



City Research Online

City St George's, University of London

Citation: Reynolds, C. (2023). Status, barriers and access routes to healthy sustainable diets.. Paper presented at the The British Nutrition Foundation Annual Conference, 7 Nov 2023, London, UK.

This is the presentation version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: <https://openaccess.city.ac.uk/id/eprint/31687/>

Copyright and Reuse: Copyright and Moral Rights remain with the author(s) and/or copyright holders. Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge, unless otherwise indicated, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way. For full details of reuse please refer to [City Research Online policy](#).



**Centre for
Food Policy**

Shaping an effective food system

Status, barriers and access routes to healthy sustainable diets.

The British Nutrition Foundation Annual Conference.

7 November 2023 11:15 AM - 11:45 AM

Royal College of Physicians

11 St Andrews Place

London, NW1 4LE

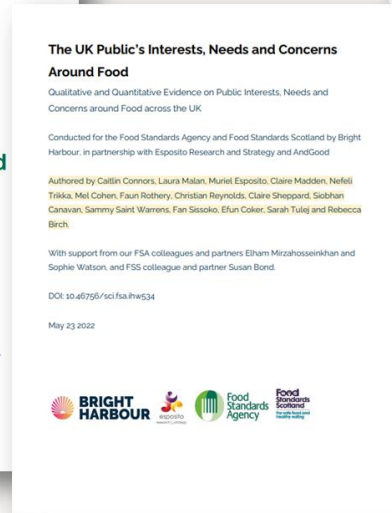
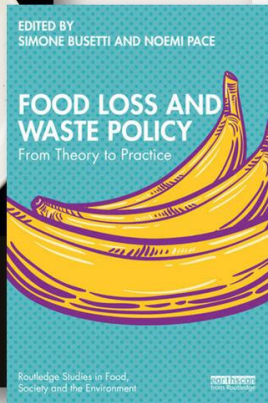
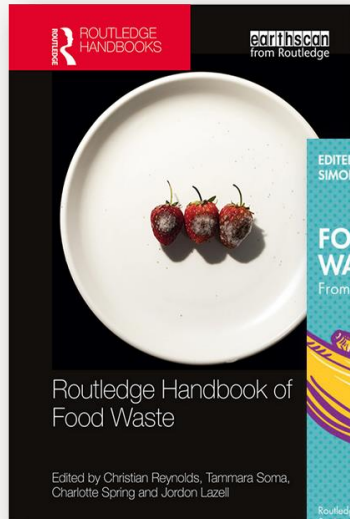
Dr Christian Reynolds
Centre for Food Policy,
City, University of London
[@sartorialfoodie](https://twitter.com/sartorialfoodie) [@FoodPolicyCity](https://twitter.com/FoodPolicyCity)
christian.reynolds@city.ac.uk



Who am I?

Reader at the Centre for Food Policy.

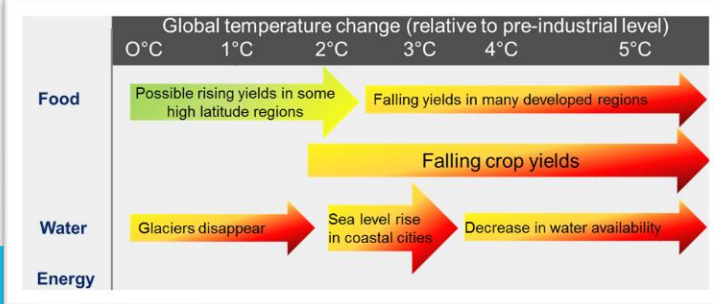
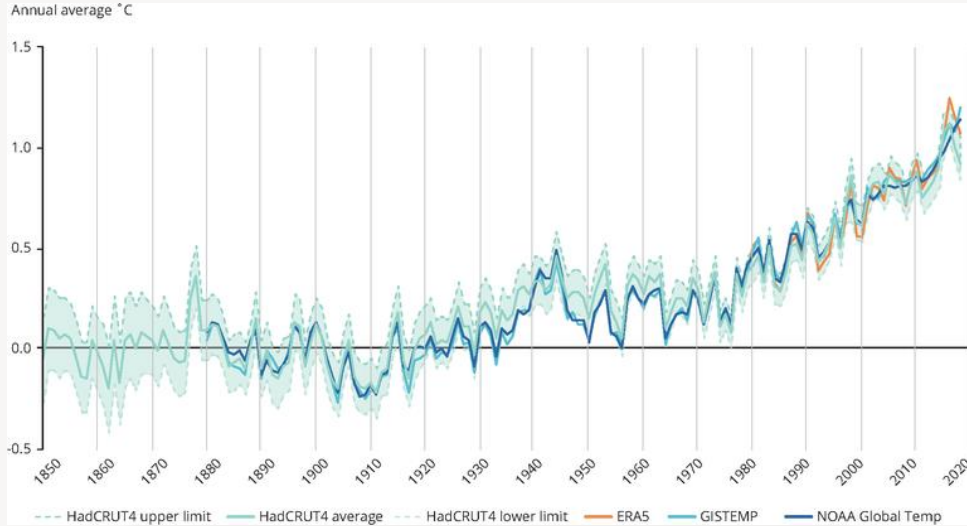
- Focus on sustainable food systems and food waste.
- Supporting the FSA/Defra through research projects. Scottish food systems research (ZWScotland). Household Simulation modelling (WRAP). Local food strategy development.
- Nutrition Society Food Systems theme lead. IFST Sustainability working group.
- Recent publications



The climate is changing...

