

How do we produce feed, food and energy for 10 billion people in 2050 — and at the same time secure the environment, nature and climate?

International Federation of Agricultural Journalists

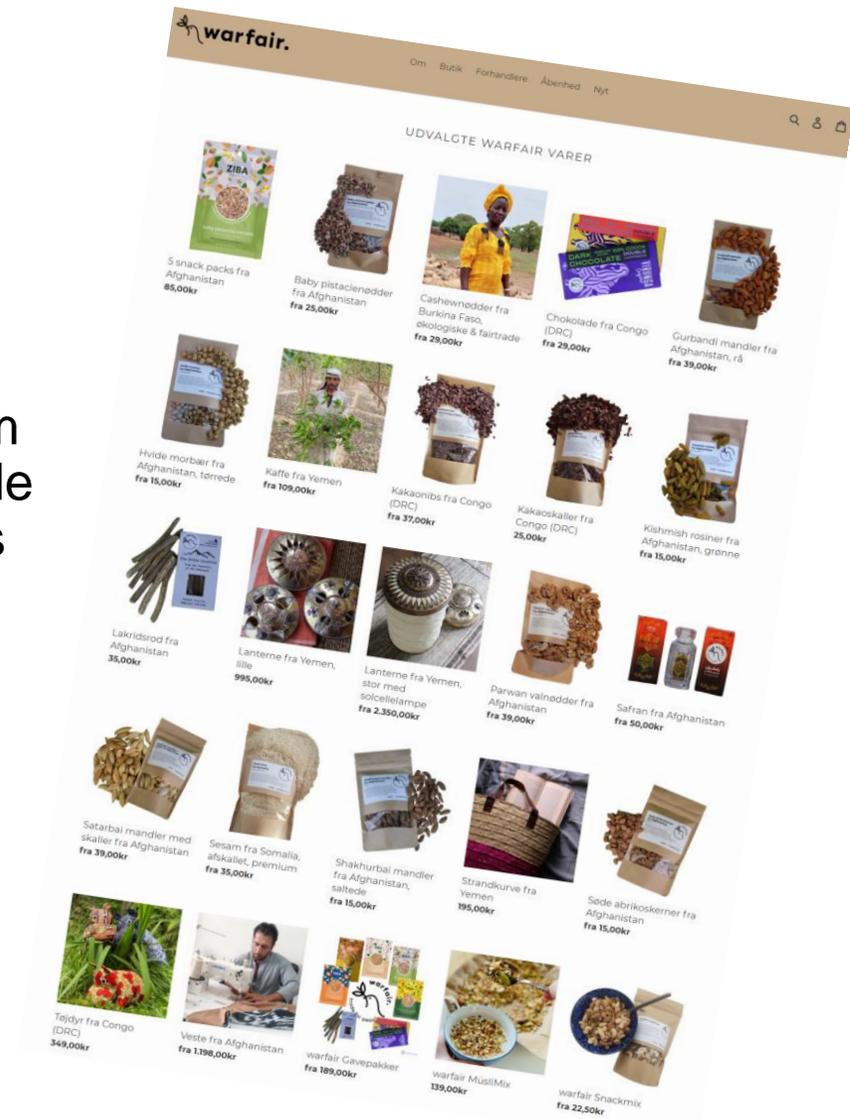
Christian Friis Bach

warfair.org

warfair



warfair trades with quality products from conflict-affected countries, because trade is a dignified way to create income, jobs and peace.



We live in the time of the large demonstrations



Libanon



Racism



Chile



Climate



Hong Kong

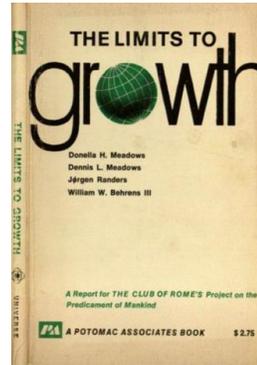
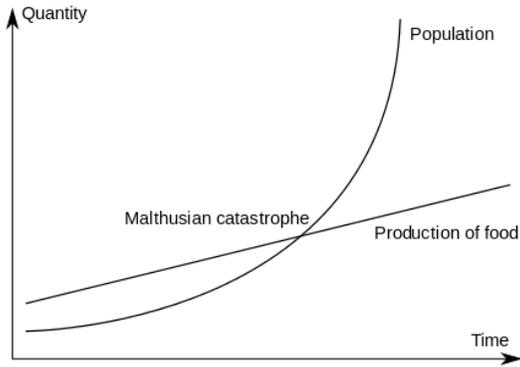


France

Can we produce enough food?

