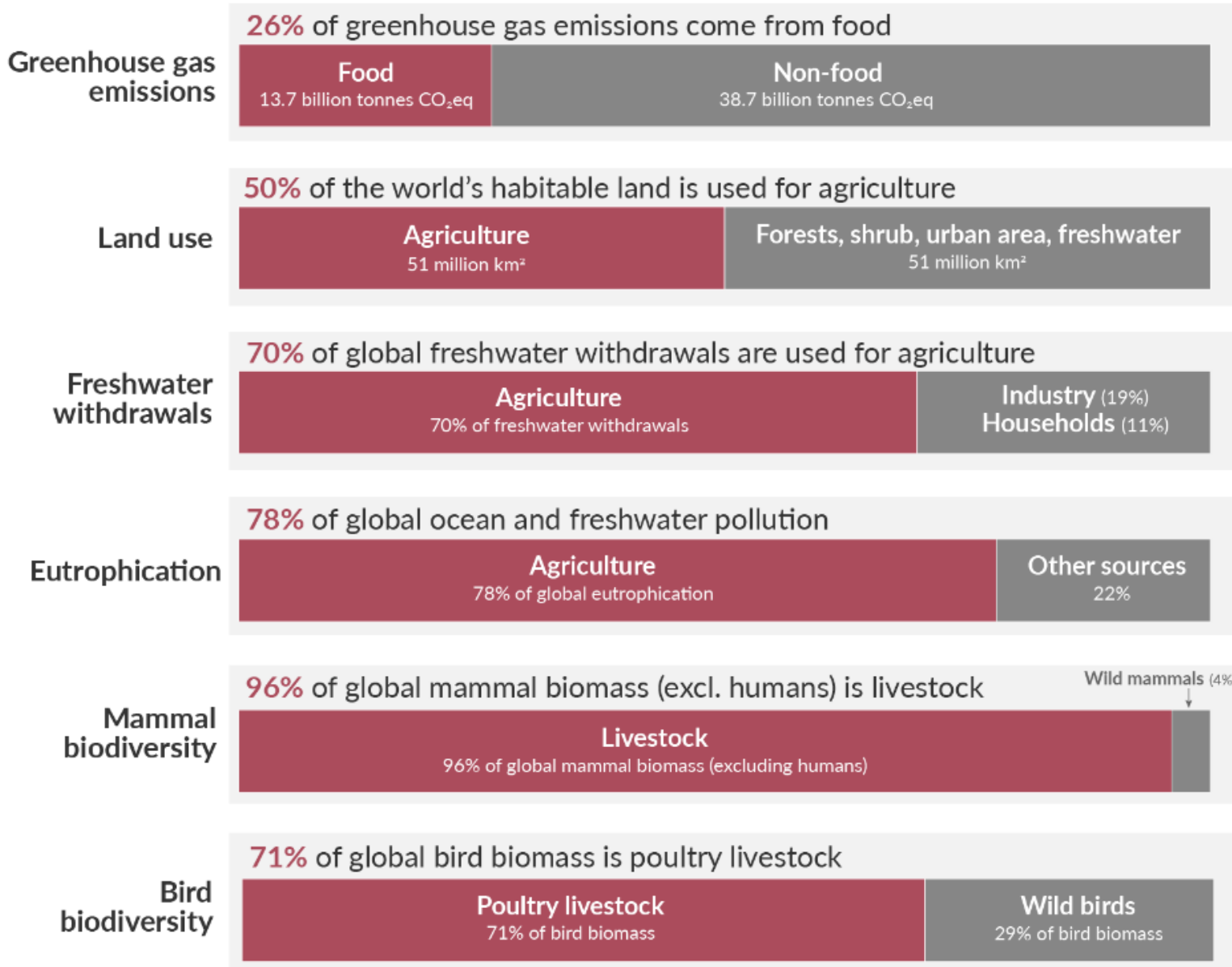




# Food and the planet: is a healthy sustainable diet possible?

28 June 2023 – Collège de France

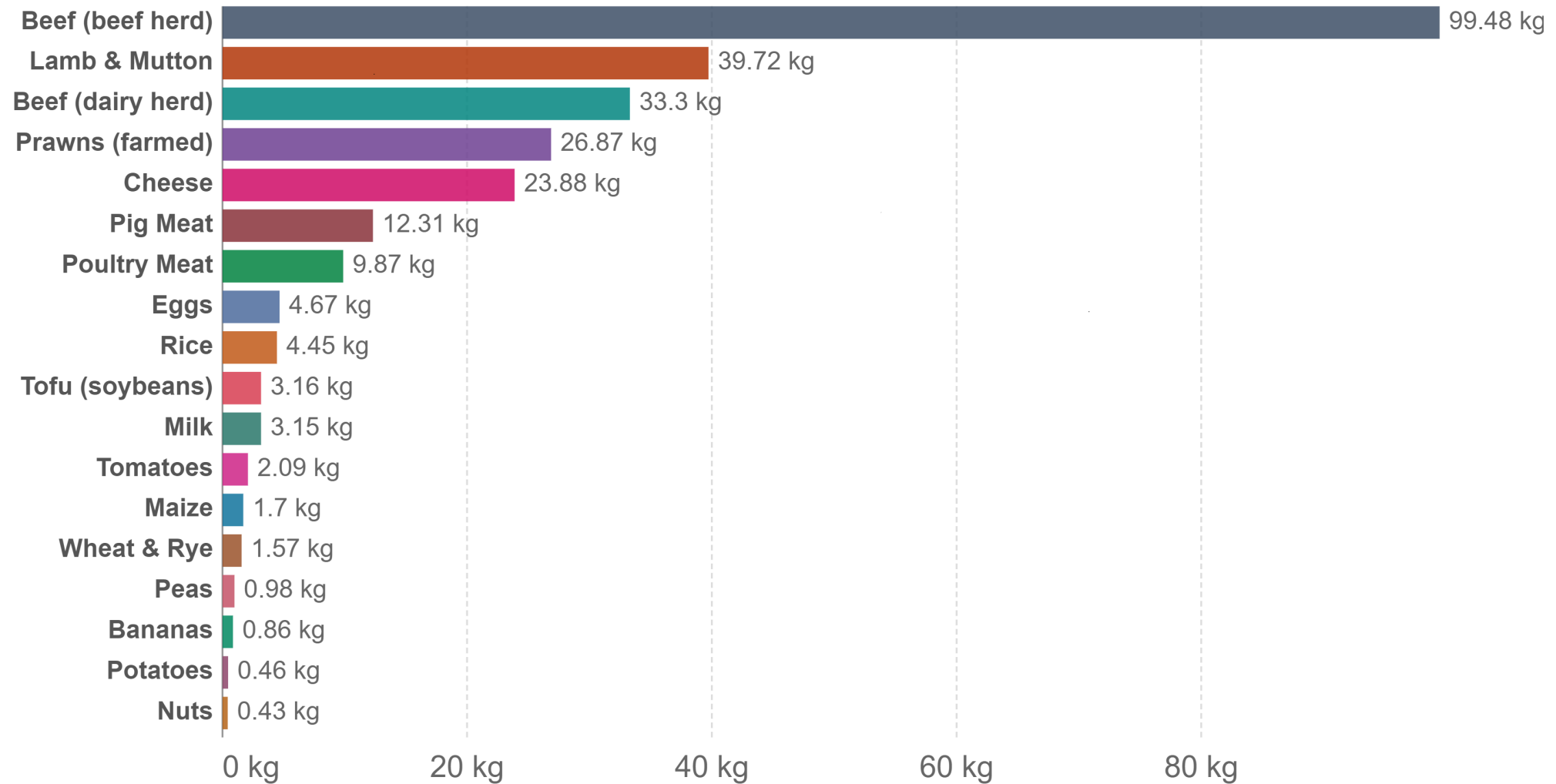
# The environmental impacts of food and agriculture



Food production is the main cause of deforestation & biodiversity loss

# Greenhouse gas emissions per kilogram of food product

Emissions are measured in carbon dioxide equivalents (CO<sub>2</sub>eq). This means non-CO<sub>2</sub> gases are weighted by the amount of warming they cause over a 100-year timescale.



