Food System Transformation: Challenges (Part 1)

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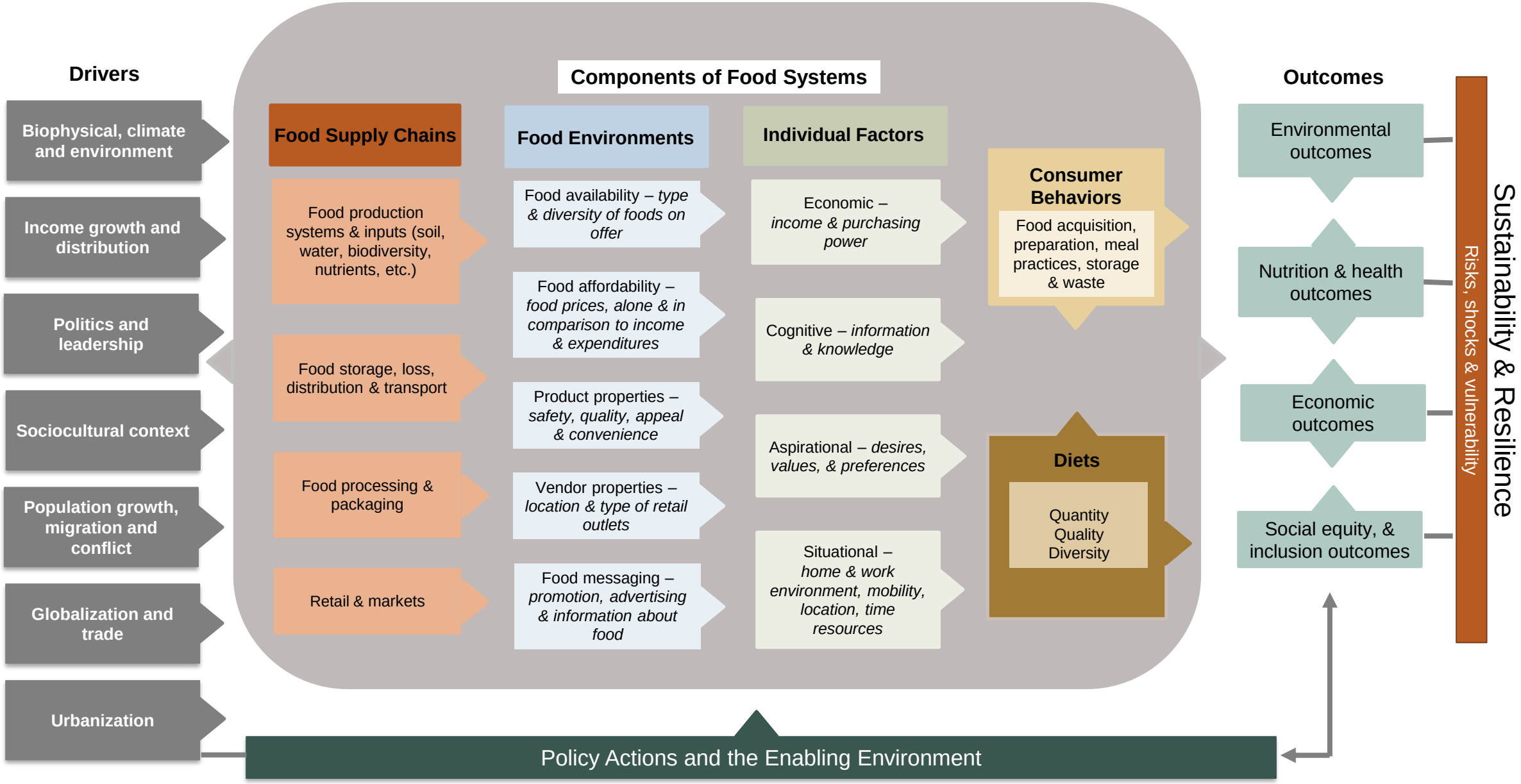
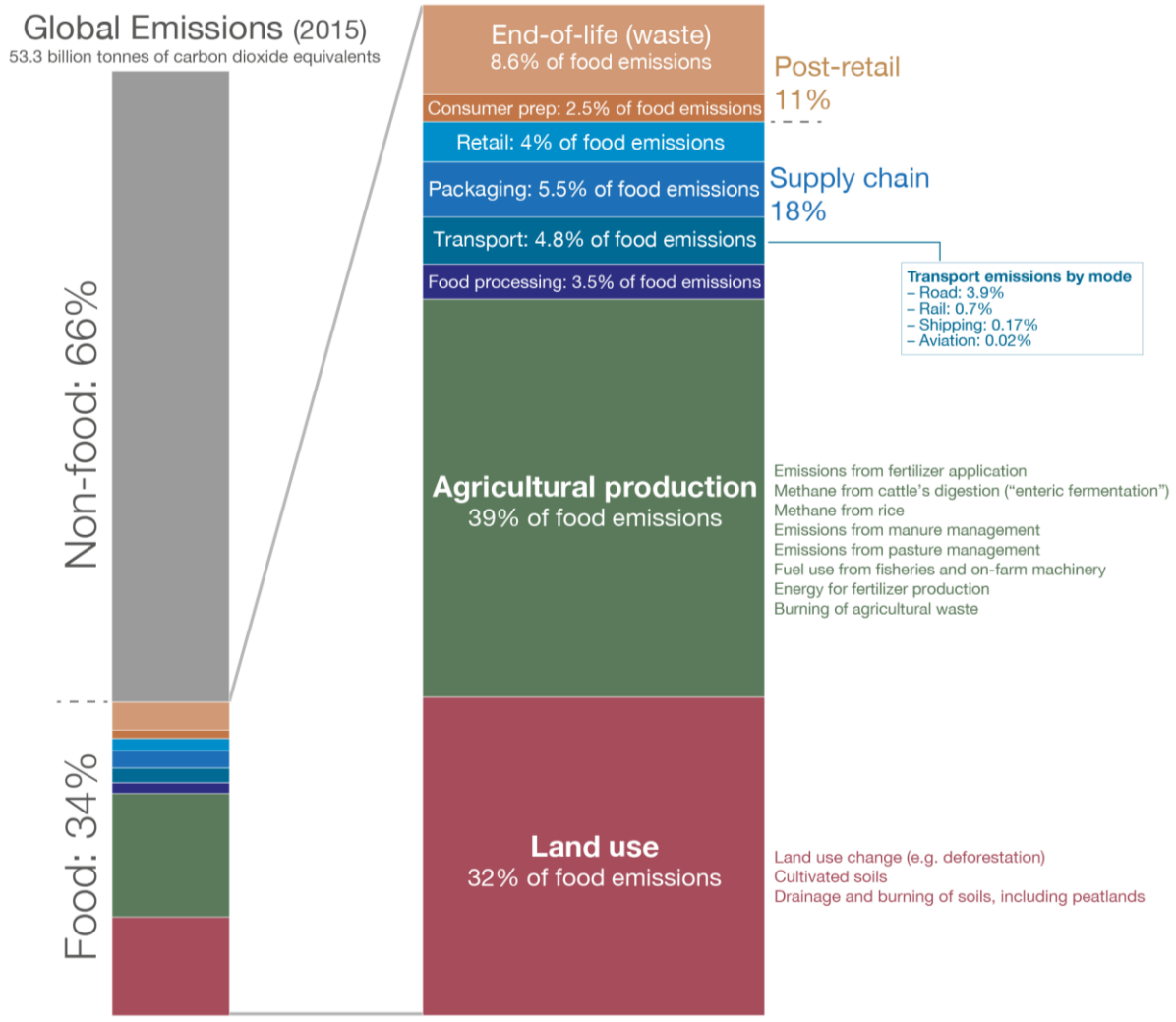
10. Food systems are complex