Malthus

Exponential population growth and arithmetic food supply growth



Club of Rome
Global Food per capita reaches a peak around 2020, followed by a rapid decline

Ukraine War
Giant leap in global food prices, says UN



1798

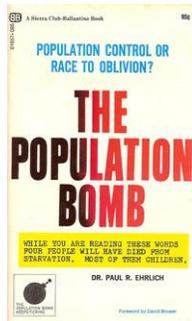
1972

2022



1968

2011



2xEhrlich

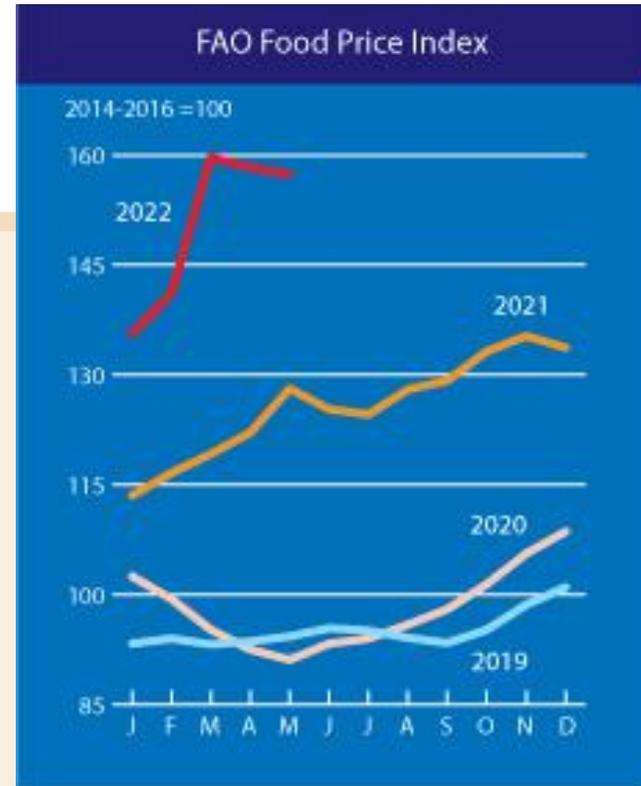
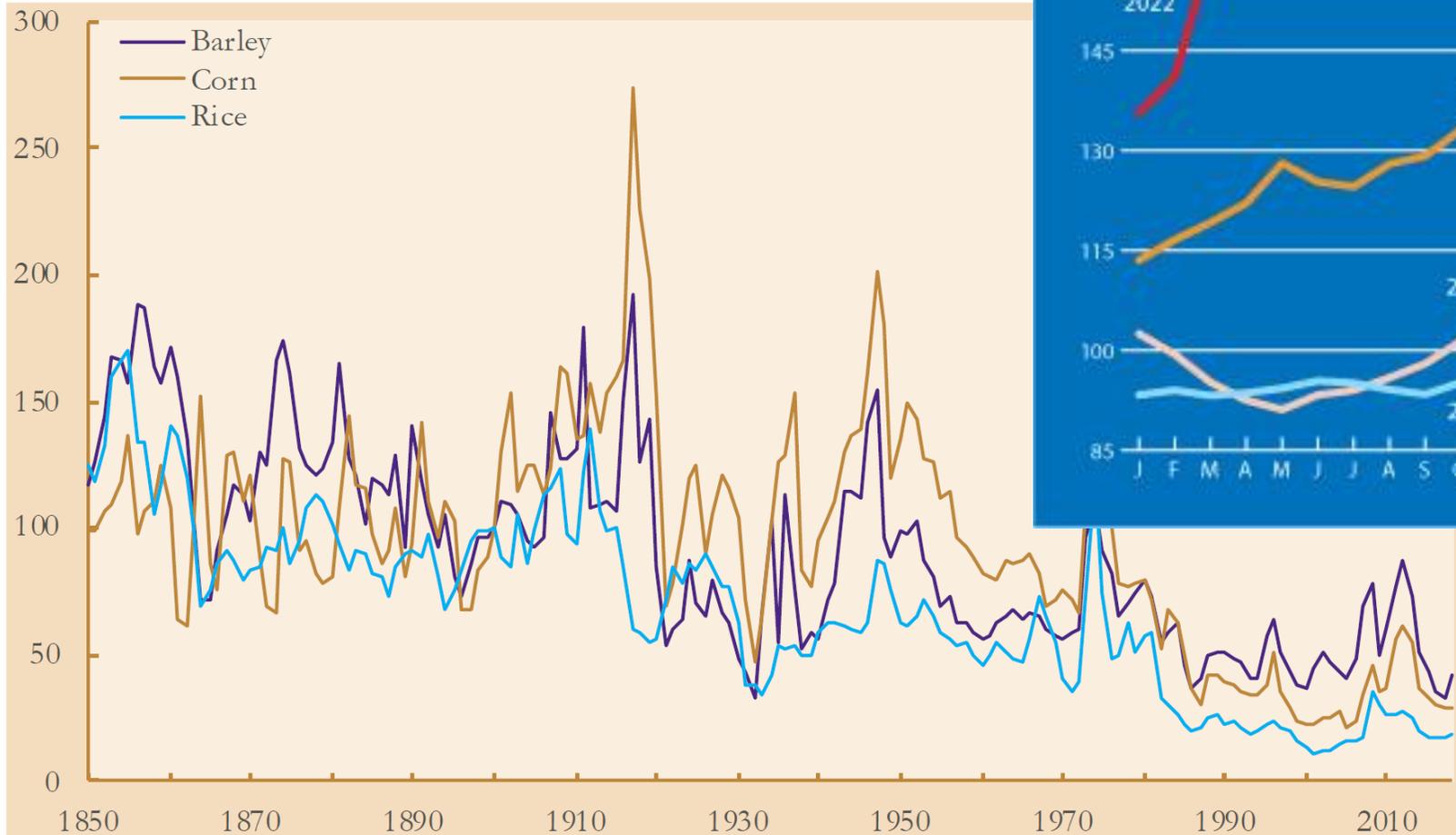
Worldwide famine in the 1970s and 1980s due to overpopulation