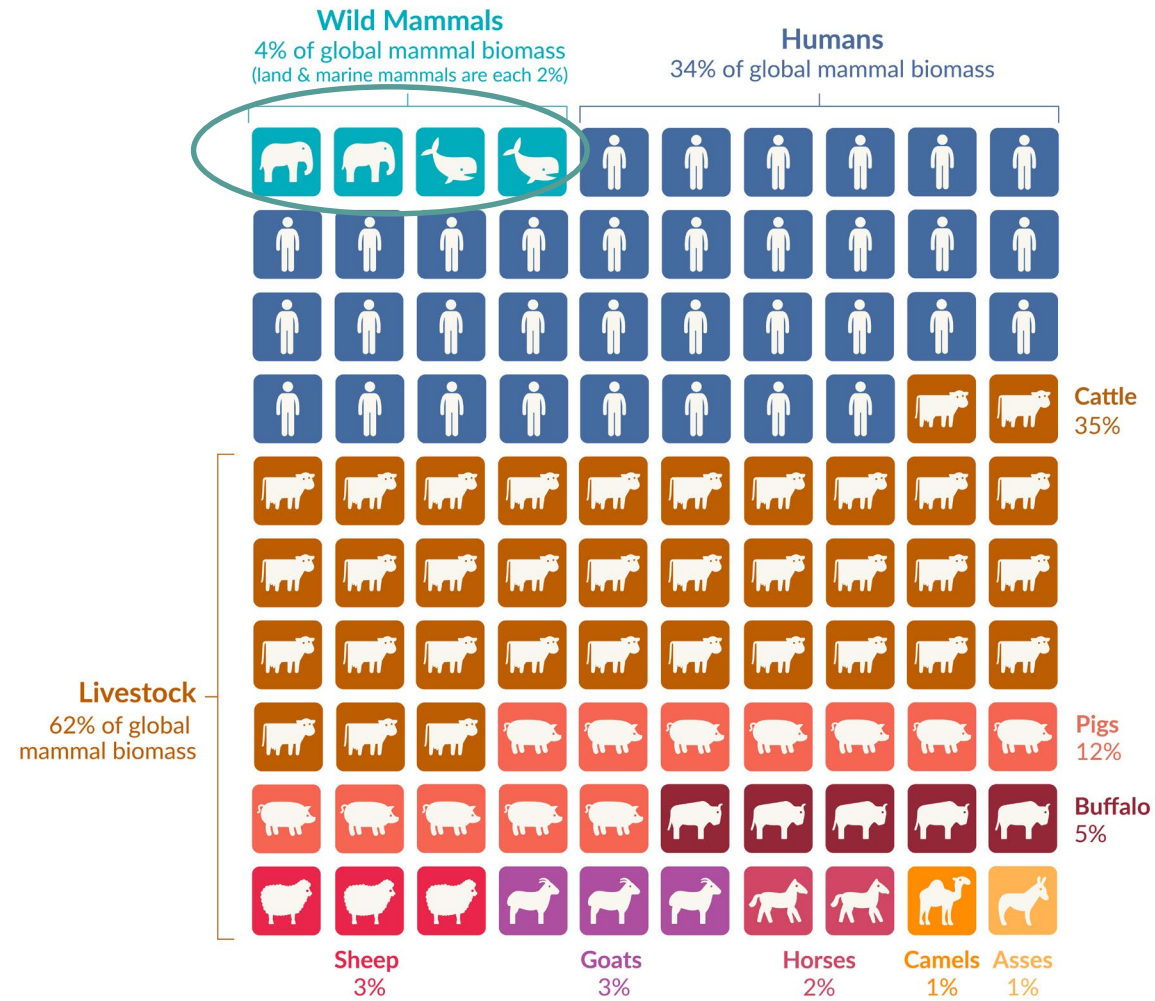
Source: Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers.

Note: Greenhouse gases are weighted by their global warming potential value (GWP100). GWP100 measures the relative warming impact of one molecule of a greenhouse gas, relative to carbon dioxide, over 100 years.