Global average near surface temperature since the pre-industrial period

Source [European Environment Agency \(EEA\)](https://www.eea.europa.eu/en/press-photos/2023/04/01)



New Zealand
As the climate warms, New Zealand winemakers grapple with a changing landscape

Winemakers worry the heat could make wine too sweet, while others are starting to plant grapes in areas previously considered too cool



✎ A vineyard in Otago, New Zealand. The planet's southernmost wine growing region was previously considered too cold for chardonnay. Photograph: Eddy Dallimore/Getty Images/Stockphoto

Nick Stringer in Central Otago
Fri 14 Apr 2023 21:00 BST

Rampant heatwaves threaten food security of entire planet, scientists warn

After hottest day ever, researchers say global heating may mean future of crop failures on land and 'silent dying' in the oceans



✎ A stag takes a drink at Dülmen wildlife reserve in Münsterland, Germany, on a sweltering day this summer. Photograph: Imageplotter/Getty Images

the guardian.org
About this content
#guardian
Fri 21 Jul 2023 04:00 BST

Our unequal earth Environment
The summer food went weird: searing heat reshapes US food production

From wilting wheat to stressed pollinators, US farmers and fishermen see unexpected climate effects



✎ Cecilia Martin picks blueberries at the Cooperativa Tierra y Libertad farm in July in Everett, Washington. Farms and workers must adapt to changing climate conditions. Photograph: John Froeschauer/AP

Supported by
Ithaka Flower Project
About this content
Cecilia Nowell
Sat 2 Sep 2023 12:00 BST

UK runs short of salad crops and citrus fruits after cold spell in Med

Supermarkets say they are working with farmers to ensure wide range of produce is available

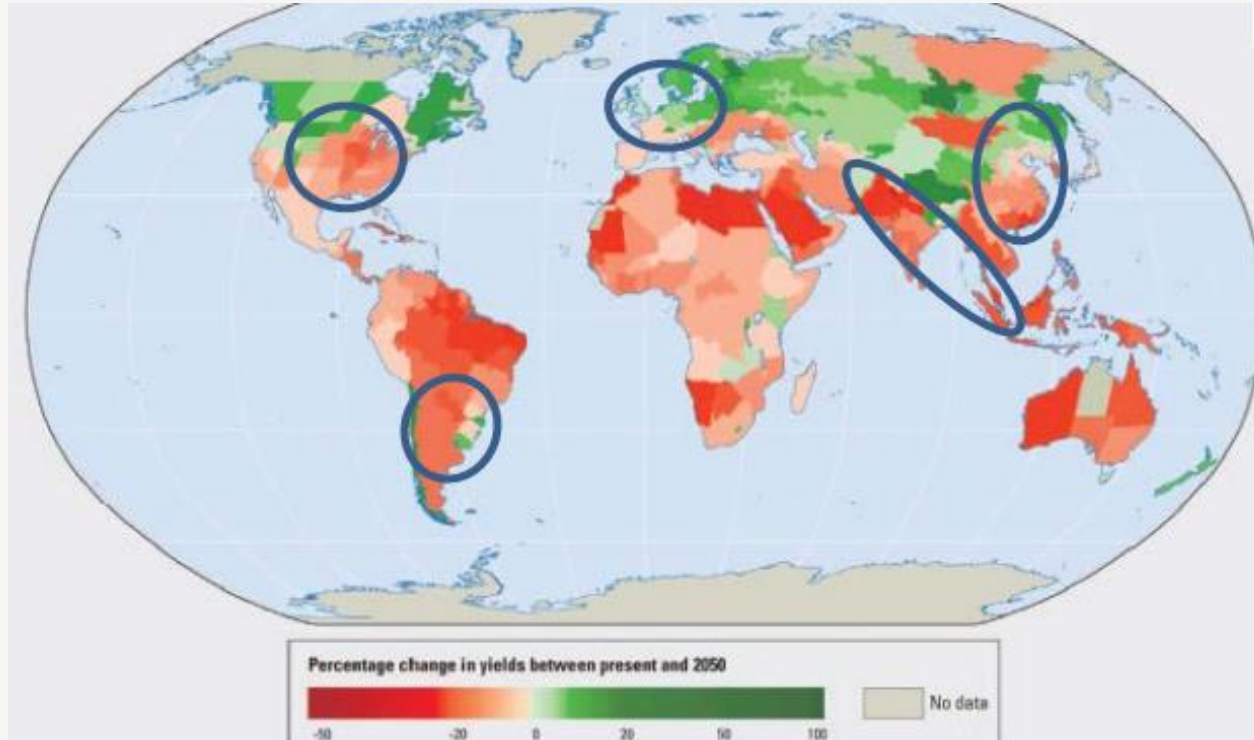


✎ Industry insiders say availability of produce is down 30%-40% on some crops. Photograph: Marek Staszczuk/Getty Images

Sarah Butler
#guardian
Mon 20 Feb 2023 19:01 GMT

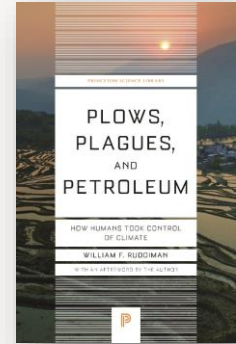
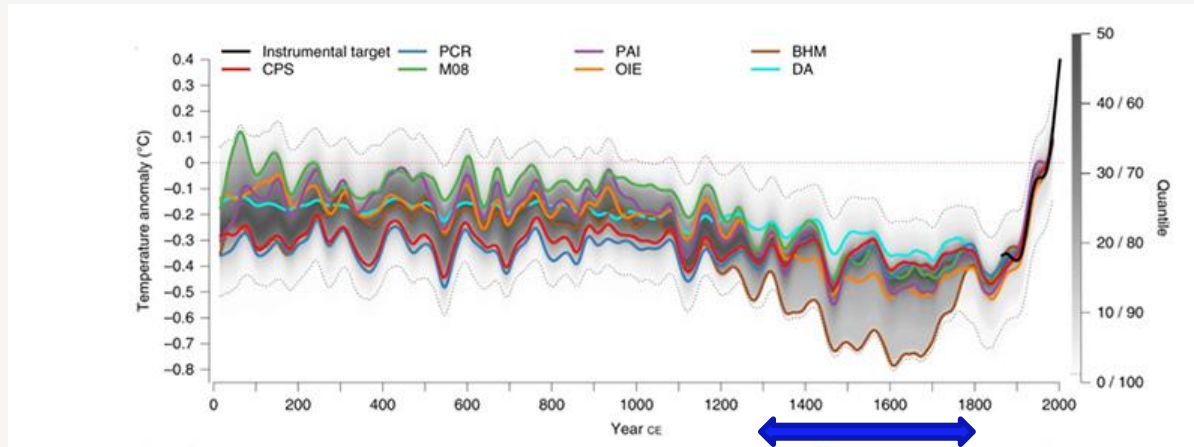


