STATISTICS

SEEA and Macro-Economic Policies

DECEMBER 1, 2021

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Real Sector Division

Outline

- ✓ Environment and climate change: impact and policy priorities
- ✓ How the System of Environmental Economic Accounting is helping policymakers design effective macroeconomic / finance policies.

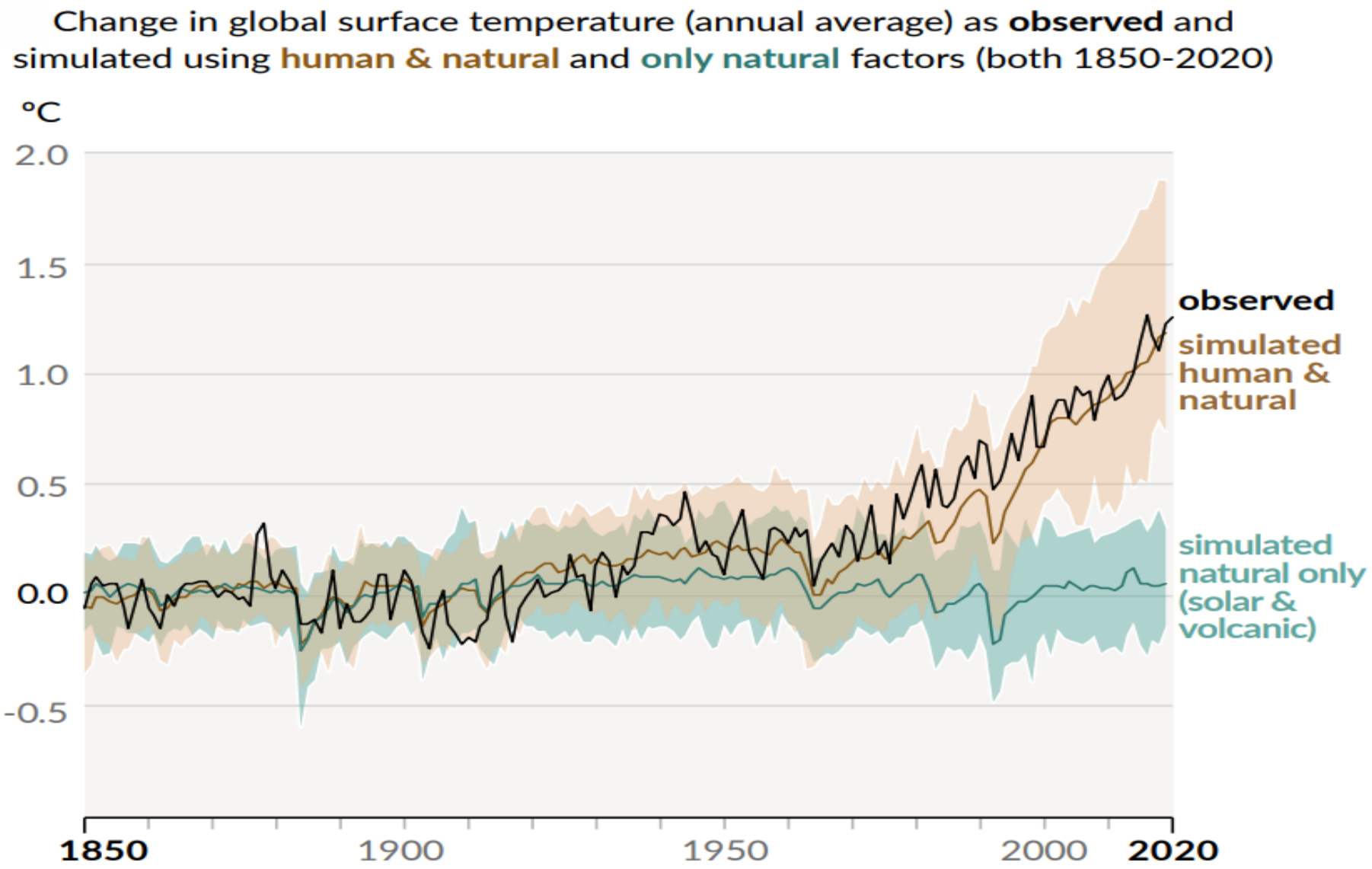
Environment and climate change: impact and policy priorities

“It is unequivocal that human influence has warmed the atmosphere, ocean and land.”