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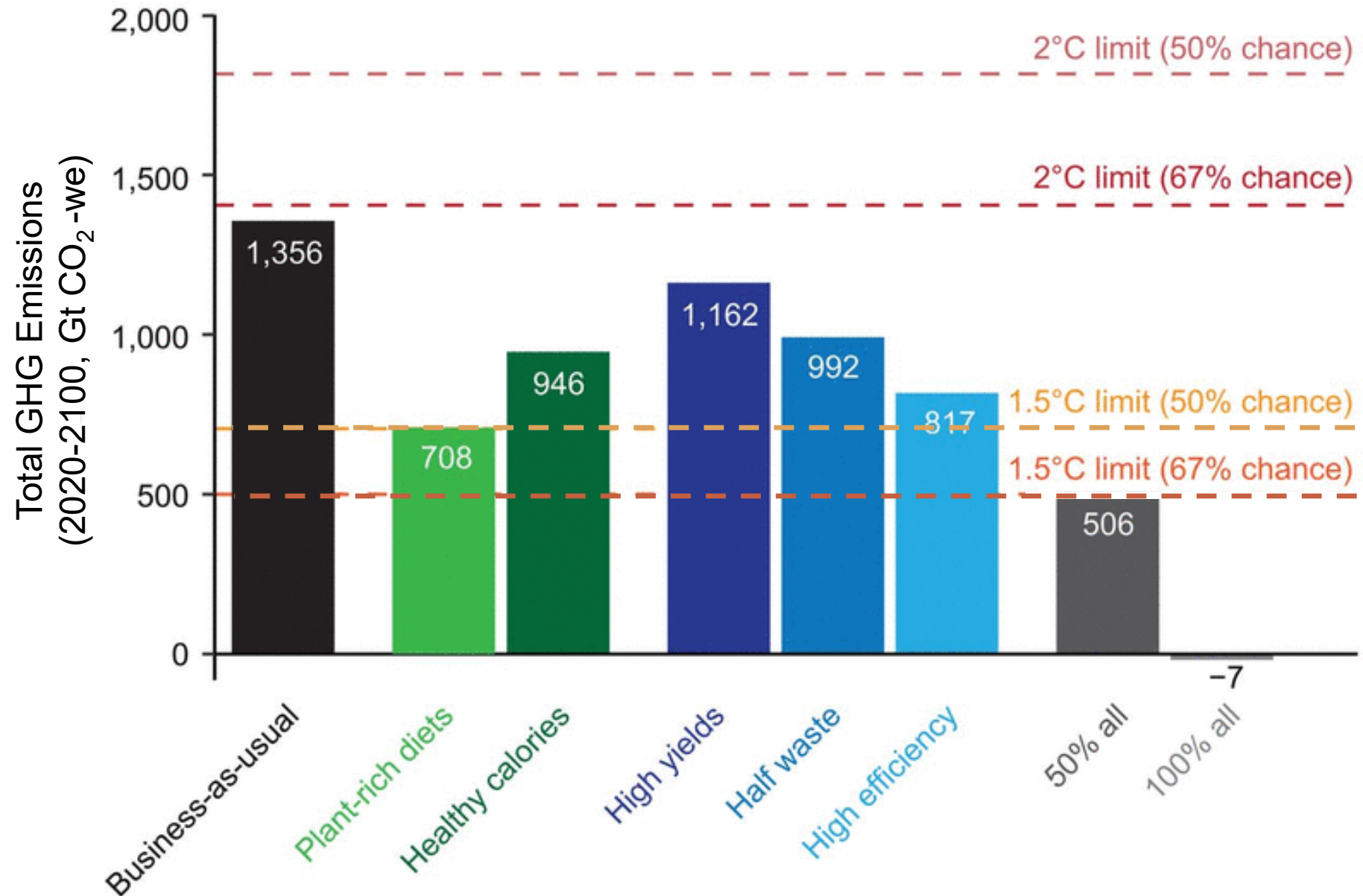
# Distribution of mammals on Earth

Mammal biomass is measured in tonnes of carbon, and is shown for the year 2015. Each square corresponds to 1% of global mammal biomass.