Food production and climatic change are linked

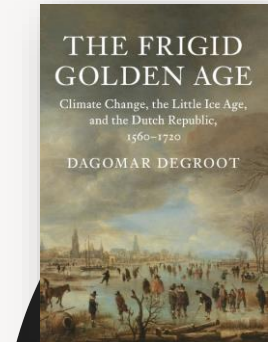
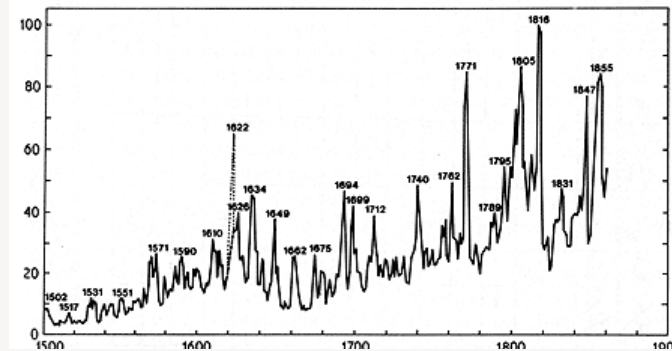
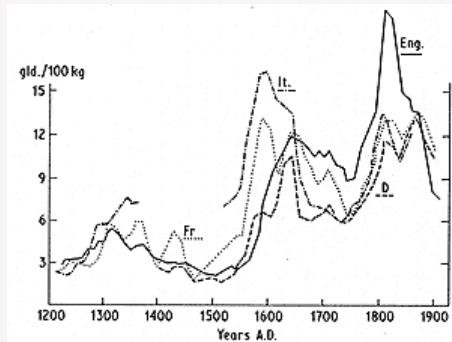


Wheeler, Tim, and Joachim Von Braun. "Climate change impacts on global food security." *Science* 341.6145 (2013): 508-513.

Food and climate have always been linked!



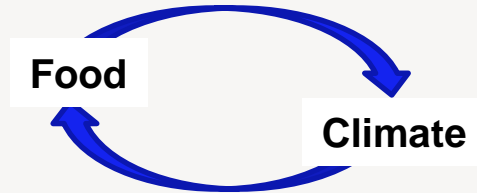
Global temperatures over the past 2,000 years, according to different statistical methods. The black line represents modern warming, as measured by meteorological instruments. Global cooling in even the chilliest decades probably did not exceed 0.5 degrees Celsius. <https://aeon.co/essays/the-little-ice-age-is-a-history-of-resilience-and-surprises>



Prices of **wheat** expressed in Dutch guilders per 100 kg. in various countries vs. time. Price of **rye** in Germany vs. time expressed as an index. (Source: Lamb, 1995) <https://www.sunysuffolk.edu/explore-academics/faculty-and-staff/faculty-websites/scott->

Feedback loops of food and climate change

Food production and consumption impacts upon **climate**



Climate impacts upon **food** production and consumption

- The "little ice age" of 1500-1700, or "age of extremes" of 1310s-1810s, changed what Europeans (etc.) farmed, ate, cooked, modes of production, consumption etc.
- Created resilient societies. (Lots of war, famine etc. !)
- Led to the start of the current European (and global) dietary patterns, and food regimes.

These (**cool**) food systems, crops, modes of production, and dietary patterns are foundational for the modern food system and diets.

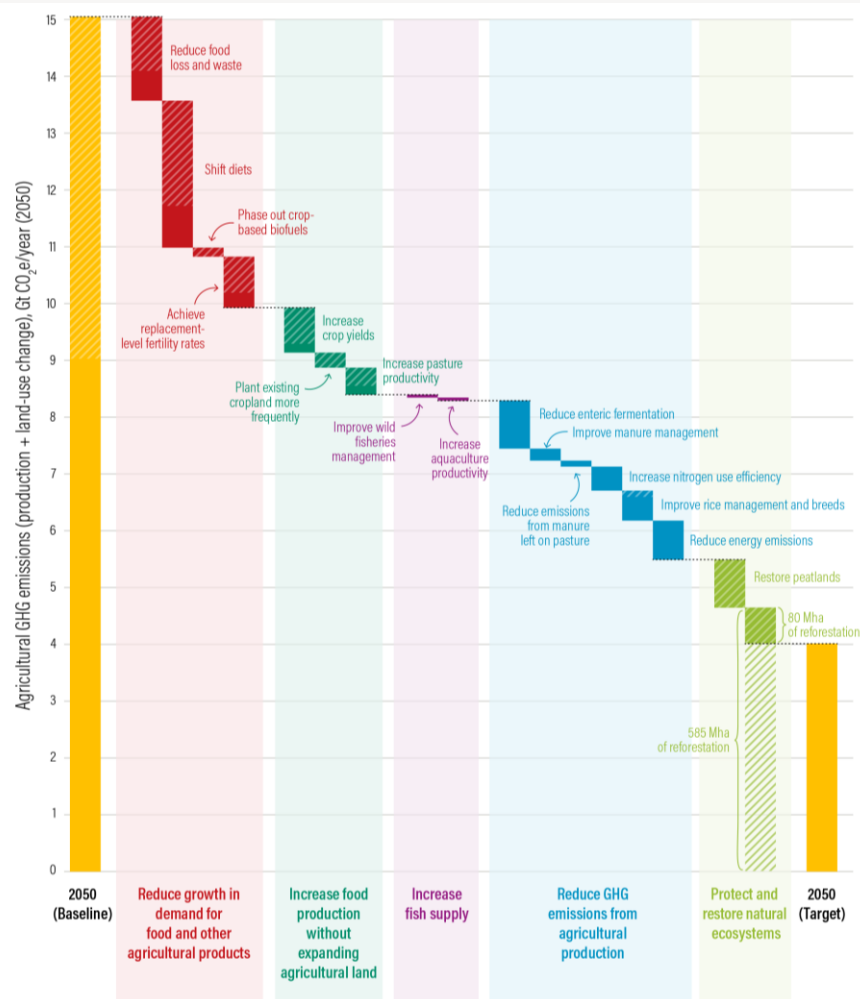
Probably only ever a max 0.5° C cooling!