- IPCC, 2021

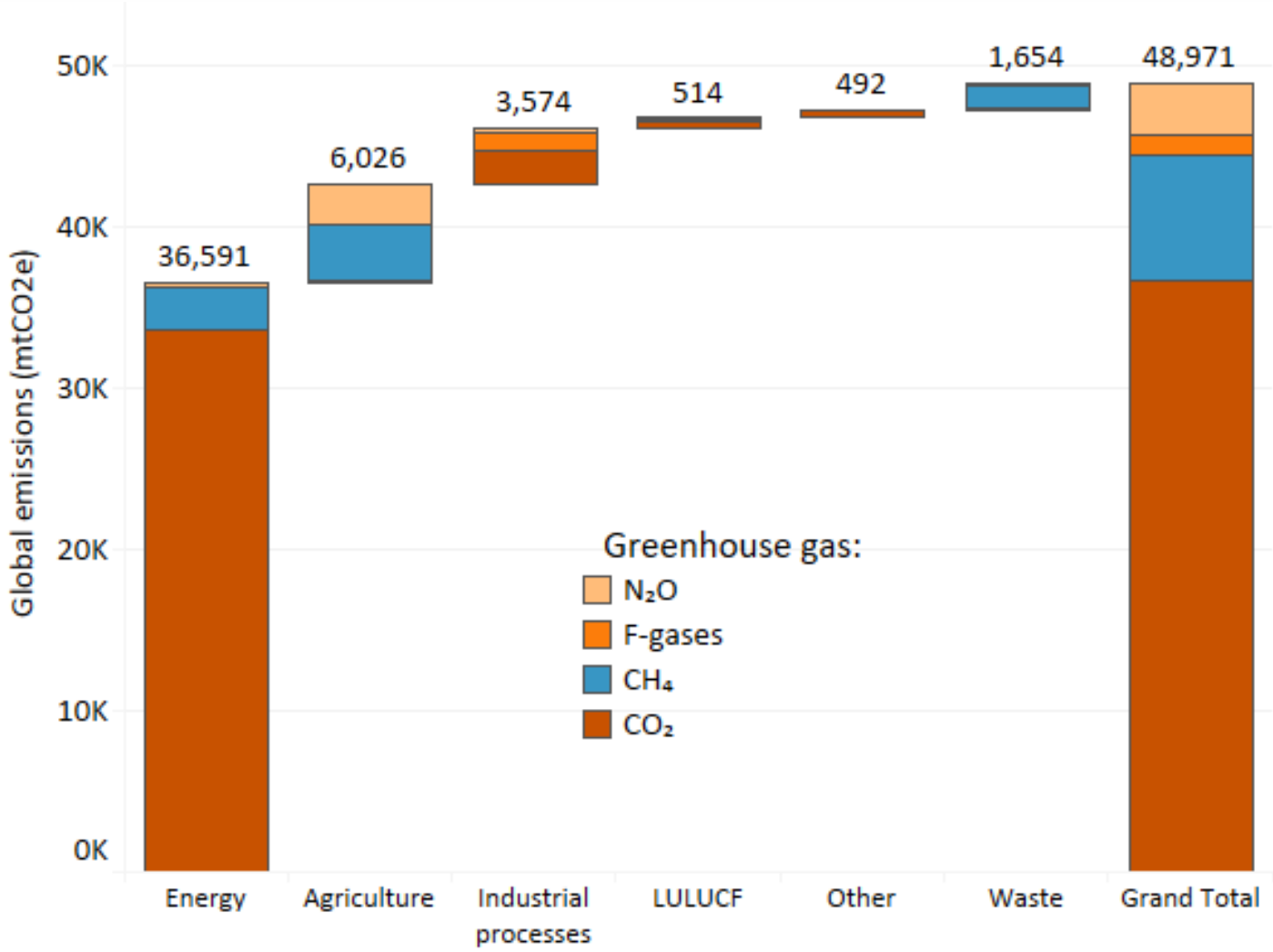
IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change