**Note:** An estimate for pets has been included in the total biomass figures, but is not shown on the visualization because it makes up less than 1% of the total.

# Dietary change away from meat is not 'optional'



# But is it healthy?

Is a low environmental impact diet compatible with health?

# A crowded field - many variants on the same question

- **Environmental impact of real life diets segmented by healthfulness** : Vieux, F. et al. (2013). High nutritional quality is not associated with low greenhouse gas emissions in self-selected diets of French adults. *Am J Clin Nutr*;97:569–83
- **Linear optimisation with cultural constraints / costs**: Lucas et al (2021). Optimising diets to reach absolute planetary environmental sustainability through consumers, *Sustainable Production and Consumption*, 28, 877-892; van Dooren (2018). A Review of the Use of Linear Programming to Optimize Diets, Nutritiously, Economically and Environmentally, *Front. Nutr.*, vol 5
- **Adherence to dietary guidelines**: Behrens P et al. (2017). Evaluating the environmental impacts of dietary recommendations. *PNAS*; 114, 51 13412–13417; and Springmann et al (2020) *BMJ* 2020;370:m2322
- **Diets based on biophysical circularity principles both balanced & unbalanced** van Selm et al.(2022). Circularity in animal production requires a change in the EAT-Lancet diet in Europe. *Nat Food* 3, 66–73; van Zanten, H.H.E. et al. (2023). Circularity in Europe strengthens the sustainability of the global food system. *Nat Food* 4, 320–330
- **Etc etc**

What do they say?



## Some say yes

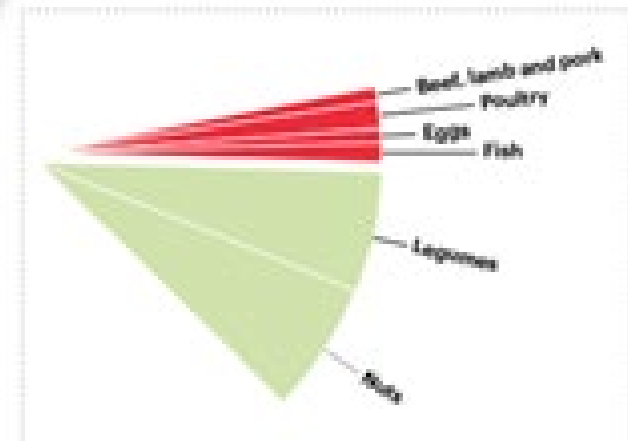
### Weekly

No more than **98 grams** of red meat (pork, beef or lamb),

**203 grams** of poultry

**196 grams** of fish

**1750 litres** milk / week  
**OR 175g** cheese



Willett W. et al (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *Lancet*;6736:3–49.

# Some raise concerns

- Beal et al (2023). Estimated micronutrient shortfalls of the EAT–Lancet planetary health diet, *The Lancet*, 7, 3, E233-E237
- Vieux et al (2022). Approximately Half of Total Protein Intake by Adults Must be Animal-Based to Meet Nonprotein, Nutrient-Based Recommendations, With Variations Due to Age and Sex, *Journal of Nutrition*, 152, 11, 2514-2525
- Temme EH, Bakker HM, Seves SM et al. (2015). How may a shift towards a more sustainable food consumption pattern affect nutrient intakes of Dutch children? *Public Health Nutr*;18:2468-78

# The dispute is largely about animal products

- Do we / don't we need animal products?
- If we do, how much?
- What kind?
- For whom?

# Why are the results so different?

Because people think differently about health

# What is a healthy diet?

- **Adequacy of inputs:** Does it contain appropriate quantities of the macro & micro nutrients required? (e.g. iron, calcium, protein, fat, energy)
- **Links to risk factors:** What are the effects on e.g sugar levels, blood pressure, metabolic markers, etc.
- **Physical outcomes of concern:** What is the association between eating X and certain health outcomes (e.g. diabetes, heart disease, osteoporosis) or mortality?
- **A matter of nutrients or of overall dietary patterns:** e.g. Mediterranean, whole foods, New Nordic etc.
- **A question of consumption as well as production** (pesticides, varieties, methods, etc.)

