving for 2km?

You also need to ensure is that you use a unit that means something to the consumer. The denominator is so important when deciding how to present the Carbon Forkprint. It can feel easy to just use the total Carbon Forkprint per kg but there is usually an extra step between buying something and eating it. Rice triples in weight once it is cooked, whilst a potato often loses weight, and many comparable foods have different portion sizes. Comparing their retail weights will give the consumer a false impression and could lead to a less sustainable choice. We have always found that consumers resonate most clearly with the Carbon Forkprint per portion of food as eaten. It might seem obvious but that's what the consumer eats!

Tell people how they can improve

Much of what we hear about living lower carbon lives; buying an electric car, putting solar panels on your home or even changing your commute can feel out of reach to many of us. That was certainly the case to us when we founded E.Mission, as six young people renting shared houses with one second hand car between us we felt disempowered. The one thing we had some agency over is what we ate. We realised everyone has the power to reduce their Carbon Forkprint, and it's a choice everyone can make today. What we lacked were the tools to make better choices.

Putting the Carbon Forkprint on a product or menu allows consumers to choose between different items but that's not always enough to make a more informed decision. Some products can benefit from a bit extra information to explain why. This should be brief but as clear, complete and specific as possible, building trust with the consumer whilst ensuring the insights are actionable. Consider this sentence: 'most of the year asparagus is airfreighted from places like Peru, giving it a Carbon Forkprint 25 times higher than when it is harvested from the UK in April, May and June'. Telling the customer that it is airfreighted from Peru may feel extraneous, but it builds trust by giving a reason for the drastic increase, whilst the completeness of saying the UK season is in April, May and June gives them actionable insights on when they can buy asparagus that is low carbon. Rather than demonising an entire food group, this sort of concise messaging can provide people with the nuanced information to make better decisions.

Working with Riza Batista-Navarro at the University of Manchester we developed a web plugin which automatically carbon counted online recipes and used artificial intelligence to generate substitutions within recipes (for example recommending they swap high carbon airfreighted mangetout for much lower carbon frozen peas). This provided people with two types of choice; between different recipes and different ingredients. We were unsurprised to see that consumers



were more likely to choose between two different curated recipes, but the substitution recommendations had an impact too. Even where they didn't use the substitution directly, consumers would see that substituting the lamb for chicken in a tagine would more than half the Carbon Forkprint, search out a recipe for chicken tagine and cook that instead. Whilst less than a quarter of meals featured a substitution, we saw the very highest carbon meals disappearing from our cohort's diet, more than halving the Carbon Forkprint of their diet overall. We made the most impact by providing them with the Carbon Forkprint on the recipe, rather than the ingredient because they could make the decision about the Carbon Forkprint at the point they made the decision on what to eat, which wasn't necessarily the same as when they bought it.

The situation really matters

We have conducted trials in a really wide range of environments and one thing has always held true; the more special a meal, the less likely someone is likely to make a different choice based on the Carbon Forkprint of the dish. In one of our first trials we put the Carbon Forkprint on the menu of a very high end restaurant, and we saw almost no change, some of the diners even complained. They had been looking forward to their evening out for weeks and did not appreciate seeing the impact their choice was having on the environment on this special occasion. In cafes and more everyday eateries we typically saw a 5-15% reduction in the average Carbon Forkprint of a dish, but when we built a tool to work in people's homes, we saw it more than half. There is no question there are elements of self-selecting samples, but one thing is clear; the more special the occasion, the less likely the consumer will change their decision based on the Carbon Forkprint.

It also held true that the biggest impact we had was in the kitchen, no matter who was cooking. When the average consumer thinks about carbon footprint of food, they assume the most important elements are the transport and packaging, and this is also true of chefs (in fact the former is only true where products are air freighted and packaging is only really significant when the product already has a low Carbon Forkprint). It doesn't matter if you are a Michelin-starred professional, or a culinary amateur, it is eye opening to understand the impact one out of season ingredient, sprinkling of cheese or garnish grown in a heated greenhouse can have on the dish's Carbon Forkprint. Changing the recipe and never giving the consumer the choice of a needlessly high carbon meal was so often the way we delivered greatest impact, with the chef often becoming the strongest advocate for reducing the Carbon Forkprint. At home or in the restaurant, the kitchen was always key.

Our journey with E.Mission might be at an end, but each of us remains committed to a delivering greener world. We are working to make all the resources we can available on our website, where they will be available for as long as we can keep them up there. If you have any queries you can get in touch at info@emission.org.uk.

Thank you to all the friends we made along the way.