Changes in global surface temperature relative to 1850-1900



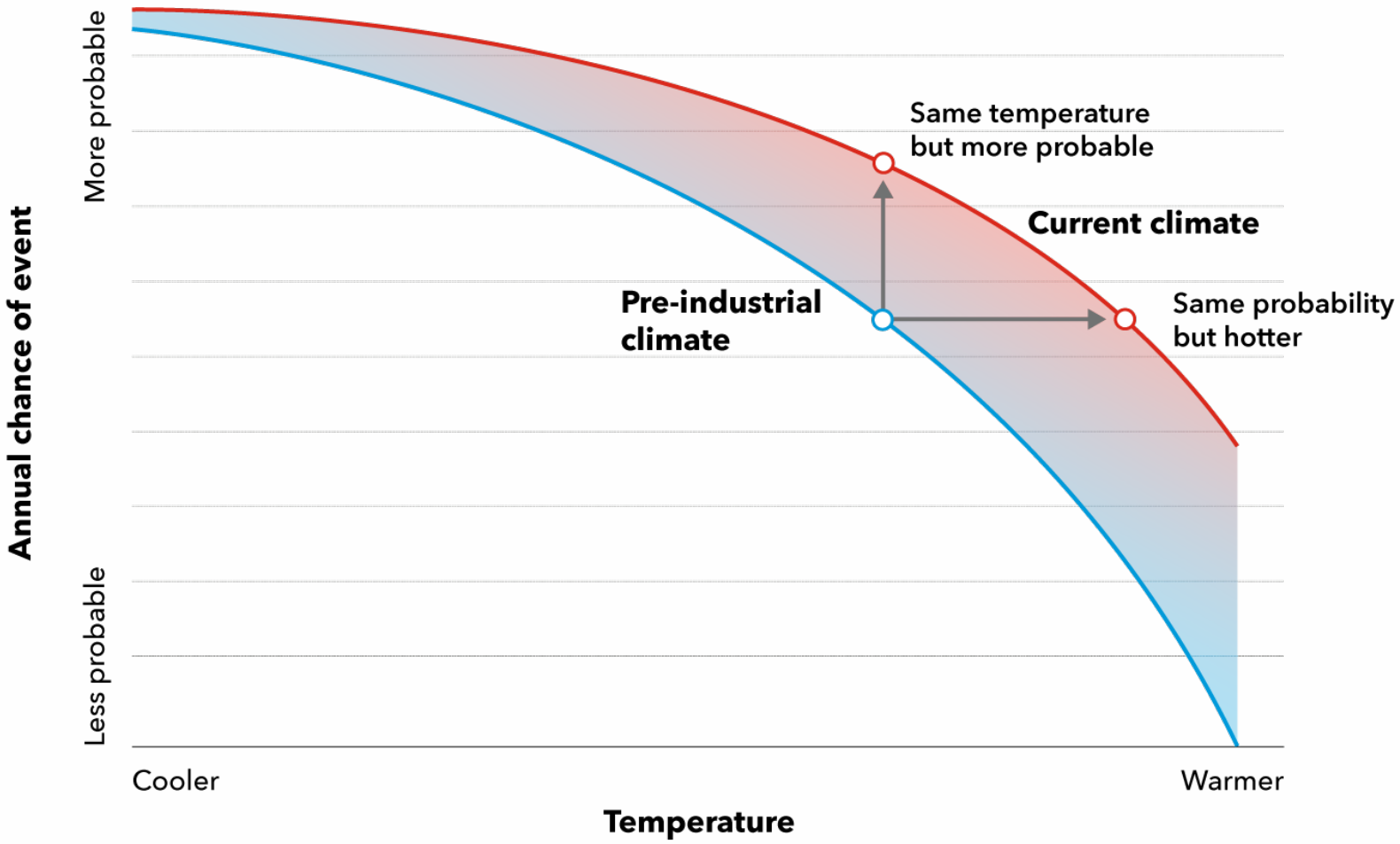
Source: IPCC, Sixth Assessment Report, 2021

Global greenhouse gas emissions by sector and gas (2018, mtCO2e)



Source: IMF staff using UNFCCC, 2021; WRI, 2021; and national sources.