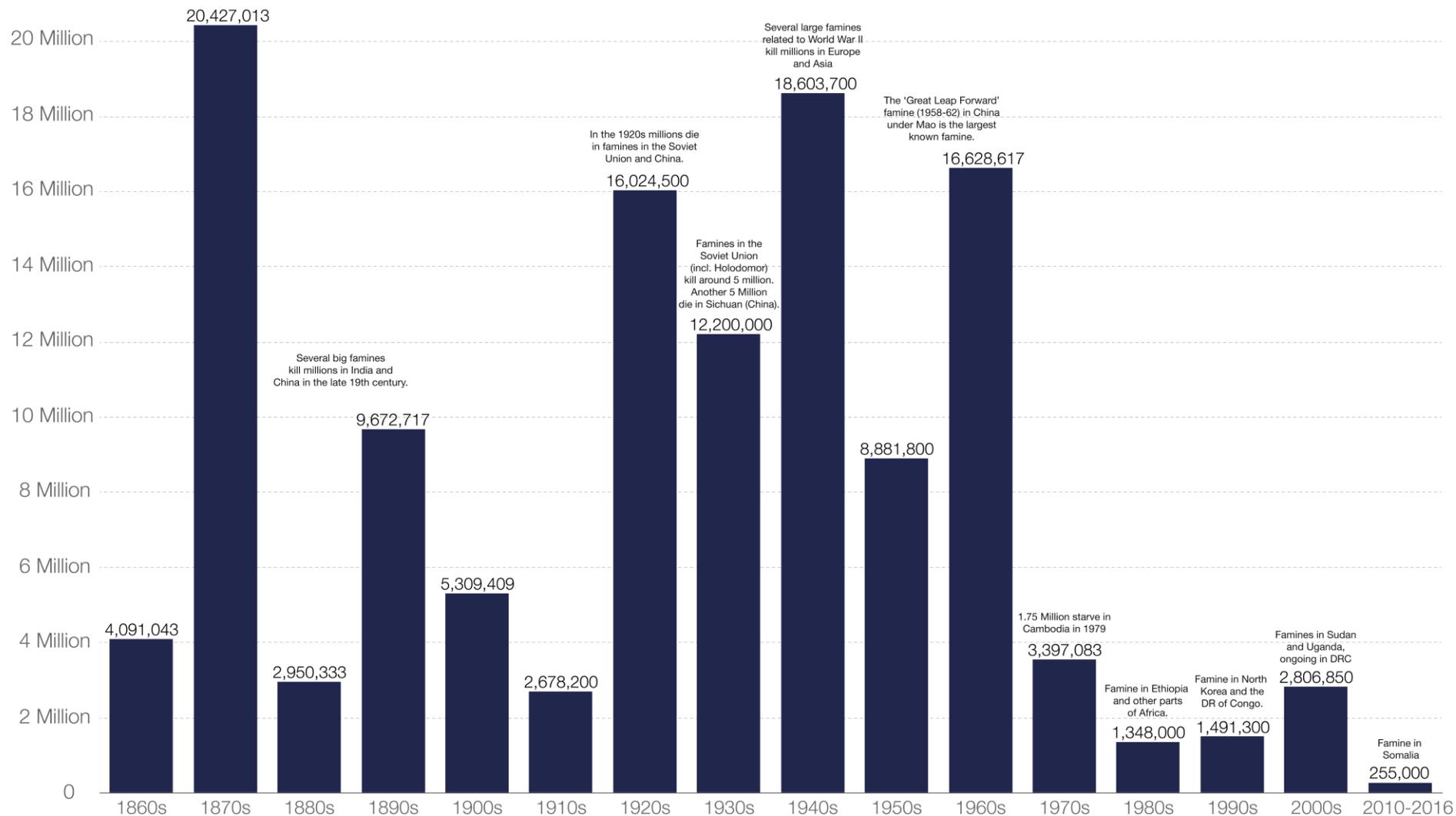
Oxfam

Drastic increase in food prices and hunger over the next two decades

Cereal prices (price index, 1900=100)