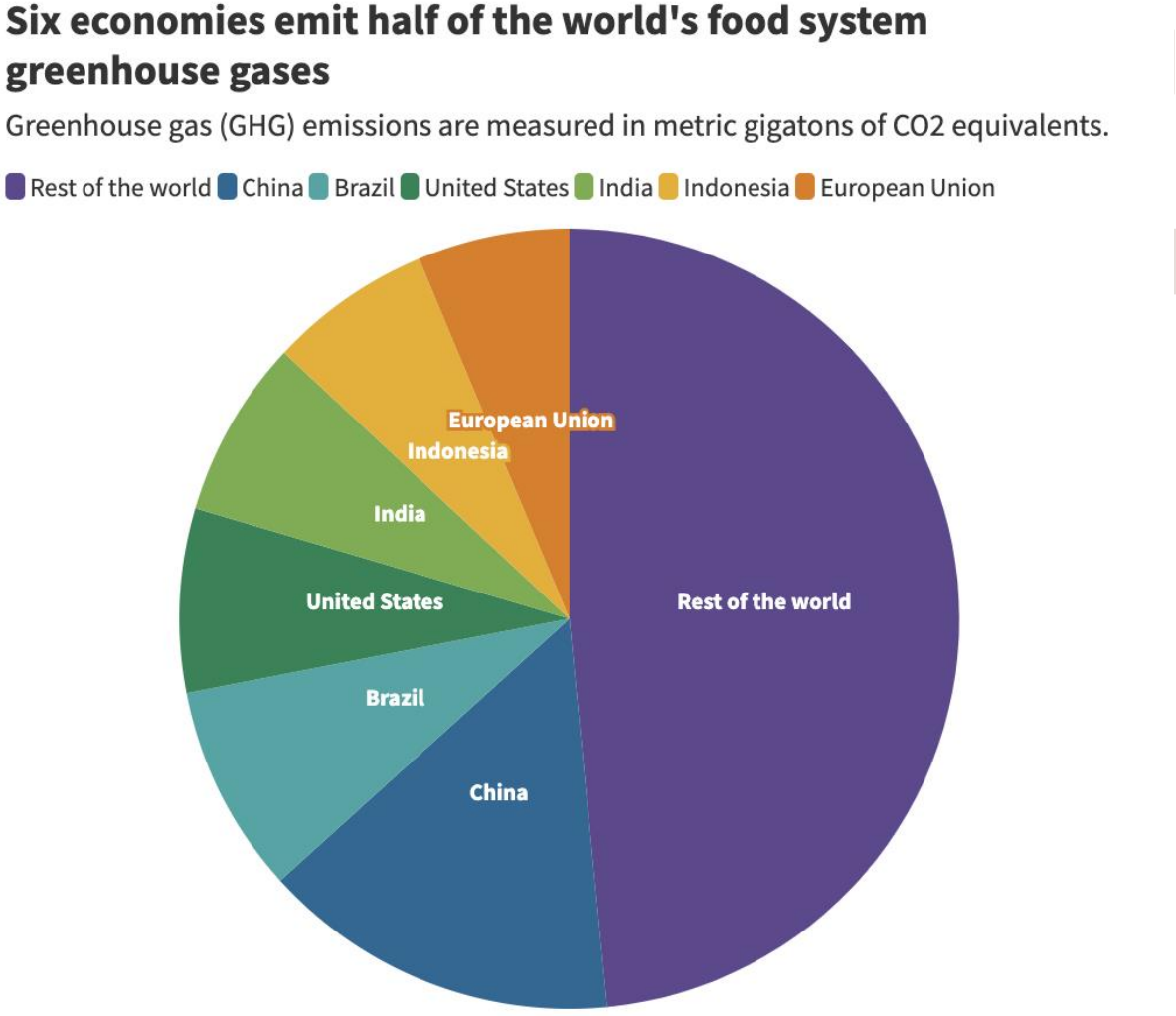
Fanzo, J., et al, 2020. The Food Systems Dashboard is a new tool to inform better food policy. *Nature Food*, *1*(5), pp.243-246.


10 reasons why food systems must be transformed and the hurdles we face

1. Food systems contribute to climate change & environmental degradation



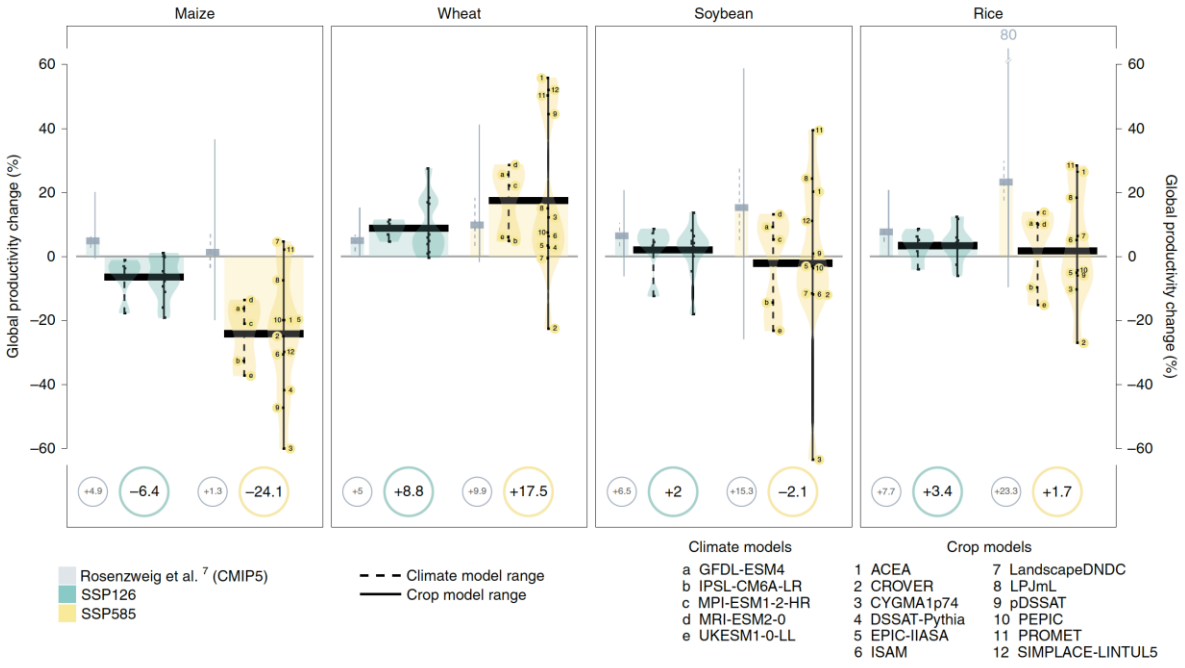
Data source: Crippa, M., et al. (2021) Food systems are responsible for a third of global anthropogenic GHG emissions. *Nature Food*.
OurWorldinData.org – Research and data to make progress against the world's largest problems. Licensed under CC-BY by the author Hannah Ritchie.