Climate extremes: more frequent and intense

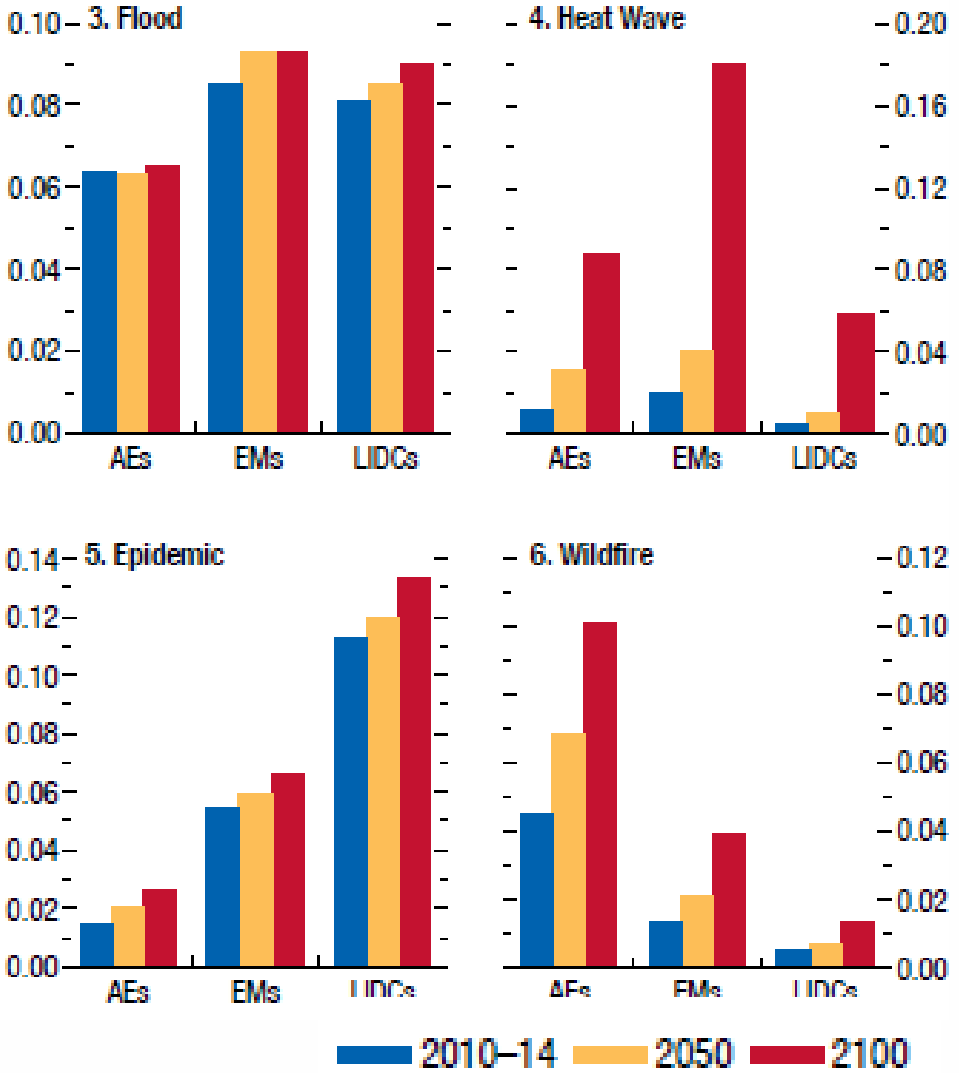


Note: Probabilities are lower for hotter (more extreme) events

Source: IPCC, 2021