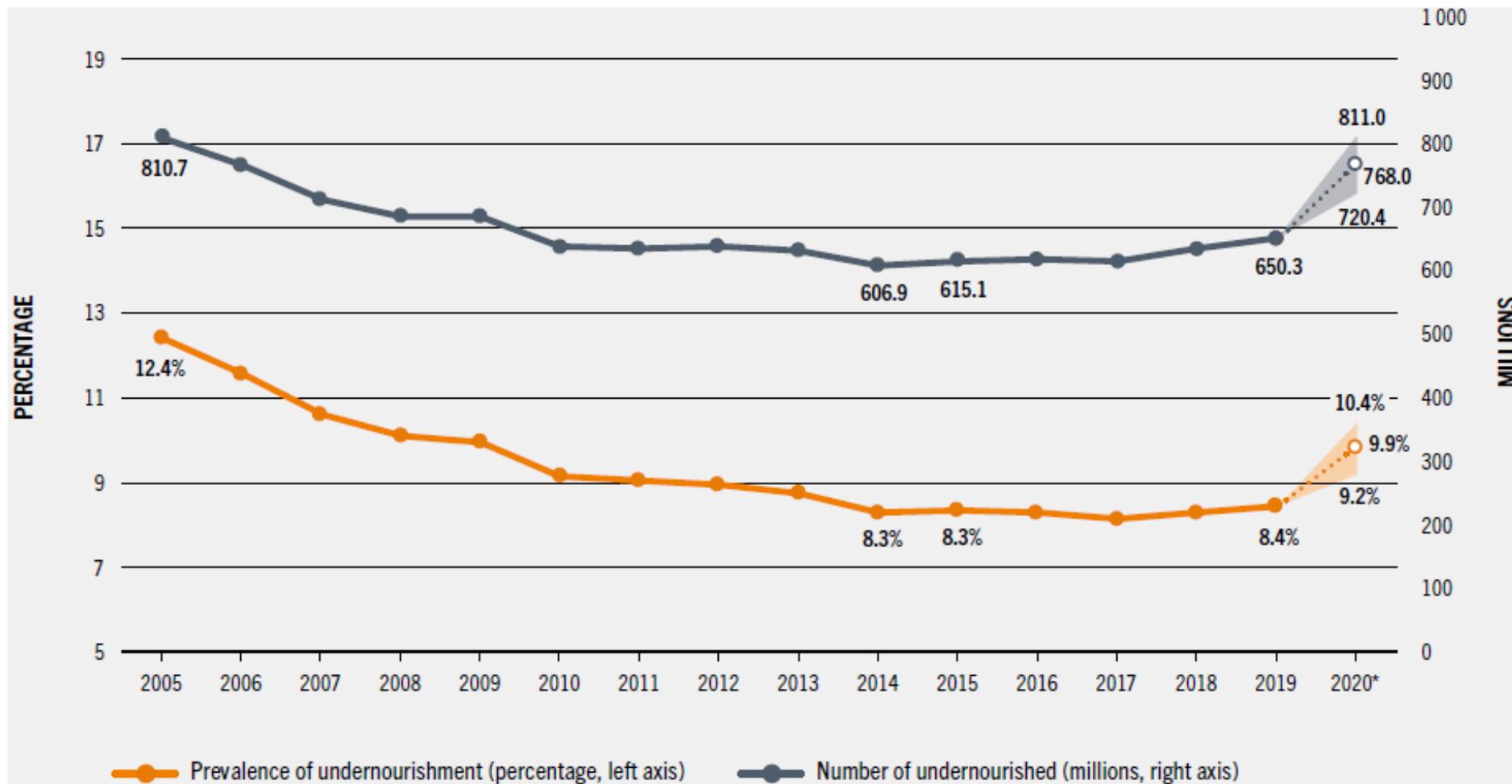


Fewer deaths from famines

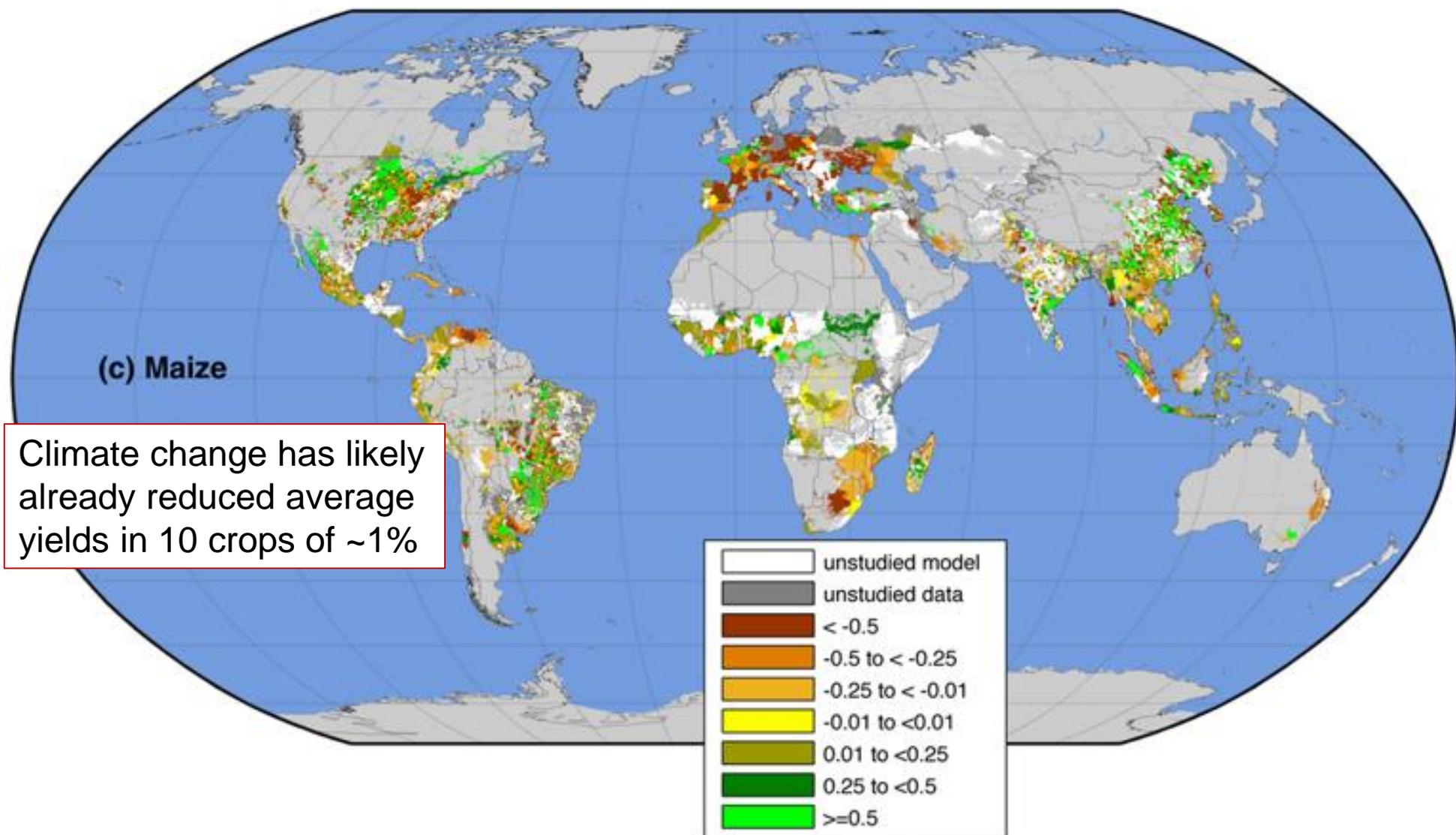


Source: Hasell and Roser (2019), https://ourworldindata.org/uploads/2018/03/Famine-victims-since-1860s_March18.png

But the trend is worrying...