# But definitions can be broader

- **Health of the ‘whole person’:** mental as well as physical (stress, pleasure, part of society, satisfaction etc) Jain R et al (2022). Association between vegetarian and vegan diets and depression: A systematic review, Nutrition Bulletin, 47, 1, 27-49
- **Societal ‘health’:**
  - cultural traditions, continuity, community cohesion & identity;
  - Jobs, livelihoods, economic continuity
  - Power & agency
- **Planetary ‘health’:** climate, biodiversity, water, soil status; welfare/rights of non human animals

# Additionally...

- Is the problem **too much**? Or **not enough**?
  - GN / GS
  - Obesity etc. / MND
- Is the goal **optimal** or **good enough**?
  - For people
  - For the planet
- Is the concern with the **individual** or the **collective**
  - of people; of other life?
- What is the **assumed counterfactual**?
  - if we don't eat/do x what will we eat or do instead?
    - Theory vs reality
    - Inevitability vs malleability

# How do our values inform the discussion?

- Does the solution lie in the past or the future?
- Where do ideas about 'naturalness' fit?
- What does one do about trade offs?\*

  - How does one rank them?
  - How does one 'solve' problems arising?
  - How low do we need to go wrt environmental impacts?

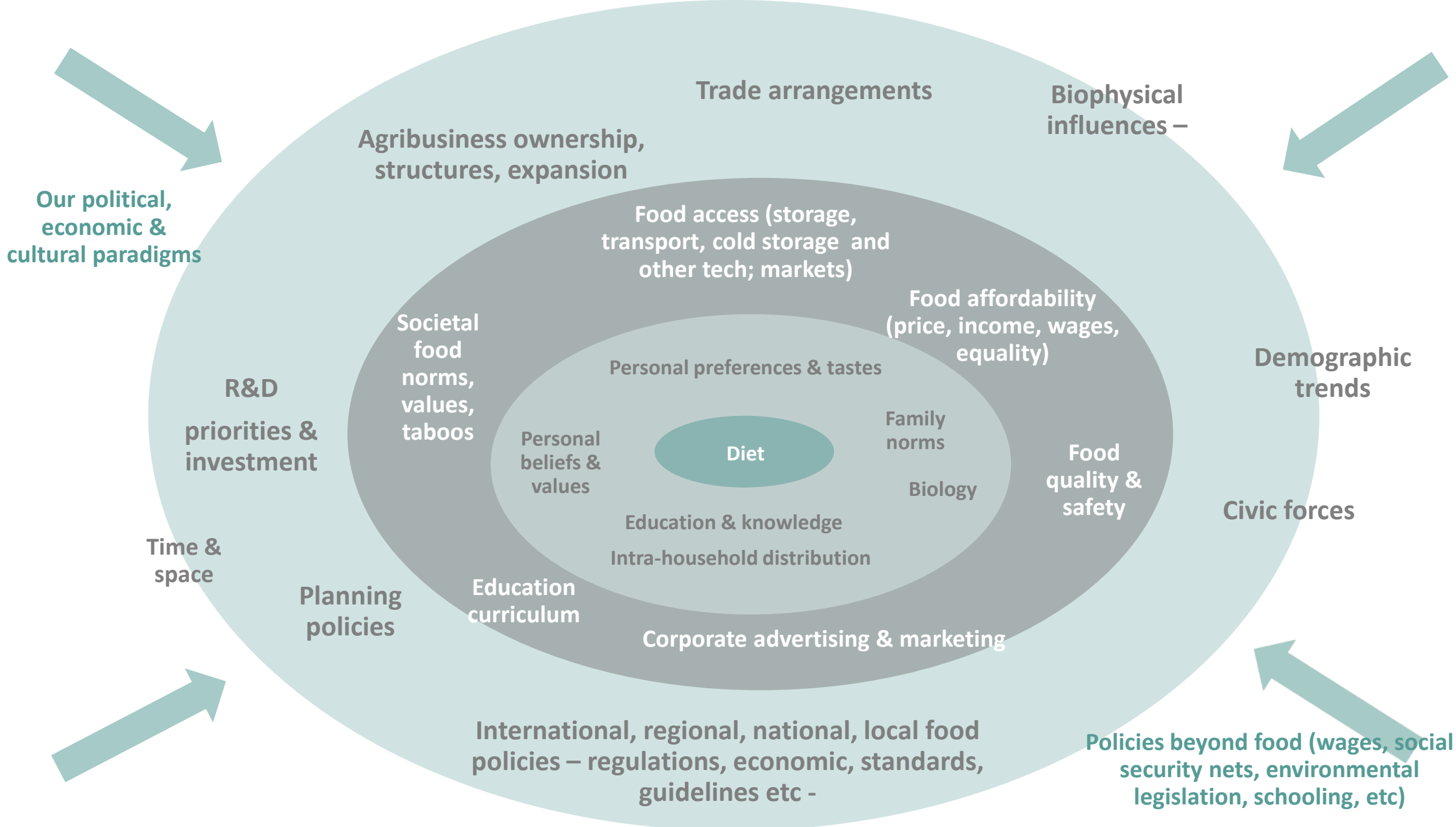
\*Examples: personal health/climate mitigation - cultural norms/nutritional requirements