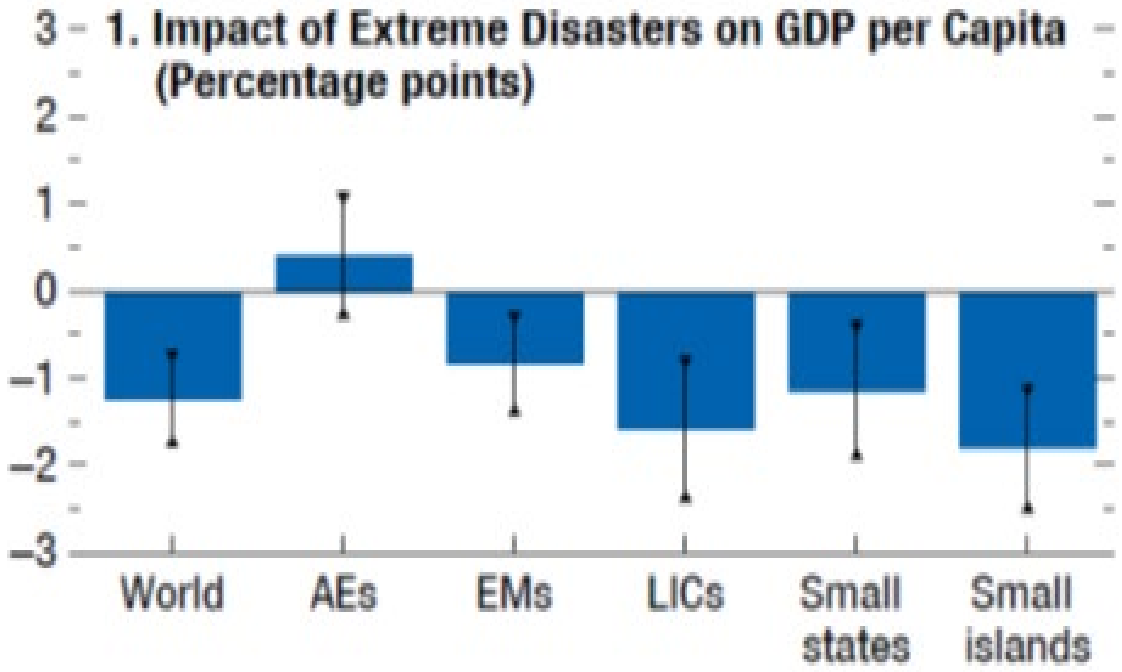
Other natural disasters

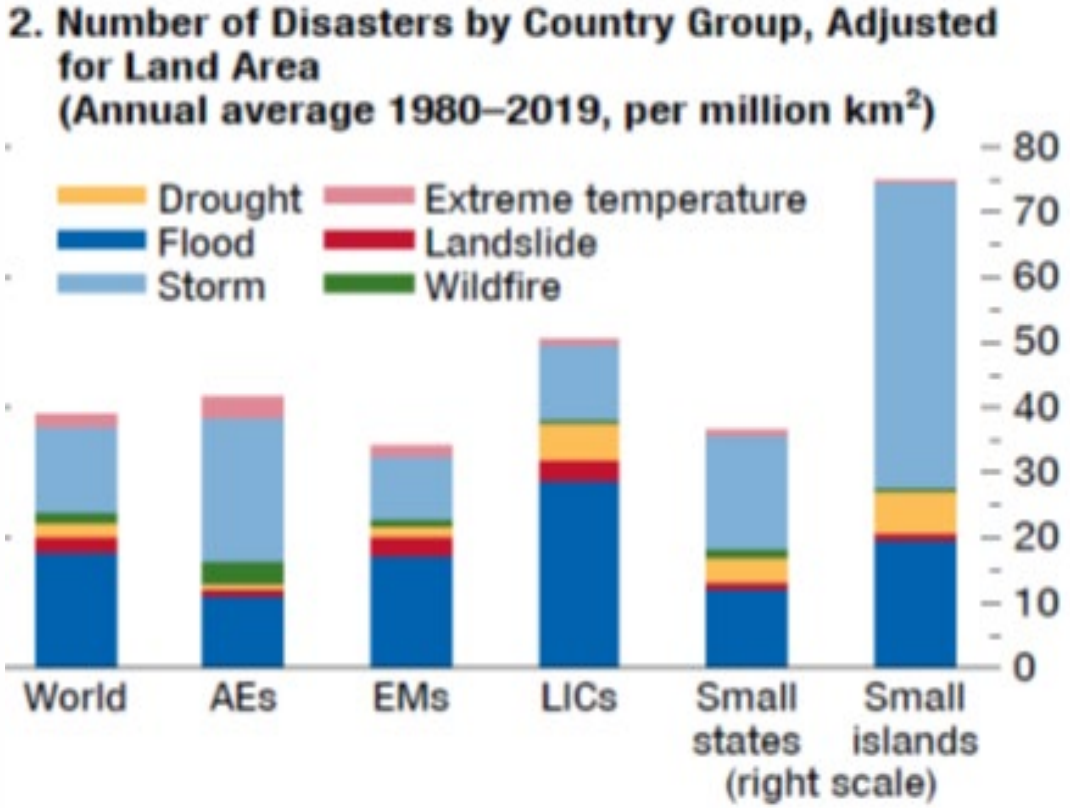
Actual and predicted monthly probability of a disaster