Effects on crop yields are already seen



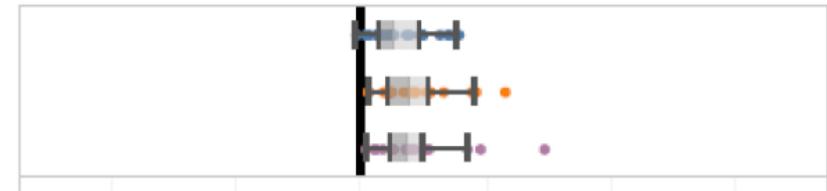
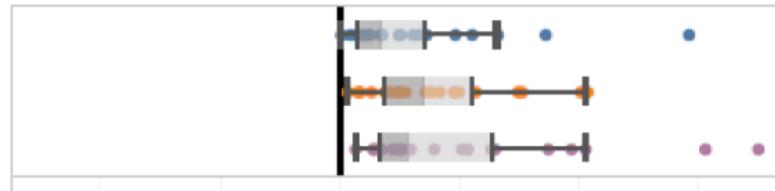
Climate policies affect food prices

Year 2050

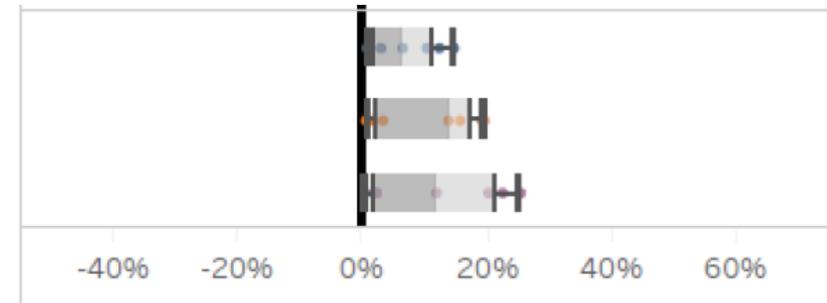
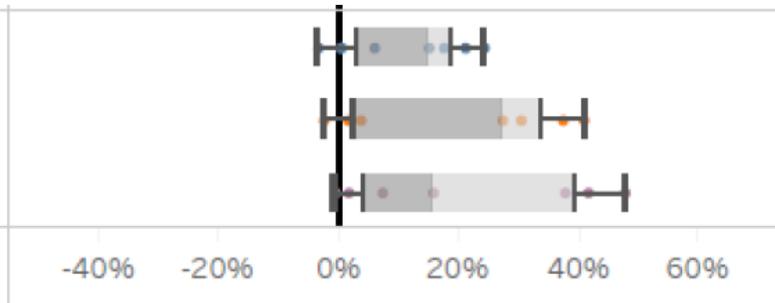
Effect of mitigation

Effect of climate change

Cereal prices



No of people
in risk of
hunger

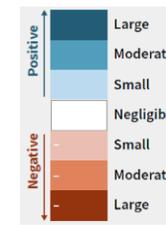


■ SSP1

■ SSP2

■ SSP3

Decisive how we act



Bioenergy and bioenergy with CCS



High level: Impacts on adaptation, desertification, land degradation and food security are maximum potential impacts, assuming carbon dioxide removal by BECCS at a scale of 11.3 GtCO₂ yr⁻¹ in 2050, and noting that bioenergy without CCS can also achieve emissions reductions of up to several GtCO₂ yr⁻¹ when it is a low carbon energy source {2.7.1.5; 6.4.1.1.5}. Studies linking bioenergy to food security estimate an increase in the population at risk of undernourishment of 150 million people by 2050 in 2°C scenarios which will increase pressure for desertification and land degradation, the actual area affected by desertification and land degradation is expected to be smaller {6.4.3.1.5; 6.4.4.1.5}.

150 mio. people in risk of undernourishment



Best practice: The sign and magnitude of the effects of bioenergy and BECCS depends on the scale of deployment, the type of bioenergy feedstock, which other response options are included, and where bioenergy is grown (including prior land use and indirect land use change emissions). For example, limiting bioenergy production to marginal lands or abandoned cropland would have negligible effects on biodiversity, food security, and potentially co-benefits for land degradation; however, the benefits for mitigation could also be smaller. {Table 6.58}

80-150 mio. people in risk of undernourishment

Tree planting



High level: Impacts on adaptation, desertification, land degradation and food security are maximum potential impacts assuming implementation of afforestation (partly overlapping with reforestation and forest restoration) at a scale of 8.9 GtCO₂ yr⁻¹ removal {6.4.1.1.2}. Large-scale afforestation could cause increases in food prices of 80% by 2050, and more general mitigation measures in the AFOLU sector can translate into a rise in undernourishment of 80–300 million people {6.4.5.1.2}.