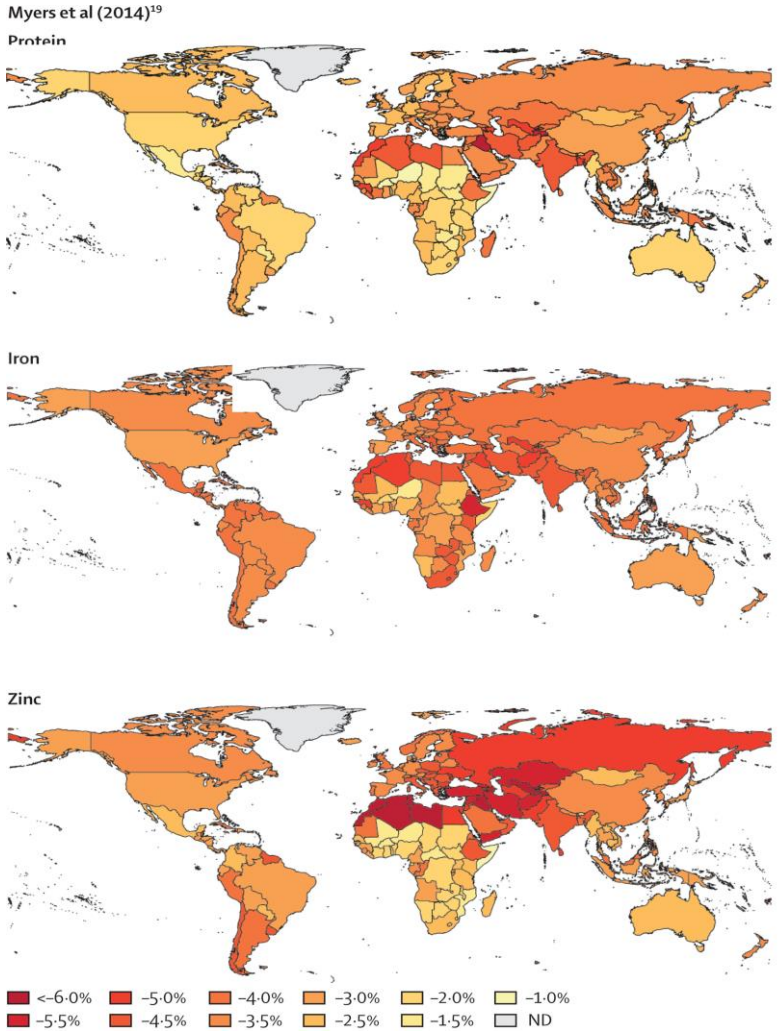


Data: M. Crippa et al/Nature Food 2021 • Visualization: Betsy Ladyzhets

2. Climate change is & will have net adverse impacts on crop yields & their nutritional quality

Climate change will have adverse impacts on crop yields and faster than expected





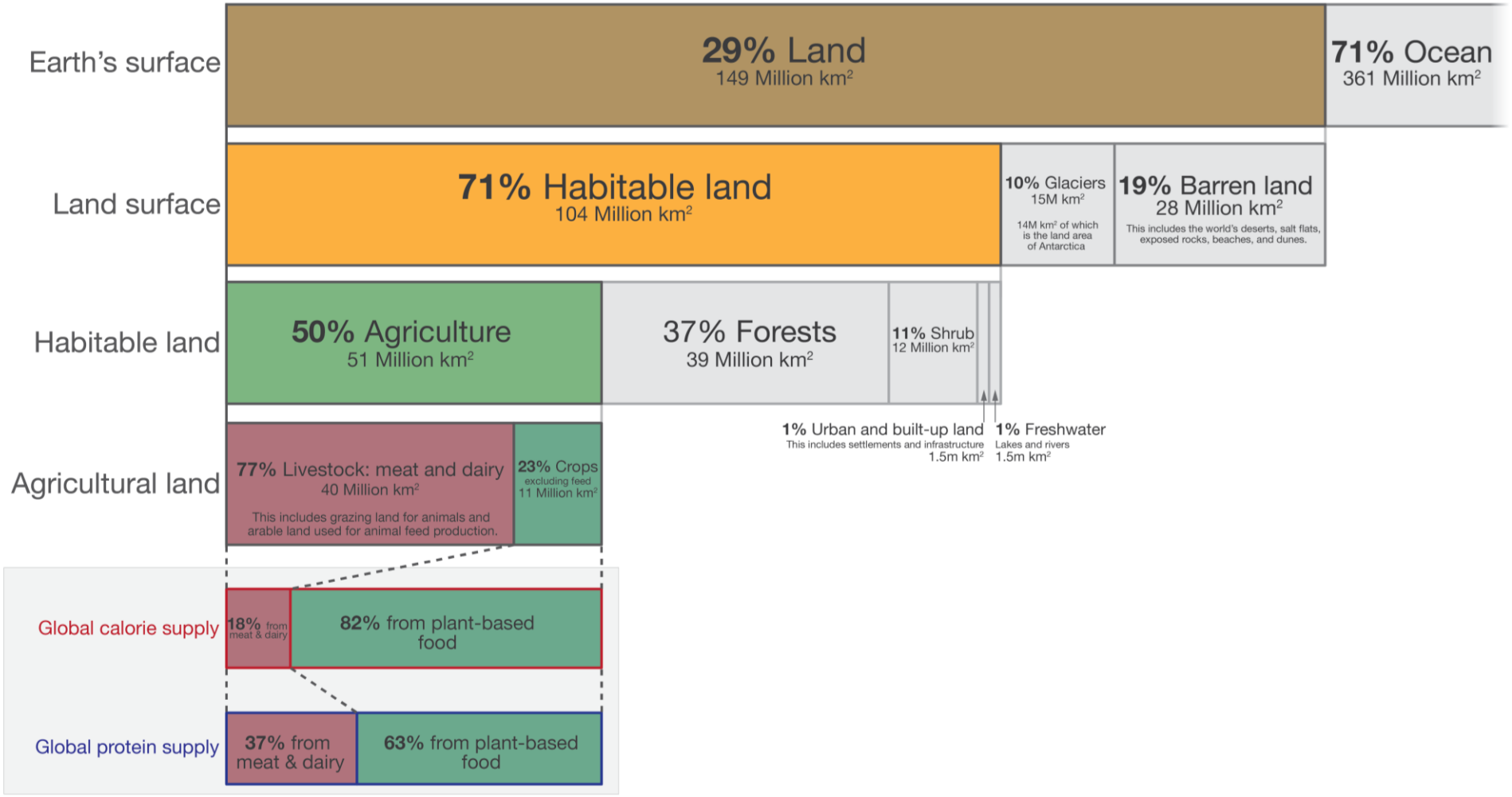
20% declines in protein

14% declines in iron

15% declines in zinc

Jägermeyr, J., et al 2021. Climate impacts on global agriculture emerge earlier in new generation of climate and crop models. *Nature Food*, 2(11), pp.873-885; Beach, R.H., et al 2019. Combining the effects of increased atmospheric carbon dioxide on protein, iron, and zinc availability and projected climate change on global diets: a modelling study. *The Lancet Planetary Health*, 3(7), pp.e307-e317.

