

# The global environmental impacts of food and how to reduce them

Joseph Poore, 19<sup>th</sup> October 2024



### PART 1 The global environmental impacts of food

















Greenhouse Gas Emissions



5

4

3

2

0

-1

-2

-3

-4

-5

26% Food

#### Eutrophication



Source: Poore & Nemecek (2018)

78%

Food

Freshwater Use (weighted by scarcity)

> 90% Food



Source: Poore & Nemecek (2018)













Food Consumption (trillion calories per day)



**Food Consumption** (trillion calories per day)



### PART 2 Food products and diets





Source: Poore & Nemecek (2018)











# **GHG Emissions** kg CO<sub>2</sub>eq



Source: Poore & Nemecek (2018)

# Eutrophying Emissions kg $PO_4^{3-}eq$



Source: Poore & Nemecek (2018)

# Land Use m<sup>2</sup>·year



Source: Poore & Nemecek (2018)



Source: Poore & Nemecek (2018); additional calculations for the BBC and Science Vs for oat milk, rice milk, and almond milk.





Land Per Person on Earth **17,000m<sup>2</sup>** 



Land Per Person on Earth **17,000m<sup>2</sup>** 

Current Diet Global 6,200m<sup>2</sup>



Land Per Person on Earth **17,000m<sup>2</sup>** 

Current Diet Global 6,200m<sup>2</sup> USA 11,800m<sup>2</sup>



Source: Poore & Nemecek (2018)



Spared Land 4,700m<sup>2</sup>



Sources: Poore & Nemecek (2018); Ellis et al (2010) Gaston et al (2003); Bar-On et al (2018)



Sources: Poore & Nemecek (2018); Ellis et al (2010) Gaston et al (2003); Bar-On et al (2018); Schmidinger & Stehfest (2012)

#### **Greenhouse Gas Emissions Per Person** (tonnes $CO_2eq$ , year = 2010)



#### **Greenhouse Gas Emissions Per Person** (tonnes $CO_2eq$ , year = 2010)



#### **Greenhouse Gas Emissions Per Person** (tonnes $CO_2eq$ , year = 2010)



Sources: JRC (2016); Poore & Nemecek (2019); Schmidinger & Stehfest (2012); WRI (2014); EPA (2018); Peters et al. (2012)

#### **Greenhouse Gas Emissions Saved Per Person** (tonnes CO<sub>2</sub>eq, European averages)





# PART 3 Solutions









#### COOL FOOD\*

#### Early Adopters' Absolute Food-Related Emissions: Trend to 2021

 $\equiv$ 



Source: WRI (2022)



- The global environmental impacts of food are very substantial.
- But we can reduce them substantially.
- Knowledge and information will play a critical role.

