CHAPTER 15

Conclusion

Abstract Just one day's food and drink has together travelled over 40,000 miles and encompassed a wide array of climate change risks and responses. Their carbon footprints also ranged widely, with milk, chicken and fried food standing out as the biggest overall, but with tea and coffee having very high emissions for each gram actually consumed. On-farm emissions and those from storage and cooking dominate life-cycle emissions for most foods. All face threats from climate change, with many smallholders around the world facing the prospect of losing their livelihoods altogether as impacts intensify. Every food and drink examined, however, has a raft of climate-smart responses available that could boost resilience and yields, and lower emissions. Engaging with stakeholders, especially the people who produce our food, and taking local contexts into account when designing and applying solutions for food in a changing climate is the fundamental take-home message.

Keywords Food miles • Vegan • Vegetarian • Mycoprotein • Soya • Insect flour • Patrick Geddes • Carbon footprint

Our day's food, albeit an extravagant champagne-swilling one, has taken in 5 continents and myriad nations of the world. Along the way it has borne witness to a warming world where severe weather events are

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becoming more frequent and intense, and where the supply chains that feed us are buckling. From impacts that reach across whole continents, like retreating Arctic ice and faltering Himalayan melt waters, to the up-close-and-personal threats of fire, pests and disease, there's a taste of climate change in every bite.

In getting from source to our West Lothian kitchen, the day's meals have together clocked up a staggering 40,000 miles of travel (mainly by container ship[1]). Such huge 'food miles' certainly play their part in the total carbon footprint,[2] but it is actually only a minor one for most. As long as airfreight is avoided, the bulk of the life-cycle emissions occur back on the farms or during storage and cooking. Milk stands out as a major slice of our carbon pie (methane belched by cows being the main culprit) (Fig. 15.1). The chicken curry, fish supper and champagne are big players too, between them making up nearly two-thirds of the total. At least for the latter two, I can guarantee neither a scrap of batter nor a drop of fizz is ever wasted.

For many of us it is the amount of meat and dairy products we consume that dominates the carbon footprint of our food. Since the early 1960s the amount of meat produced worldwide has risen almost fivefold—the average person in the UK now consumes over 75 kilograms per year of it (in the US, the average is over 100 kilograms). This gravy tide may be turning though.

Two-thirds of US citizens say they are now eating less of at least one type of meat, and a third of Brits say they have either cut back or given up meat altogether [1]. My own family's diet has itself changed quite radically as the writing of this book has progressed. At its inception we still ate some bacon, sausages and salami, alongside fresh beef, lamb, pork and chicken. First to go was the processed meat as more and more studies

[1] 40,828 miles based on container ship to Portsmouth, England, from Admiral Barroso Terminal (orange juice), Kolkata (tea), Djibouti (coffee), Takoradi (cocoa), Vera Cruz (maize), Karachi (rice), Reykjavik (cod), Calais (champagne) and onward delivery to Scotland by truck.

[2] 4.06 kilograms carbon dioxide equivalent (CO_2e), based on consumption of one person: 200 ml glass of orange juice (100 g CO_2e), 200 ml mug of black tea (50 g CO_2e), 200 ml glass of milk (600 g CO_2e), 40 g chocolate bar (270 g CO_2e), 200 ml mug of black coffee (150 g CO_2e), banana (200 g CO_2e), portion of chicken curry (75 g) with rice (100 g) (525 g CO_2e), 40 g bag of nachos (50 g CO_2e), standard portion fish & chips (1,000 g CO_2e), three 125 ml glasses (half bottle) of champagne (1,000 g CO_2e).