3. The way we manage land for food is not optimal

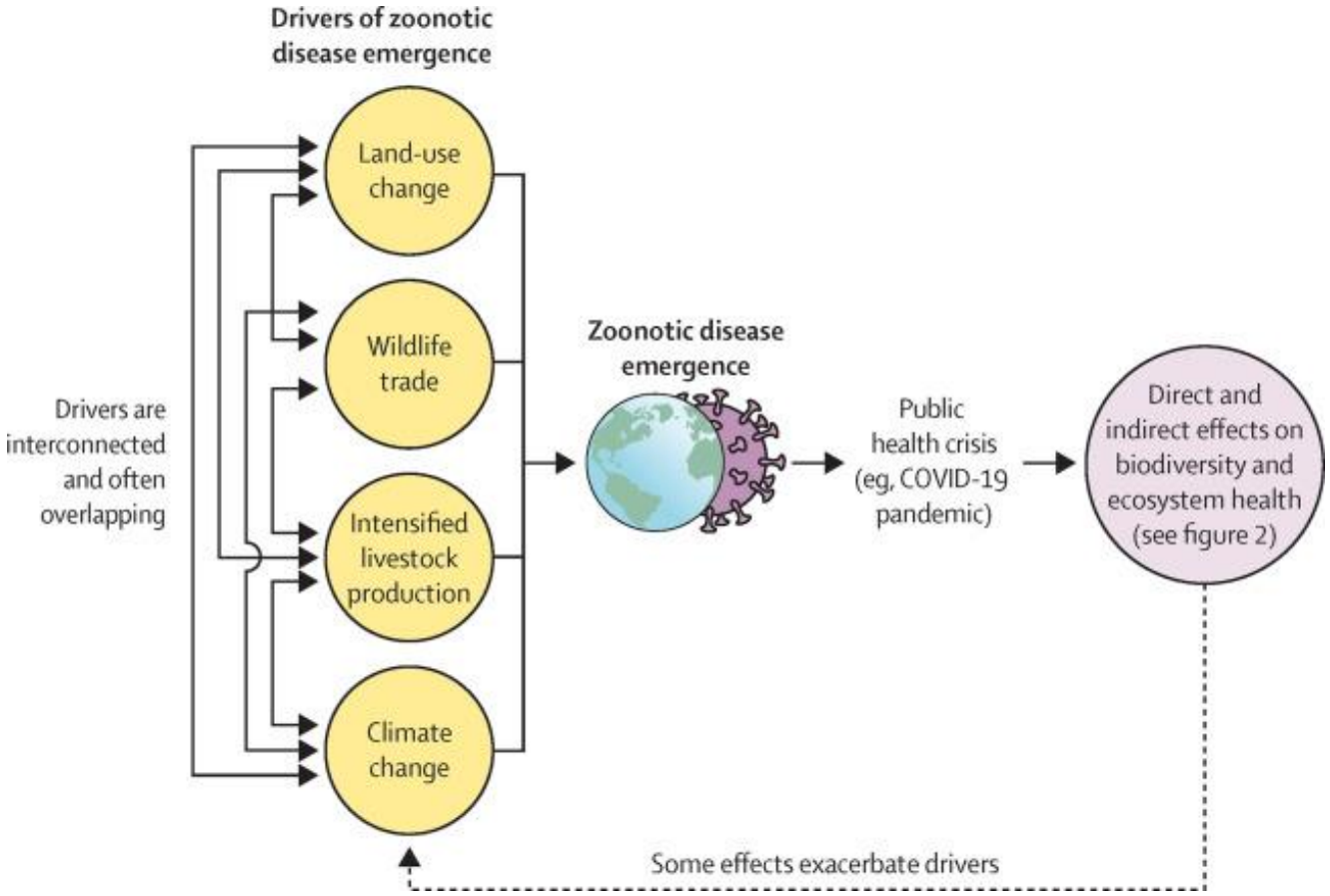


Data source: UN Food and Agriculture Organization (FAO)

OurWorldinData.org – Research and data to make progress against the world's largest problems.

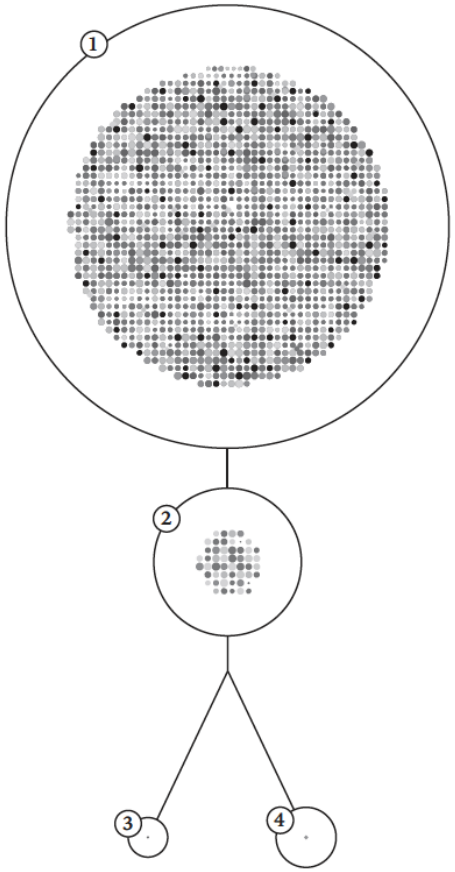
4. Zoonotic pandemics are not going anywhere

- COVID-19 is (likely) a zoonotic disease due to a spillover event that jumped from animals to humans.
- **60% of emerging infectious diseases are zoonotic, and of that 60%, 72% originate in wildlife.**
- Food and agriculture have a big part in the rise of zoonotic spillover events.



Cutler, S.J., et al 2010. Public health threat of new, reemerging, and neglected zoonoses in the industrialized world. *Emerging infectious diseases*, *16*(1), p.1; Lawler, O. K., et al. (2021). The COVID-19 pandemic is intricately linked to biodiversity loss and ecosystem health. *The Lancet Planetary Health*, *5*(11), e840-e850.