We now ~1.1c warmer than preindustrial levels

The emissions reduction challenge – A **warming** food system

The two biggest reductions we can make to agricultural GHGE to achieve a **2° C** warming target (4 Gt/year) or **1.5° C** warming target (0 Gt/year) are through:

1. **Shifting to sustainable diets**
2. Reducing Food Loss and Waste



Note: Solid areas represent agricultural production emissions. Hatched areas represent emissions from land-use change.

Source: GlobAgri-WRR model.

Source WRI, [World Resources Report: Creating a Sustainable Food Future](#)



Individualized impact change: 12.4% food

TOP 20 HIGH-IMPACT CLIMATE ACTIONS FOR HOUSEHOLDS AND INDIVIDUALS

The data presented here represents cumulative Gt CO2-eq over 30 year period



BY SECTOR

Together, the individual and household actions presented here have the potential to produce roughly **25-30 percent** of the total emissions reductions needed to avoid dangerous climate change (>1.5°C rise)



PROJECT
DRAWDOWN.

Learn more about these & other climate solutions at: projectdrawdown.org



Sustainable diets and The EAT–Lancet report

Published in 2019

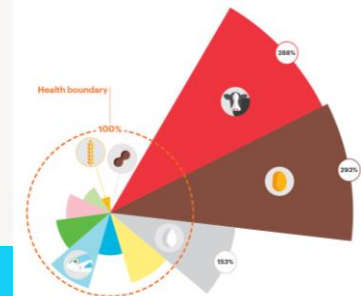
Setting Scientific Targets for Healthy Diets and Sustainable Food Production

↑ consumption of fruit (100 -300g/day) & vegetables (200-600g/day)

↓ consumption of animal products

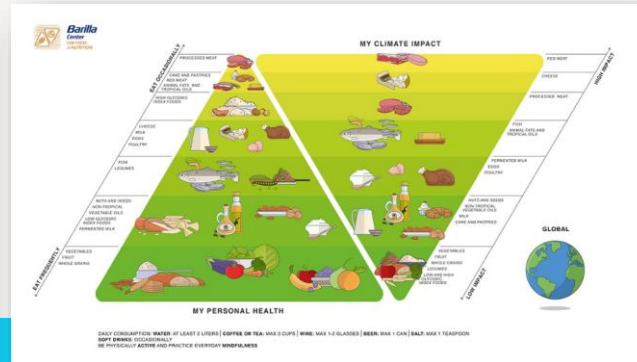
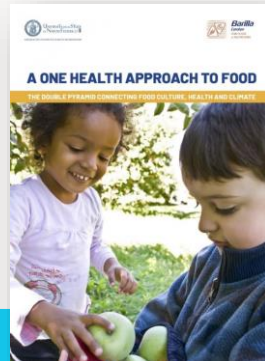
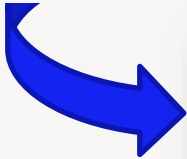
Per day requirements: 2500 kcal, and protein 56g, for a max of 1780g of CO₂e

	Macronutrient intake grams per day (possible range)	Caloric intake kcal per day
 Whole grains Rice, wheat, corn and other	232	811
 Tubers or starchy vegetables Potatoes and cassava	50 (0-100)	39
 Vegetables All vegetables	300 (200-600)	78
 Fruits All fruits	200 (100-300)	126
 Dairy foods Whole milk or equivalents	250 (0-500)	153
Protein sources		
 Beef, lamb and pork	14 (0-28)	30
 Chicken and other poultry	29 (0-58)	62
 Eggs	13 (0-25)	19
 Fish	28 (0-100)	40
 Legumes	75 (0-100)	284
 Nuts	50 (0-75)	291
Added fats		
 Unsaturated oils	40 (20-80)	354
 Saturated oils	11.8 (0-11.8)	96
Added sugars		
 All sugars	31 (0-31)	120