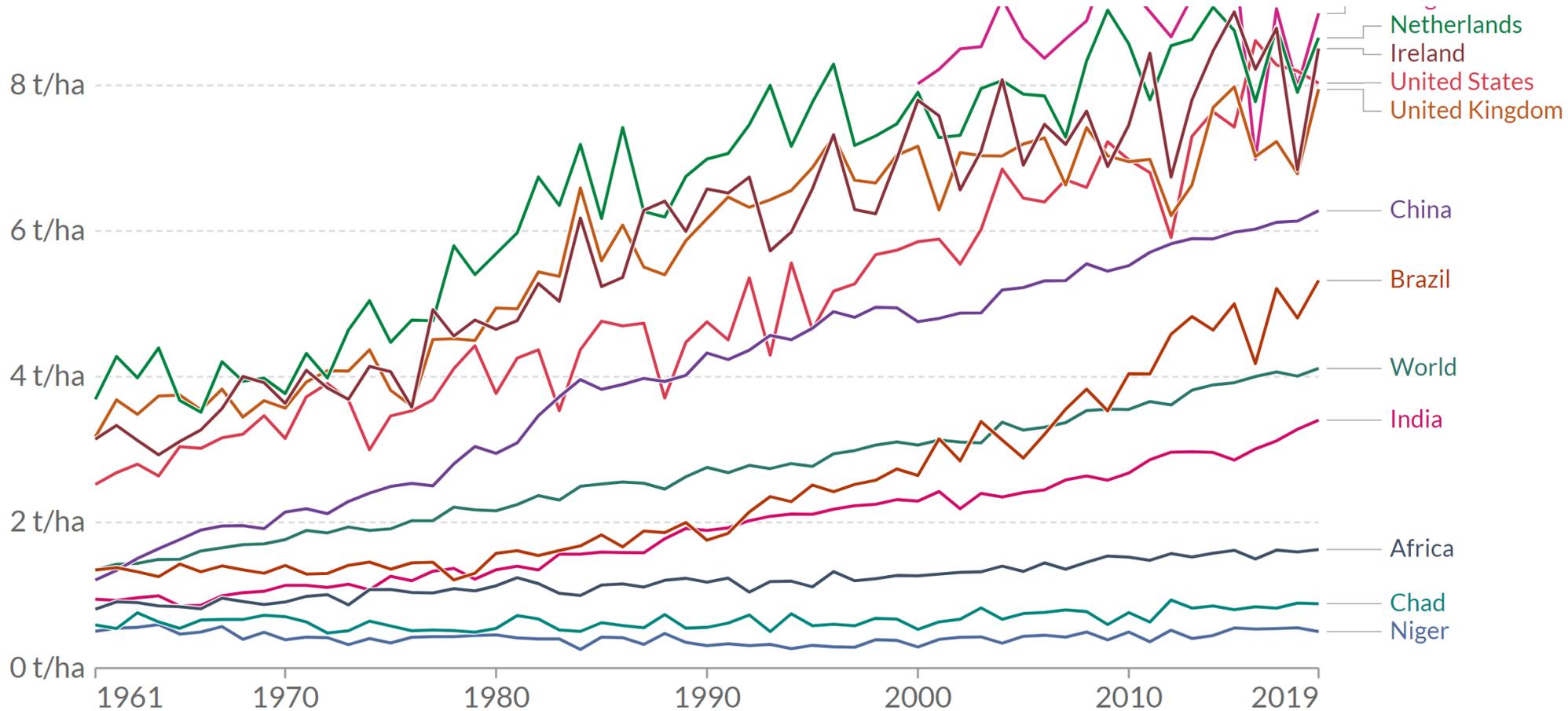


Best practice: Afforestation is used to prevent desertification and to tackle land degradation. Forested land also offers benefits in terms of food supply, especially when forest is established on degraded land, mangroves, and other land that cannot be used for agriculture. For example, food from forests represents a safety-net during