5. The lack of diversity is putting us at risk



① 391,000

GLOBALLY IDENTIFIED PLANT SPECIES

② 5,538

NUMBER OF CROPS USED FOR FOOD BY HUMANS THROUGHOUT HISTORY

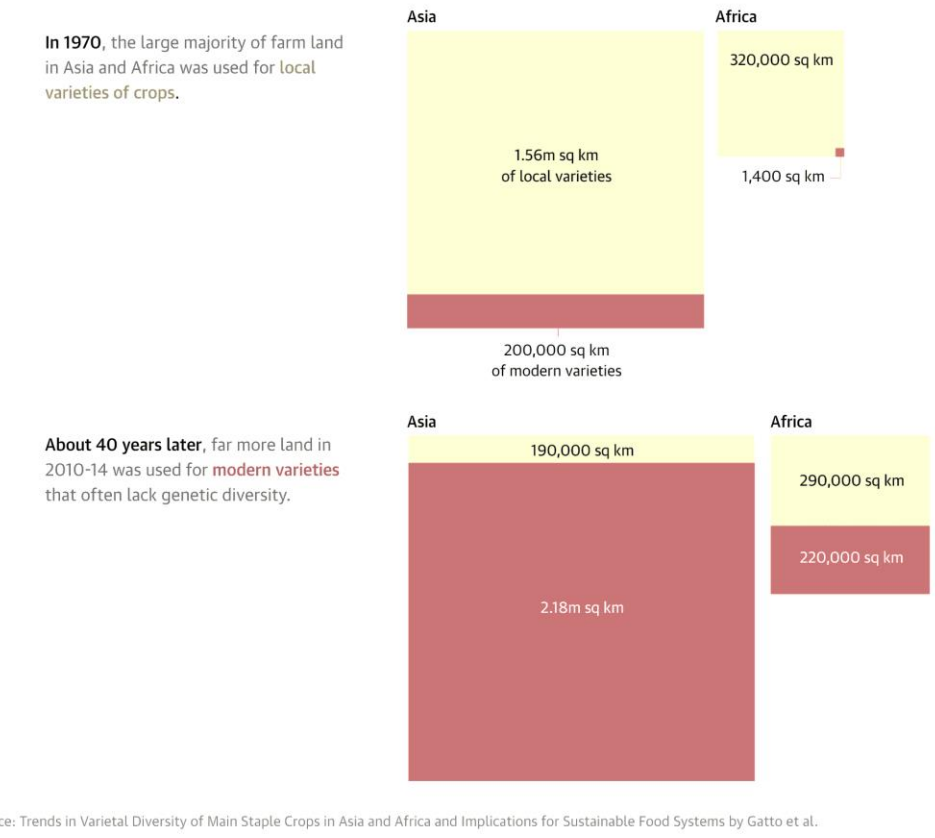
③ 3

RICE, MAIZE, AND WHEAT CURRENTLY PROVIDE >50% OF THE WORLD'S CALORIES FROM PLANTS

④ 12

12 CROPS THAT TOGETHER WITH 5 ANIMAL SPECIES* PROVIDE 75% OF THE WORLD'S FOOD TODAY

*(IN ORDER OF GLOBAL CONSUMPTION, COWS, CHICKENS, PIGS, GOATS, AND SHEEP)

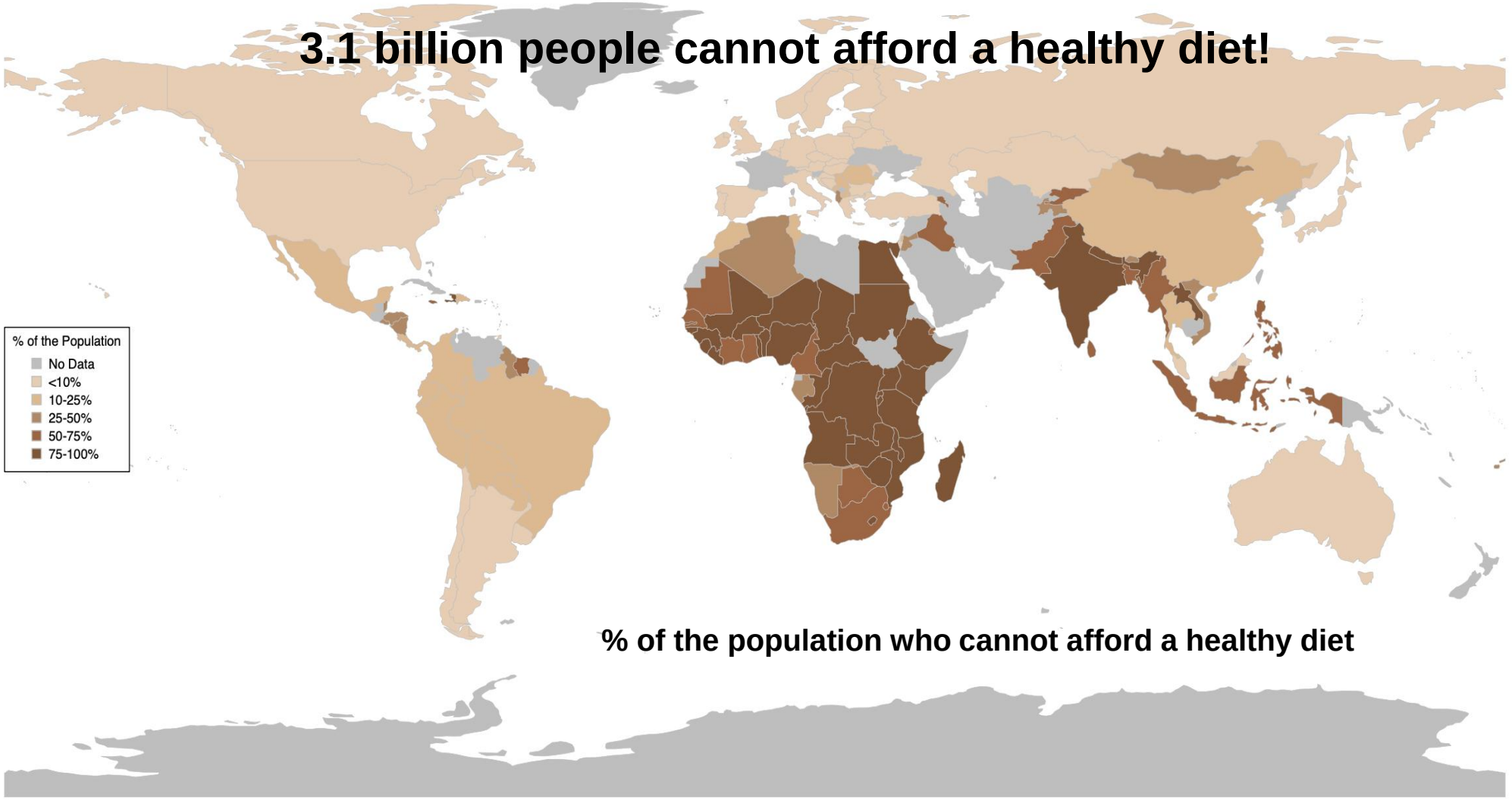


Guardian graphic. Source: Trends in Varietal Diversity of Main Staple Crops in Asia and Africa and Implications for Sustainable Food Systems by Gatto et al.

Khoury, C. et al 2014. Increasing homogeneity in global food supplies and the implications for food security. Proceedings of the National Academy of Sciences, 111(11), pp.4001-4006;
Gatto, M., et al 2021. Trends in varietal diversity of main staple crops in Asia and Africa and implications for sustainable food systems. *Frontiers in Sustainable Food Systems*, p.12.