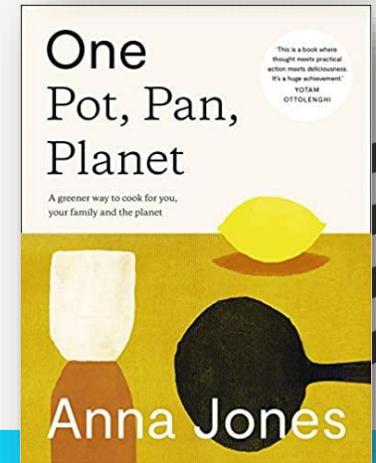
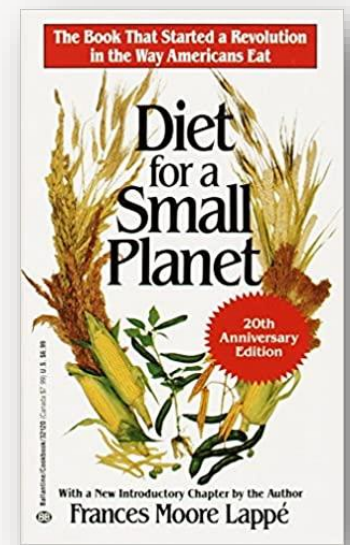
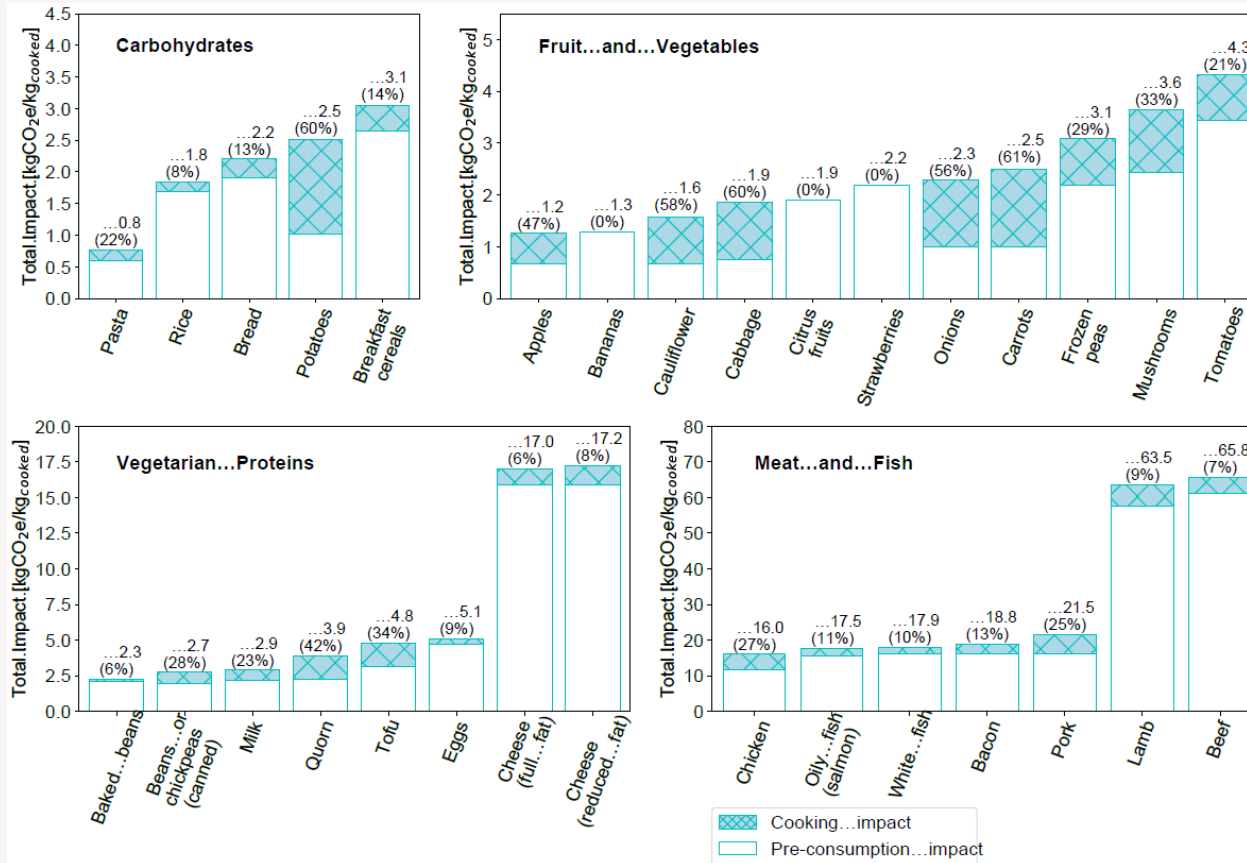


The EAT–Lancet report - A Critique

- Lack of consideration of local and traditional diets, food ways or systems of production.
- Limited suggestions on how to implement the 'global healthy sustainable diet' (only photos).
- Minimal discussion of cooking and real life examples (e.g. no recipes)
- Current sustainable dietary guidance is given as ingredients
- We have only just started to see translation into sustainable gastronomy – see Barilla foundation reports (2021)



How we cook matters!



But we are still a long way from even the Eatwell diet...

- UK population overall continues to consume **too much sugar and saturated fat and not enough fruit and vegetables and fibre.**



- **Fruit and vegetables** Adults aged 19 to 64 years consumed on average 4.3 portions per day, 33% of adults, 12% of 11 to 18 year olds met the 5 A Day recommendation.



- **Red and processed meat** in all age or sex groups met the recommendation of no more than **70g per day**, Mean consumption. (**EAT-Lancet 28g per day MAX**)



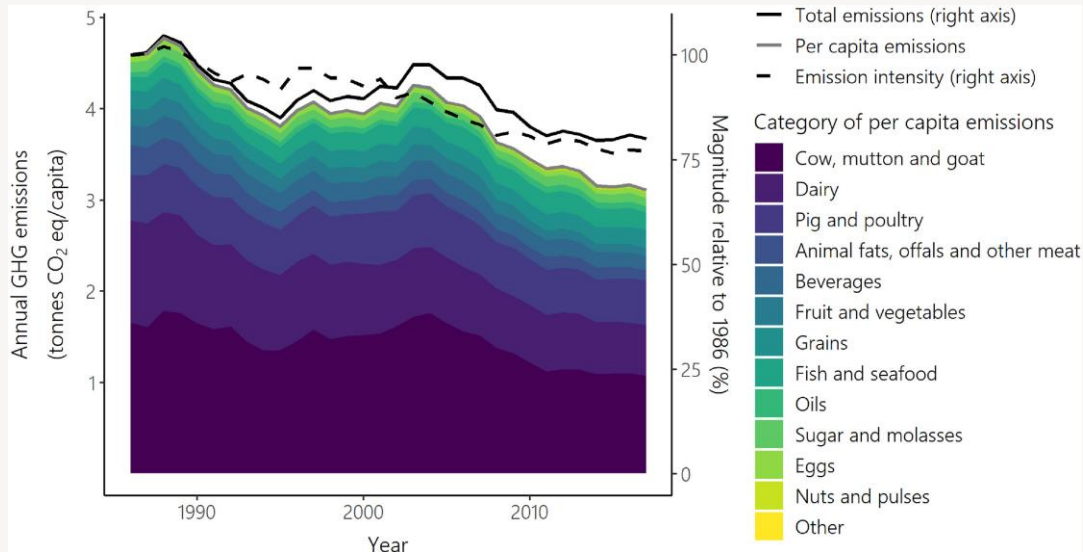
- **Oily fish** was equivalent to 56g per week in adults aged 19 to 64 years and 86g per week in adults aged 65 years and over, well below the recommended one portion (140g) per week in all age groups. (**EAT-Lancet 196g per week MAX**)



- **Fibre** below recommendations in all age groups. 9% of the 19 to 64 met the recommendation. 19.7g per day mean consumption.