Source: IMF, 2017

Climate change and natural disasters

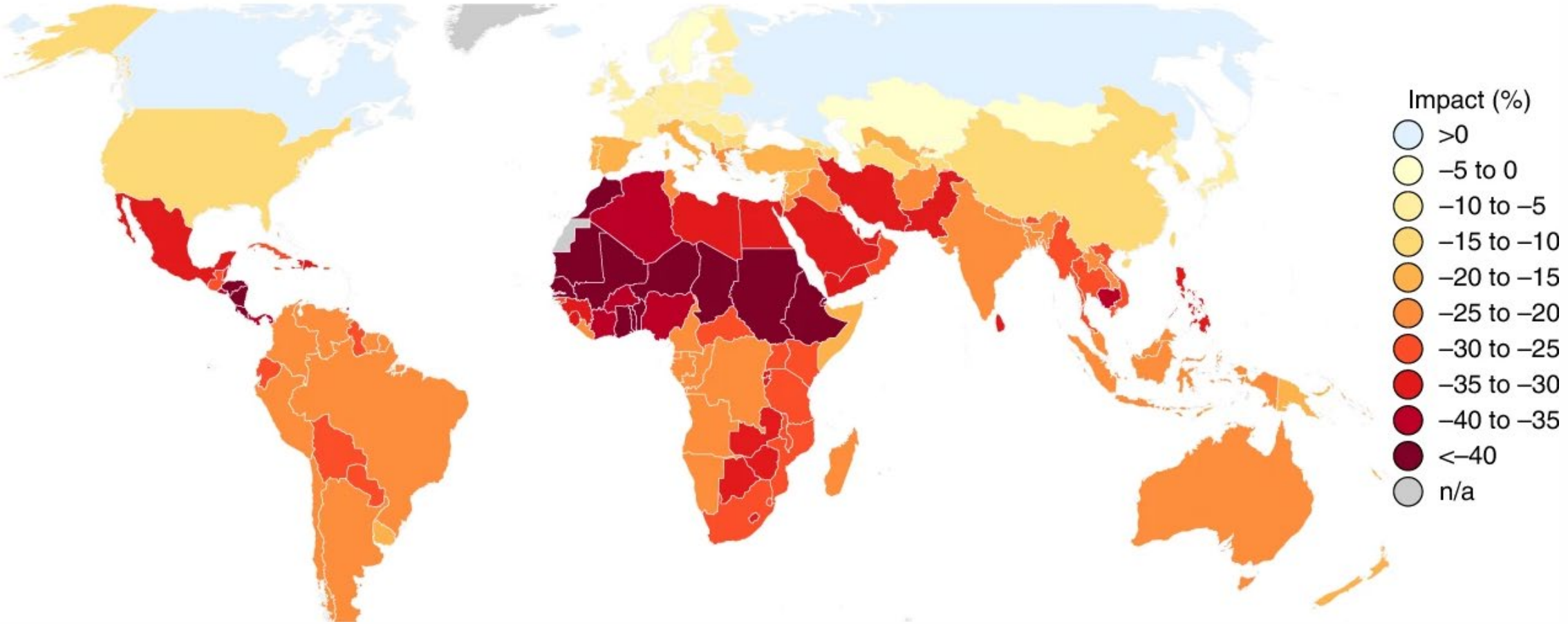




Source: “Global prospects and policies”. World Economic Outlook (April 2021), IMF 2021.