6. Inequities are deepening and plaguing progress

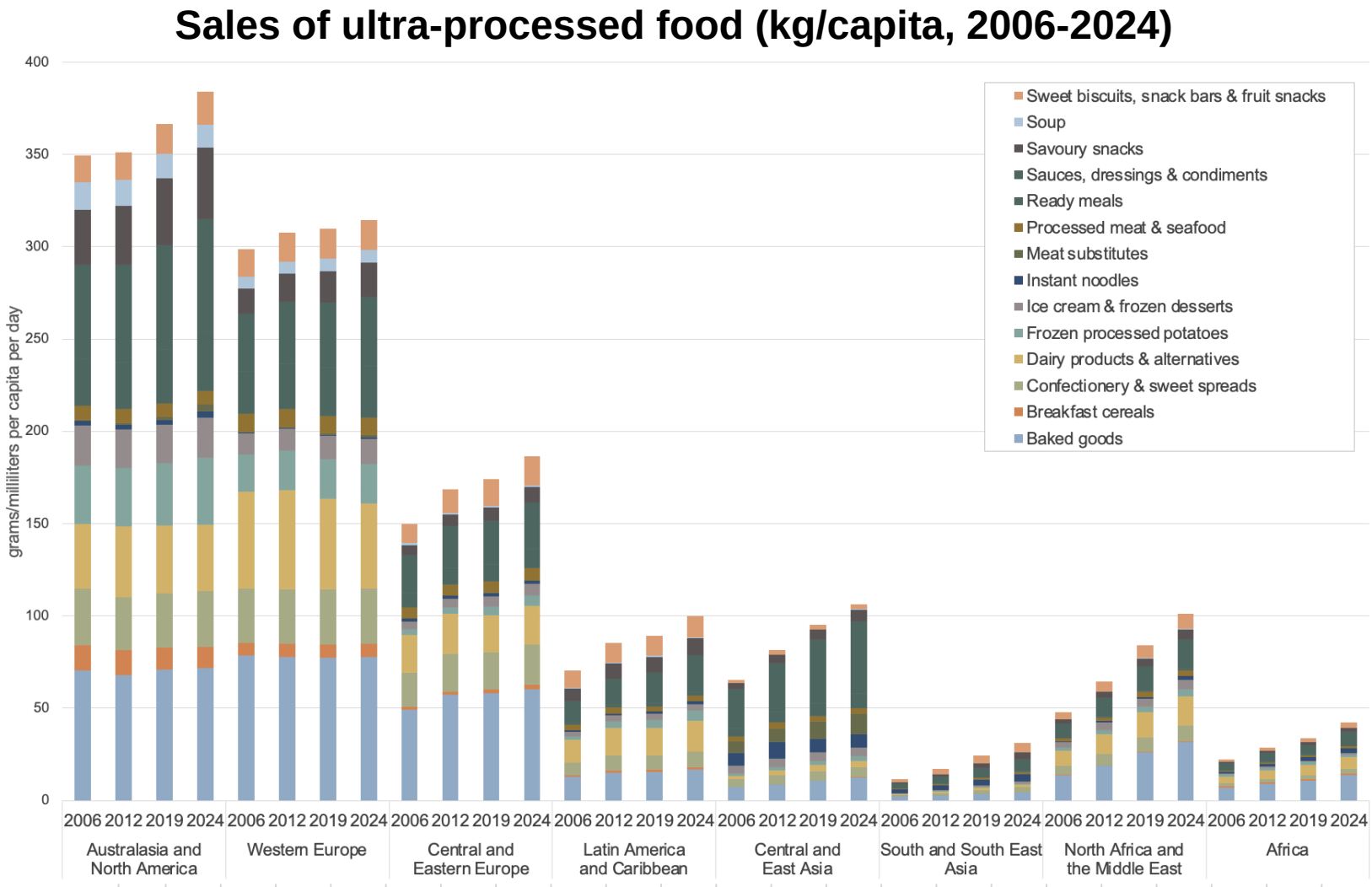
3.1 billion people cannot afford a healthy diet!



% of the population who cannot afford a healthy diet

FAO, IFAD, UNICEF, WFP and WHO. 2020. The State of Food Security and Nutrition in the World 2020. Transforming food systems for affordable healthy diets. Rome, FAO.

7. The types of foods available to most are not optimal



P.I. Baker, P. Machado, T. Santos, et al., “Ultra-Processed Foods and the Nutrition Transition: Global, Regional and National Trends, Food Systems Transformations and Political Economy Drivers,” Obesity Reviews 21, 12 (2020): e13126.

8. The scale of malnutrition is universal & worsening

828 million (10%)
of the world's population are undernourished

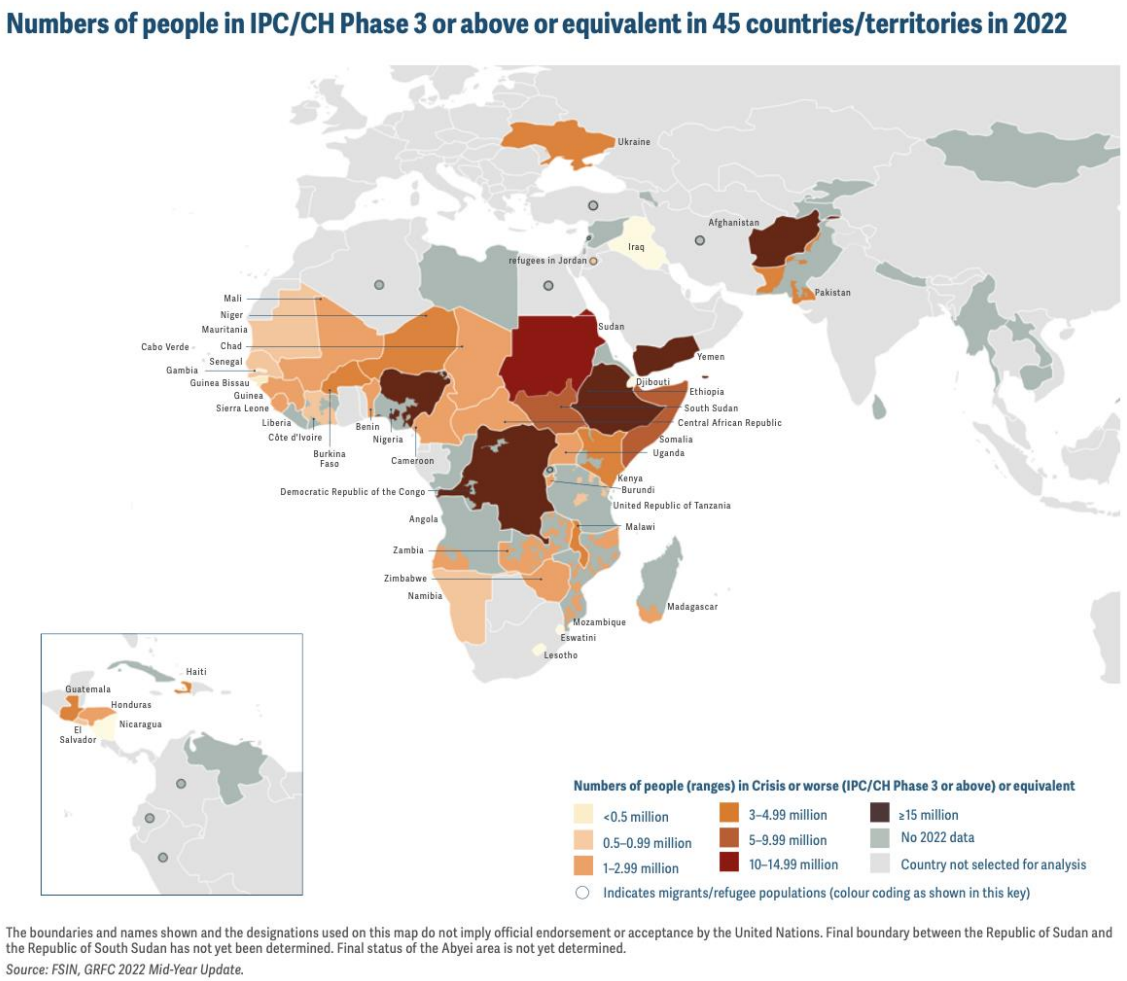
149 million (23%)
children under five years of age are stunted

45 million
children under five years of age are wasted

39 million
children under five years of age are overweight

2.2 billion
adults are overweight or obese

205.1million people in **45** countries/territories face acute high food insecurity