- If we can't 'afford' an optimally healthy diet for all, then what?



Where do we direct our time, thinking, money?

How do we think about  
changing diets?



**How to think about how change happens?**

**Disciplinary lens (e.g. neuroscience, psychology, economics, sociology, political sciences, arts & humanities; engineering; organisational theory,)**

**At different scales (biological through to global)**

**In different contexts (home, schools, farms, factories, retail, workplaces etc)**

**Agent of transformation (individuals through to governments)**

**Target of transformation (individuals through to governments)**

**Through different moral mechanisms (aspiration, altruism)**

**Levers of change (information – regulation - paradigms)**

**'Logic' of change (knowledge; incentives; emotions; context)**

**Utopia vs realpolitik**

# The role of values

- **What change is legitimate**

- ‘Governments should govern’ ‘Governments should stop interfering’
- ‘Empower’ the individual vs ‘stop blaming the individual’
- ‘Harness market mechanisms’ vs ‘markets are self-serving’

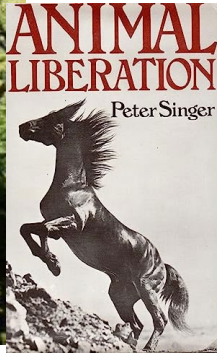
- **What change is necessary**

- ‘Incremental change is sensible’ vs ‘incremental change won’t get us far enough, fast enough’
- ‘Systems change is necessary’ vs ‘systems change is too vague’

- **What counts as ‘real’ change**

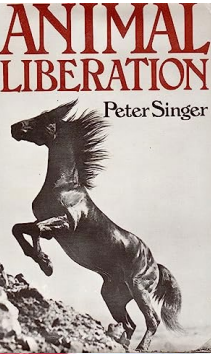
- ‘We need to be less greedy!’ vs ‘we need to have what we want in greener/cleaner ways’
- Change based on **extrinsic** values (aspiration, convenience, ‘being like everyone else’, health) vs on **altruistic** values (‘the right thing to do’; ‘for future generations’, ‘for animals’ etc).

# Garden of Eden?



Less animal

# Techno-salvation?



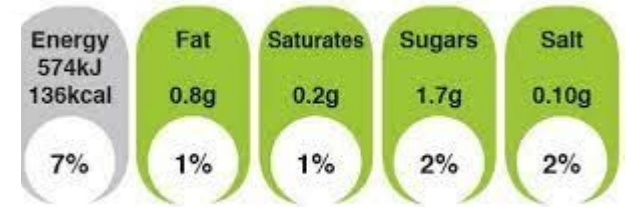
More consumption shift

More tech

# What's good?



More animal



# Circular solutions?

# Status quo 'lite'?

# Thank you

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## Scale project

The global-local  
debate

[www.tabledebates.org/scale](http://www.tabledebates.org/scale)



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