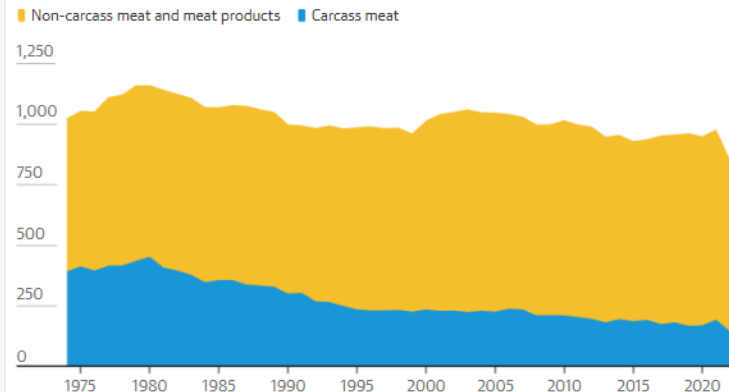
The dietary patterns of each generation are changing... we are currently more sustainable in the 2010s+ than ever before.

- Per capita greenhouse gas emissions (left axis, tonnes CO₂eq/capita) by food category between 1986 and 2017, also showing changes in total emissions and emission intensity (right axis, % relative to 1986). As the impact of trade is dependent on the composition of the UK diet, a separate line for trade is not shown.



Meat consumption in the UK fell to its lowest level on record last year

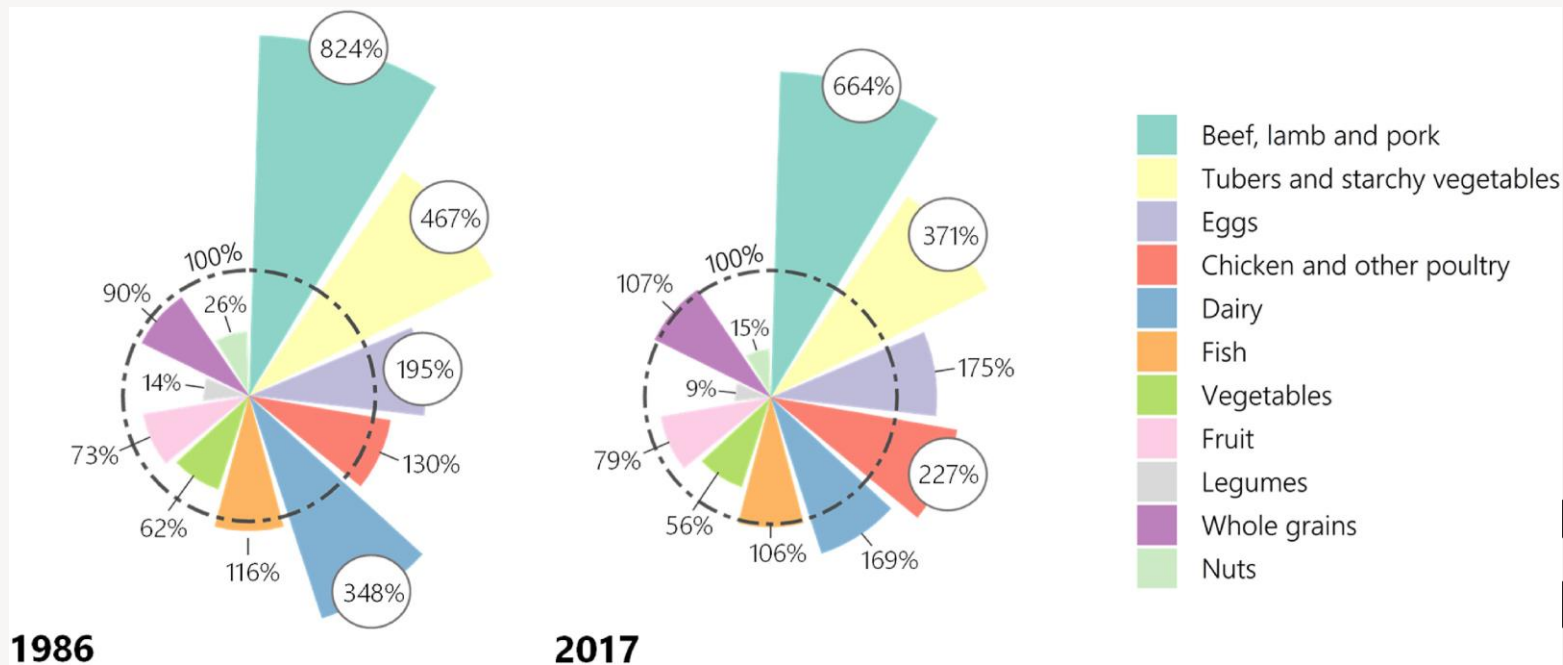
Average quantity of meat per person purchased for household consumption each week (grams)