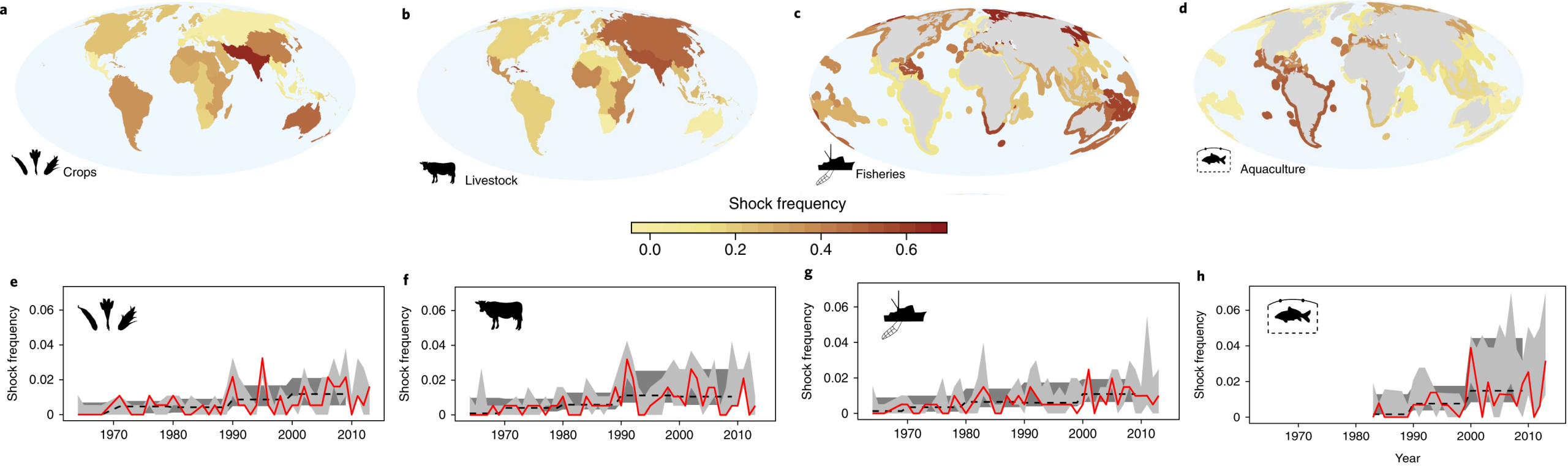
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined.

Source: FSIN, GRFC 2022 Mid-Year Update.

Global Nutrition Report 2021; WHO/UNICEF/World Bank Group. Joint Malnutrition Estimates 2021; The Global Report on Food Crises 2022

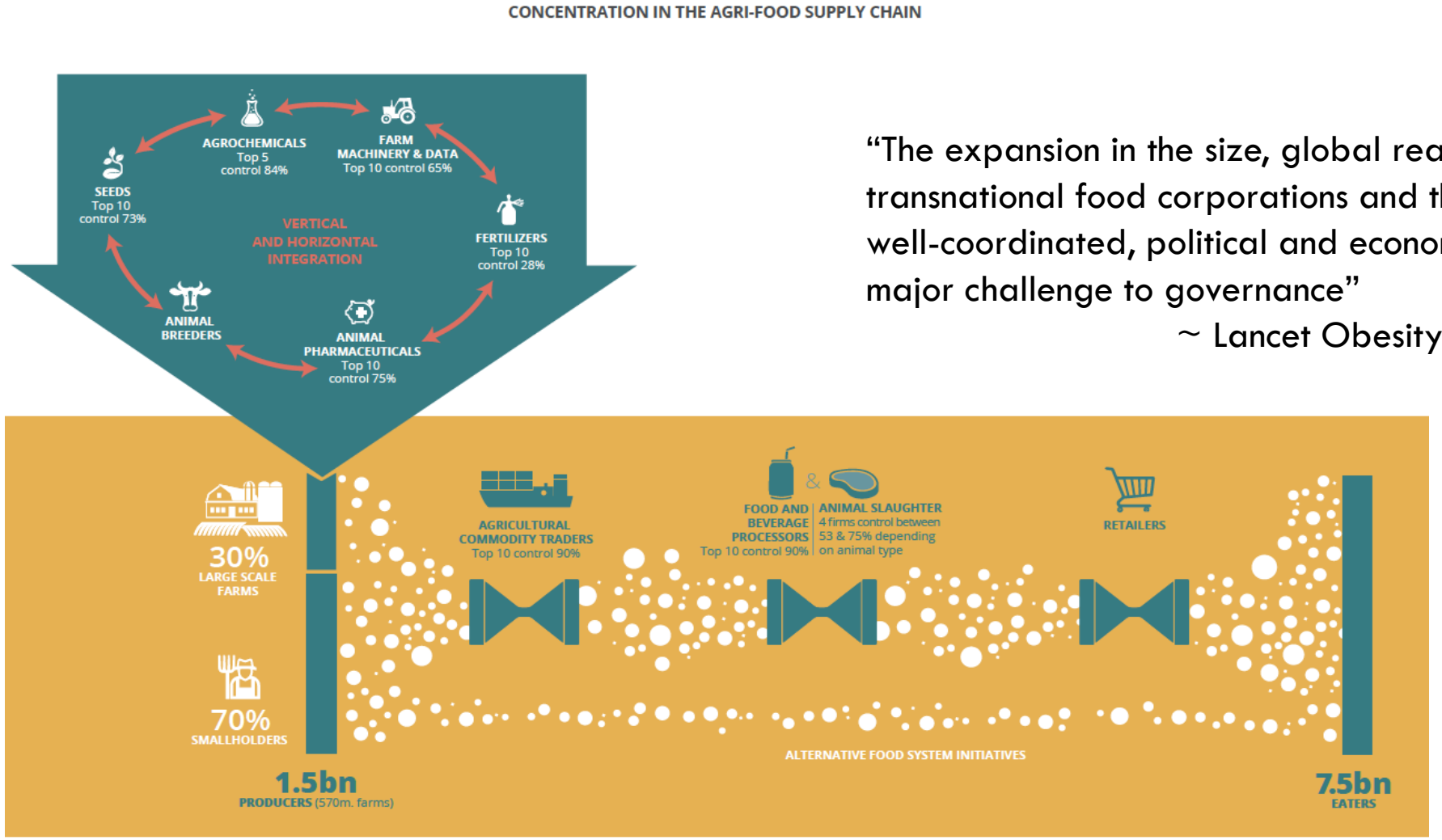
9. Food systems are vulnerable with increased risk of multiple breadbasket failures

Climate and weather events
Geopolitical and economic events
Mismanagement and policy change



Cottrell, R.S., *et al.* Food production shocks across land and sea. *Nat Sustain* **2,** 130–137 (2019).