Climate Change and Food Security

Country-level impacts of anthropogenic climate change (ACC) on agricultural productivity: Year 2020



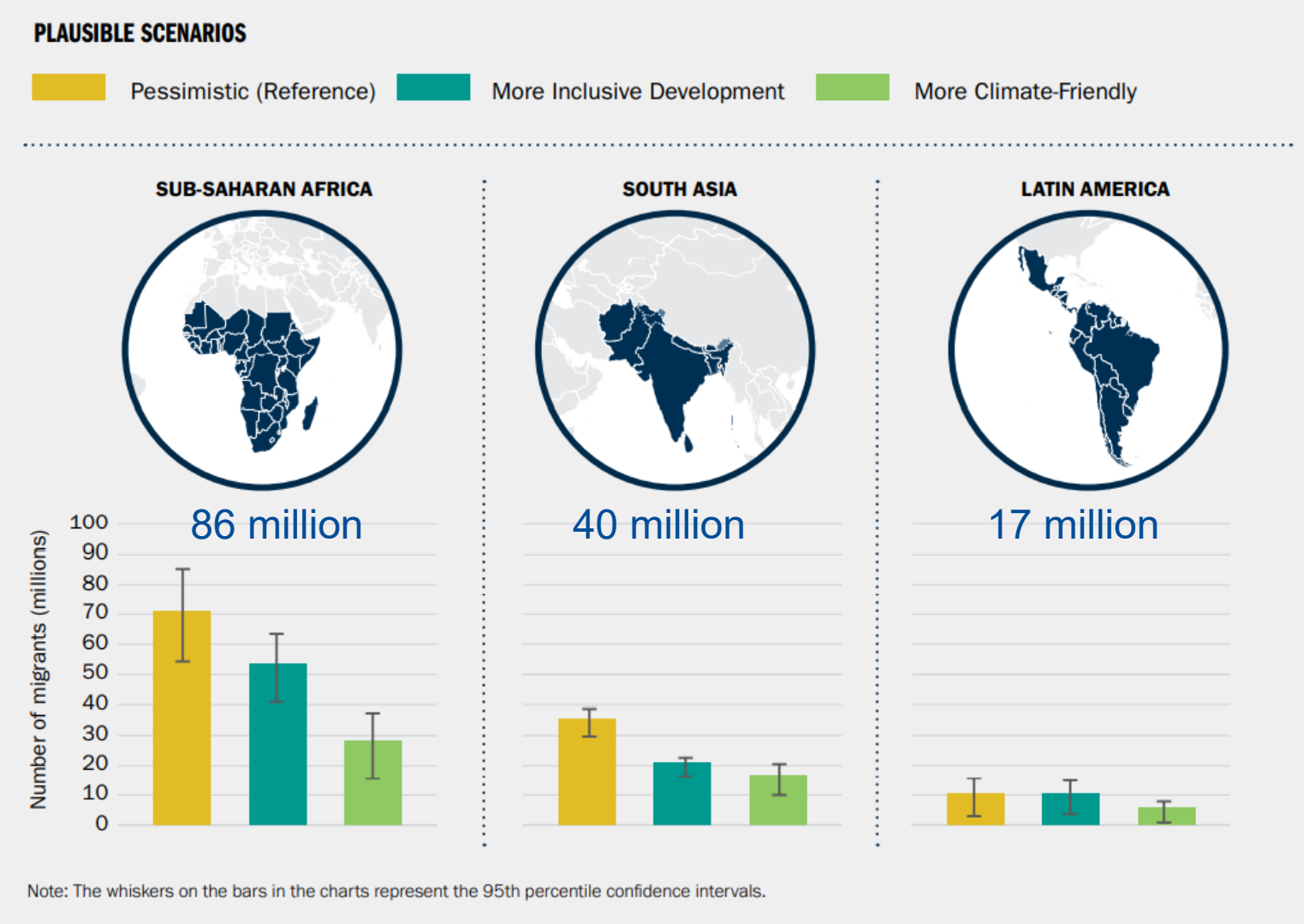
Source: Ortiz-Bobea, A., Ault, T.R., Carrillo, C.M. et al. Anthropogenic climate change has slowed global agricultural productivity growth. Nat. Clim. Chang. 11, 306–312 (2021). https://doi.org/10.1038/s41558-021-01000-1