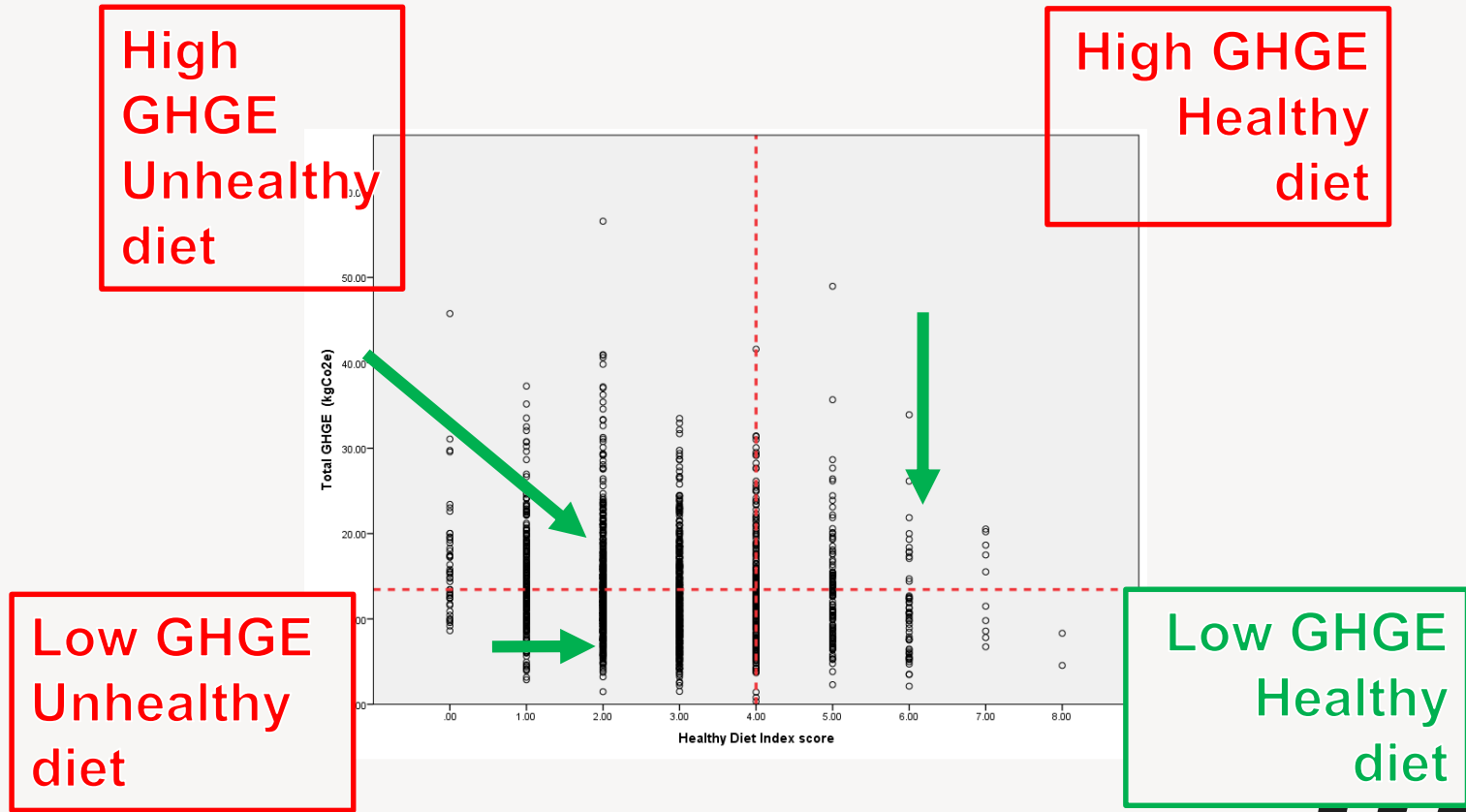
Guardian graphic. Source: Defra Family Food Survey. Note: Carccass meat includes beef and veal, mutton/lamb and pork. Non-carccass meat includes liver, offal, bacon, poultry, pate, ready and takeaway meals and sausages etc

The dietary patterns of each generation are changing... we are currently more sustainable in the 2010s+ than ever before.

- Comparison of the composition of the UK diet to the PHD ([EAT-Lancet Commission, 2019](https://www.eat-lancet.com/)) in 1986 and 2017, where 100% (dashed line) indicates that daily consumption in the UK is equal to the PHD. Normalised to a 2500 calorie diet.



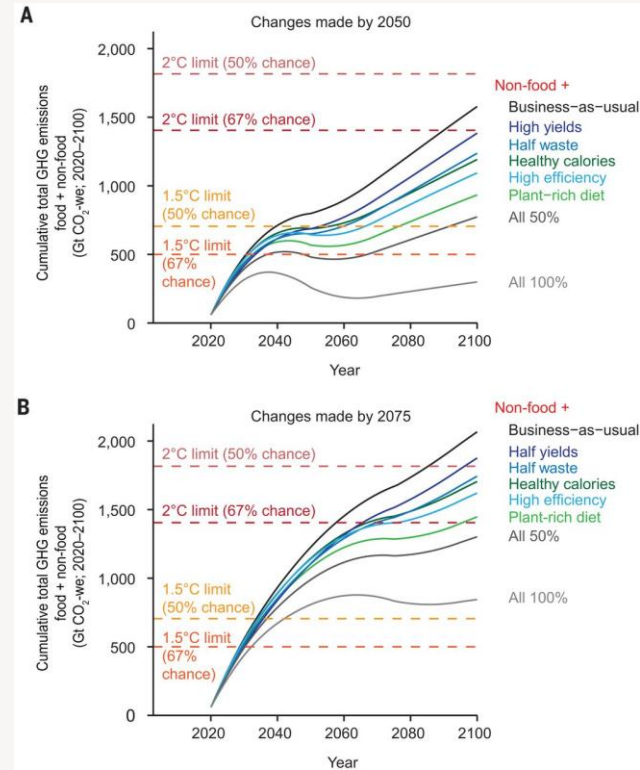
Lots of different paths to a sustainable diet...



We need to continue engaging with existing trends to identify coherent solutions.

What policies and trends help our (**cool**) food system to become a resilient (**warm**) food system?

How long do we have to implement these policies?



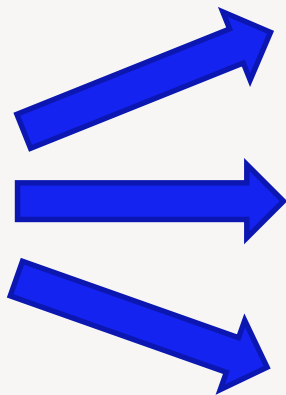
Disrupting eating (and cooking) for lower carbon emissions

Current focus on

- 1) Reducing consumption instances
- 2) Smaller portion sizes

0-28g per day
for beef, lamb
or pork

Choice of fat also
matters! (butter vs oil)



1) Typical beef portion in the UK
70-90g, once weekly



(Cooking in small
batches inefficient)

2) Integrate 28g of beef into
other dishes



(Cooking in
fast/sustainable,
Batch cooking)

3) Adapt UPFs trends to be
lower emissions. E.g. blend
with sustainable protein.



(Encourage
reheat?; Batch
cooking, leftover
(re)use)

12 strategies for promoting sustainable diets.