We need to invest significantly in agriculture

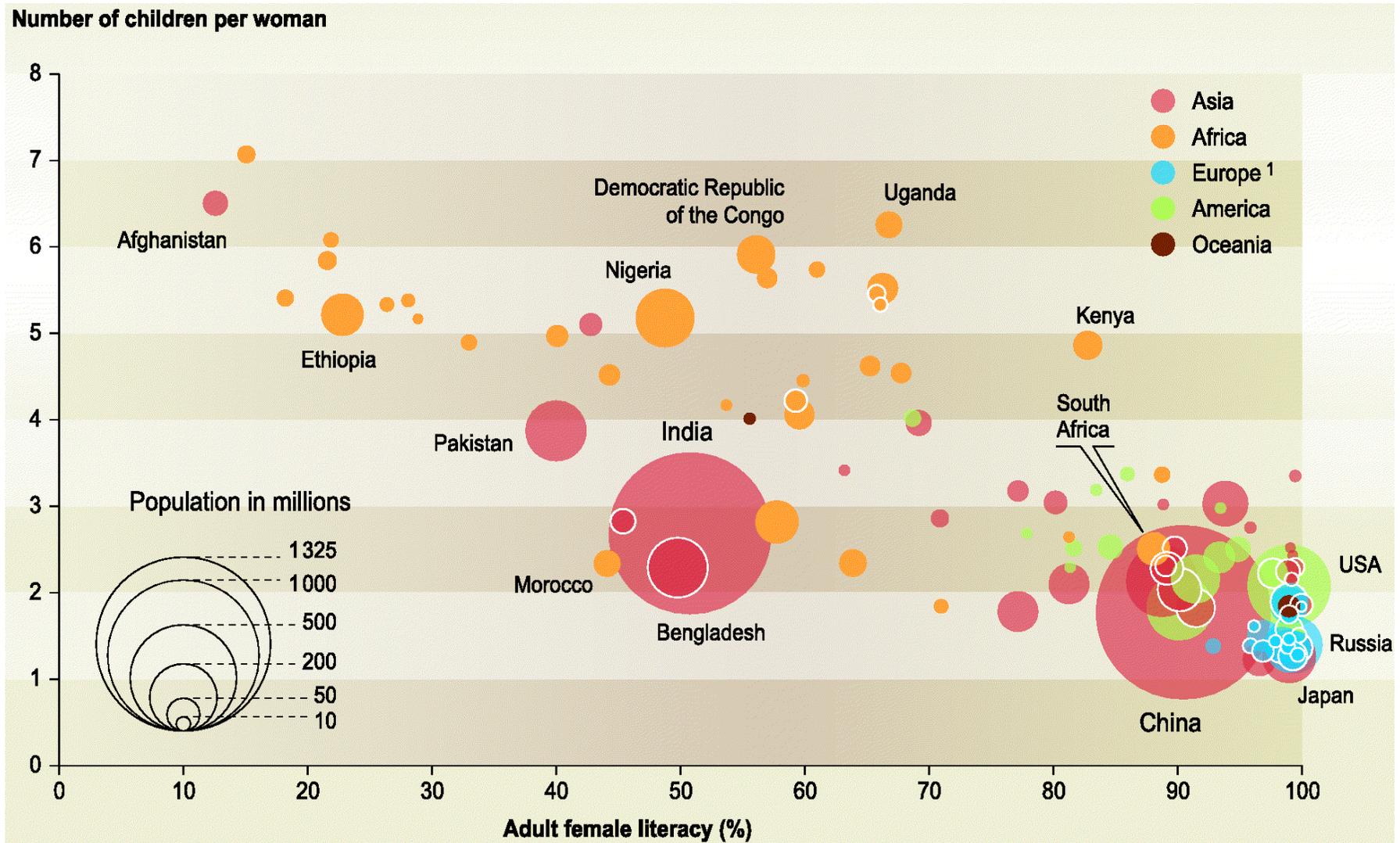


Cereal Yield 1961-2019



Source: FAO as quoted in <https://ourworldindata.org/africa-yields-problem>

And in education of girls



How many people can the earth feed?

The answer depends on who you ask?

But the largest concentration of studies say between 8 and 16 bn people

Estimates of Earth's carrying capacity

 = one estimate

6 STUDIES SAY
≤ 2 billion 

7 STUDIES SAY
≤ 4 billion 

20 STUDIES SAY
≤ 8 billion 

14 STUDIES SAY
≤ 16 billion 

6 STUDIES SAY
≤ 32 billion 

7 STUDIES SAY
≤ 64 billion 

2 STUDIES SAY
≤ 128 billion 

1 STUDY SAYS
≤ 256 billion 

1 STUDY SAYS
≤ 512 billion 

1 STUDY SAYS
≤ 1,024 billion 

Source: UNEP (2012): One Planet, How Many People? A Review of Earth's Carrying Capacity
https://na.unep.net/geas/archive/pdfs/geas_jun_12_carrying_capacity.pdf

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