10. The power imbalances are problematic and unjust

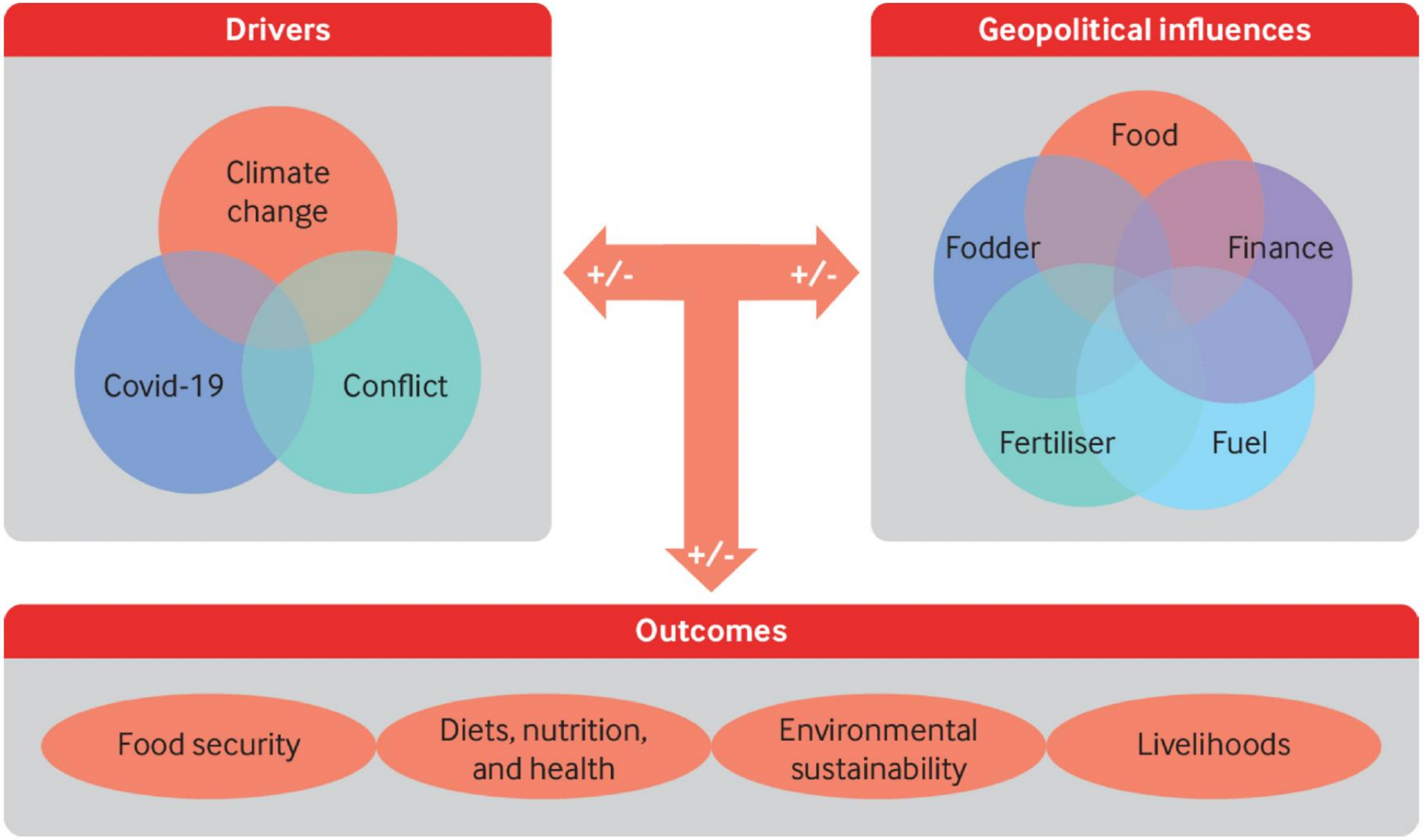


"The expansion in the size, global reach, and concentration of transnational food corporations and their massively increased, well-coordinated, political and economic power constitutes a major challenge to governance"

~ Lancet Obesity Commission, p27

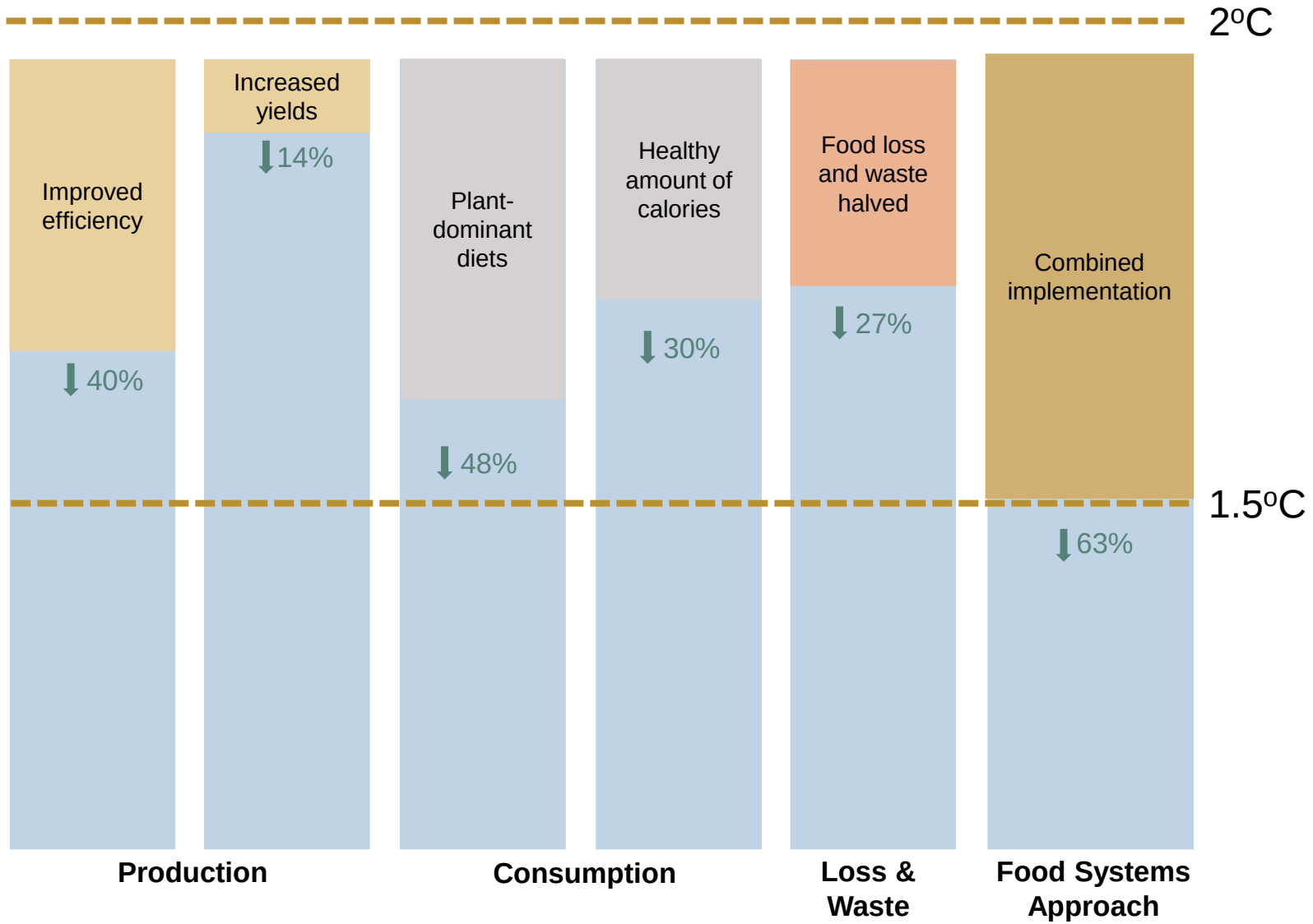
IPES-Food. 2017. Too big to feed: Exploring the impacts of mega-mergers, concentration, concentration of power in the agri-food sector.

A Polycrisis: “three Cs” and “five Fs” of concern



Hendriks et al 2022 BMJ

Achieving the Paris climate change targets requires multi-level food systems action



Clark et al 2020 Science

Thank you!

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