1. **Incentivise** product innovation and reformulation (e.g. a carbon tax)
2. Market **plant-based food** as aspirational, delicious, and indulgent
3. Use novel in-store/in-app **promotions**, incentives and games
4. Campaign with pride, positivity, and pragmatism
5. Raise awareness, and build a mandate for strong policy
6. Publicise the **desirable norm**, and lead by example
7. 'Re-brand' plant-based food towards a mainstream identity, and promote more mainstream dishes
8. Integrate (don't segregate) the plant-based produce
9. **Eco-labels and supermarket ratings**
10. Ease the change with 'rules of thumb', tips and **recipes**
11. Prompt sustainable choices at timely moments
12. Edit the **choice architecture**, to make sustainable options more prevalent, more prominent, and the default choice



Interventions need to fit the target community.

Perceived most and least helpful interventions for supermarkets to increase **healthy foods** purchasing –according to people living with obesity

Health

Perceived most and least helpful interventions for supermarkets to increase **sustainable foods** purchasing –according to people living with obesity

Sustainability

In store

Top 3 MOST HELPFUL interventions

- 1 Price discounts on healthy foods (p)
- 2 Personalised **money-off** promotions (p)
- 3 Rewards on supermarket loyalty card (p)

Online

- 1 Offers/promotions on healthy food (p)
- 2 Rewards on supermarket loyalty card (p)
- 3 Increased **stocking** and availability (s)

In store

Top 3 MOST HELPFUL interventions

- 1 Offers/promotions on sustainable food (p)
- 2 Rewards on supermarket loyalty card (p)
- 3 **Locally grown** produce (s)

Online

- 1 Availability of 'green delivery' slots (s)
- 2 Rewards on supermarket loyalty card (p)
- 3 Offers/promotions on sustainable food (p)

*Hartmann-Boyce et al. (2018)

*Hartmann-Boyce et al. (2018)

Top 3 LEAST HELPFUL interventions

Top 3 LEAST HELPFUL interventions



Behaviour Change Lever *

(p) = Price/Incentivisation

(s) = Store Environment

(a) = Awareness/Education

Project website

http://



Behaviour Change Lever *

(p) = Price/Incentivisation

(s) = Store Environment

(a) = Awareness/Education

Project website

http://



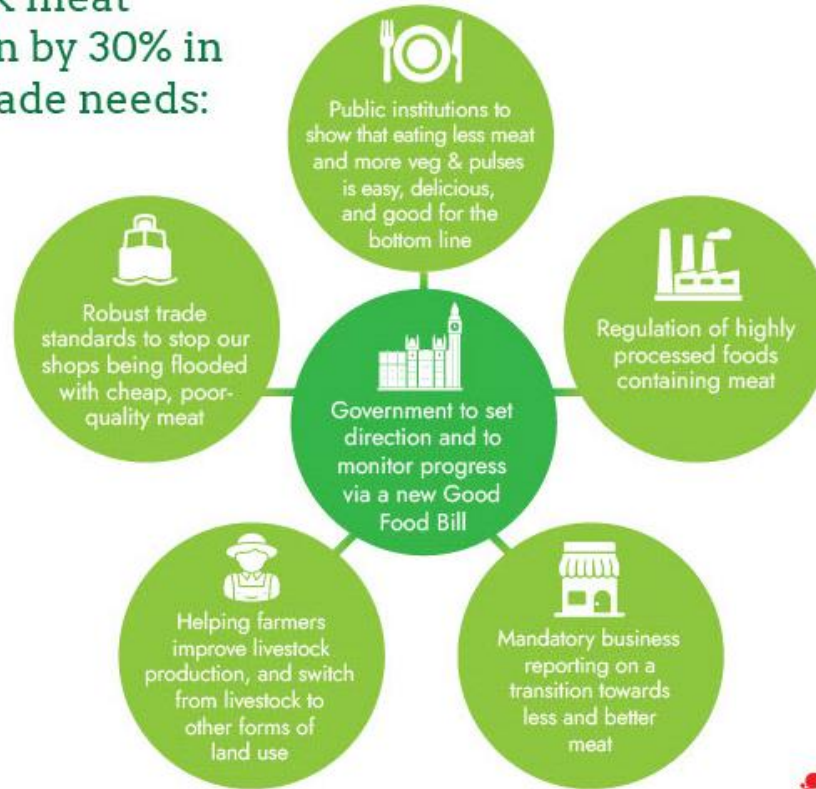
This research was funded through the Transforming the UK Food Systems for Healthy People and a Healthy Environment SPF Programme, delivered by UKRI, in partnership with the Global Food Security Programme, BBSRC, ESRC, MRC, NERC, Defra, DHSC, OHID, Innovate UK and FSA.



This research was funded through the Transforming the UK Food Systems for Healthy People and a Healthy Environment SPF Programme, delivered by UKRI, in partnership with the Global Food Security Programme, BBSRC, ESRC, MRC, NERC, Defra, DHSC, OHID, Innovate UK and FSA.

A wider systems perspective

Reducing UK meat consumption by 30% in the next decade needs:

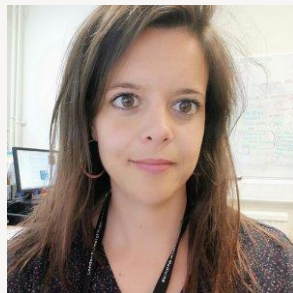


Lots of amazing people research this topic.

We cannot stop the climate crisis alone;

Shout out to a great community of researchers, please check out their research.

Rachel Pechey; Emma Garnett; Rosemary Green; Pauline Scheelbeek; Lindsay Jaacks; Clare Pettinger



School of Health & Psychological Sciences

City, University of London
Northampton Square
London
EC1V 0HB
United Kingdom

T: +44 (0)20 7040 5060

E: christian.reynolds@city.ac.uk
[@sartorialfoodie](https://www.instagram.com/sartorialfoodie)

<https://www.city.ac.uk/about/schools/health-sciences/research/centre-for-food-policy>

The Centre for Food Policy,
City, University of London offers the
following courses

Nutrition and Food Policy BSc (Hons)

Undergraduate degree

Food Policy MSc/PGDip/PGCert/MSc

Distance Learning

Postgraduate taught degree

PhD/MPhil Food Policy

Postgraduate research degree

<https://www.city.ac.uk/prospective-students/courses/postgraduate/food-policy>