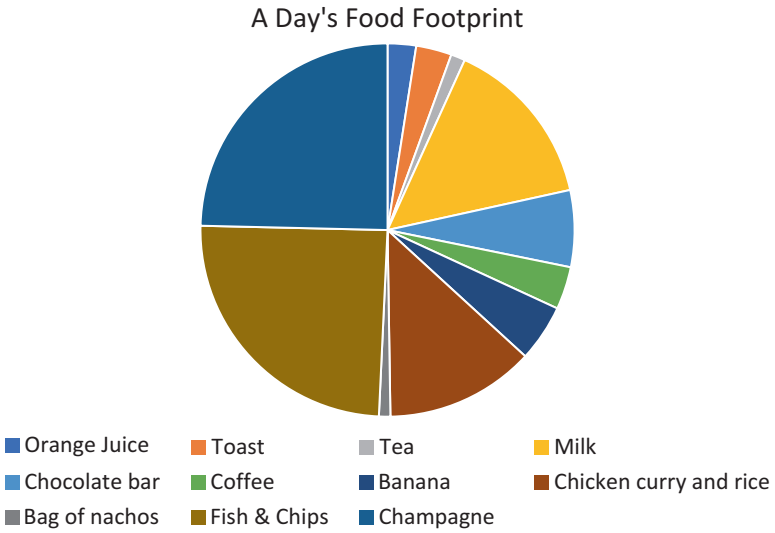

Fig. 15.1 Relative contribution of the day's foods and drinks to the total carbon footprint of 4 kilograms. For details see footnote 2

emerged on the cancer risks they pose [2]. Next went the ruminants—the beef and lamb—due to their high carbon footprints (up to 4 kilograms of emissions per serving of lamb and even more than that for beef) [3].

An initial dabble with meat substitutes like mycoprotein Quorn sausages and soya-filled Linda McCartney pies was a big success and saw the end of our pork consumption too. Chicken dinners held out for a while longer (until the last barbecue of summer 2018). Chicken has a carbon footprint only slightly higher than that of meat substitutes like Quorn [4], and by always buying free range we assumed the welfare of the birds was guaranteed. Researching broiler chickens for this book (Chap. 9) made clear my imagined daisy-pecking idyll for commercial free-range birds is often far from reality. We still eat lots of eggs though, as our small flock of rescue hens in the back garden provide enough for us and many of our friends and neighbours.

Most recently we have switched to plant-based milk—dairy milk clocks up around 600 grams of emissions per serving, while the plant-based ones

cut this by two-thirds [3]. Crucially, it tastes good too. Over the past couple of years, the carbon footprint of our food has contracted along with my own waistline. Cutting out meat has made the biggest dent on both counts. Our family diet continues to evolve as the kids become more food and climate-aware, and much more vociferous in their opinions. The 6-year-old Molly who liked to wrap her cocktail sausages in salami is now the 12-year-old extolling the virtues of vegan cheese. We are yet to incorporate insects into our daily diet—these already form part of the traditional diet for around 2 billion people worldwide [5] and could be a viable lower-carbon alternative to animal protein in Western diets too [6]. Likewise, Impossible Burgers (a plant-based burger using heme proteins from legumes) [7], Greggs' vegan sausage rolls (they had all sold out), and artificial steaks (from lab-grown animal cells) [8] remain culinary treats for the future.

Cricket flour may still be some years away from appearing on the shelves of our own local food store, but other alternatives to meat and dairy have become cheaper and more readily available. Whatever our food choices, they are certainly becoming better informed. From quick and easy food and climate comparison tools [3] to in-depth reports on the sustainability of our diets [9, 10], we have never been better able to assess the relative merits of what's in our shopping basket. The message is a clear one: a transition to more sustainable diets can deliver big benefits for our own health alongside that of the planet—an estimated 10 million lives saved each year, just for starters [9].

Yes, there are barriers, risks and uncertainties aplenty. Wholesale conversion to plant-based milk, for instance, could cripple the dairy industry and damage the livelihoods of already-struggling farmers. The nutritional benefits of meat and milk substitutes will differ from their animal-based cousins [4] and soaring demand for soya and almond milk could accelerate land-use change and deforestation overseas, thus shifting some emissions and biodiversity loss problems offshore [11].

For much of the world, uncertain projections of our future climate are a barrier too. Most remain far too broadscale and imprecise to be useful for individual farmers to decide exactly what to grow and when. Likewise, specially-bred crop varieties have huge potential, but developing these takes time and, even when available, farmers may be distrustful of them [12].

If researching this book has taught me anything, it is that climate-smart food is not a one-size-fits-all solution. Climate change is a global phenomenon, but its impacts on our food, and the best responses, are more diverse and location specific even than the rainbow of Mexican maize landraces. The further we as consumers are separated from the farmers and herders, the vintners and fisherfolk, the less we are able to understand this complexity, and the greater the chance that vital local contexts are overlooked.

At the risk of making my Scottish sustainability hero Patrick Geddes turn in his grave, we need to 'Think Local, Act Global' on food. To learn from and enhance the capacity to face climate change at the local level, everywhere. Through greater support for and engagement with the many millions of people who help feed us each day, the opportunity to realise a climate-smart future for our food is within reach. Let's grasp it.

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