Climate change and migration

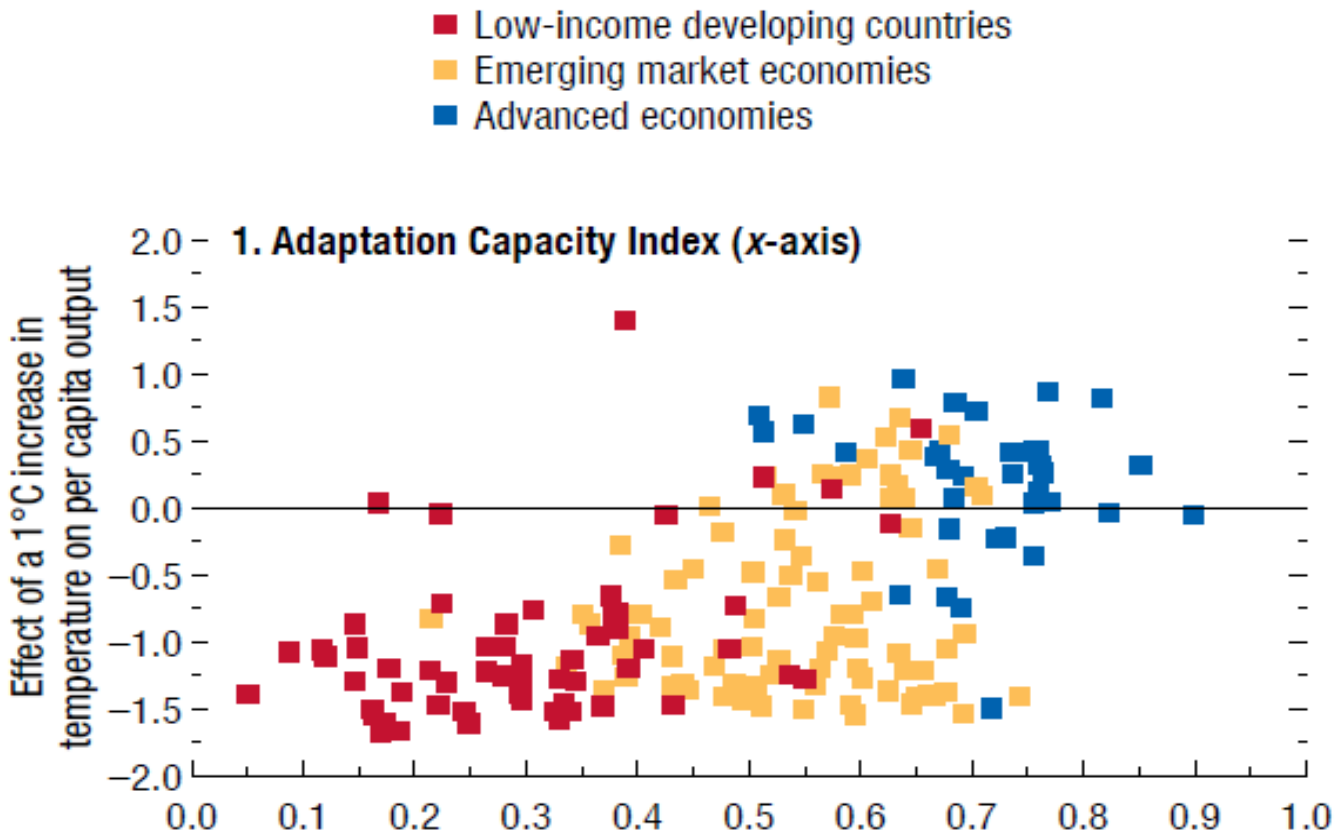
143+ million people internally displaced by 2050 in three regions alone

Source: Rigaud, Kanta Kumari; de Sherbinin, Alex; Jones, Bryan; Bergmann, Jonas; Clement, Viviane; Ober, Kayly; Schewe, Jacob; Adamo, Susana; McCusker, Brent; Heuser, Silke; Midgley, Amelia. 2018. Groundswell : Preparing for Internal Climate Migration. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/29461

Projected number of climate migrants by 2050



Vulnerability to climate change



Larger short-term impact of weather shocks

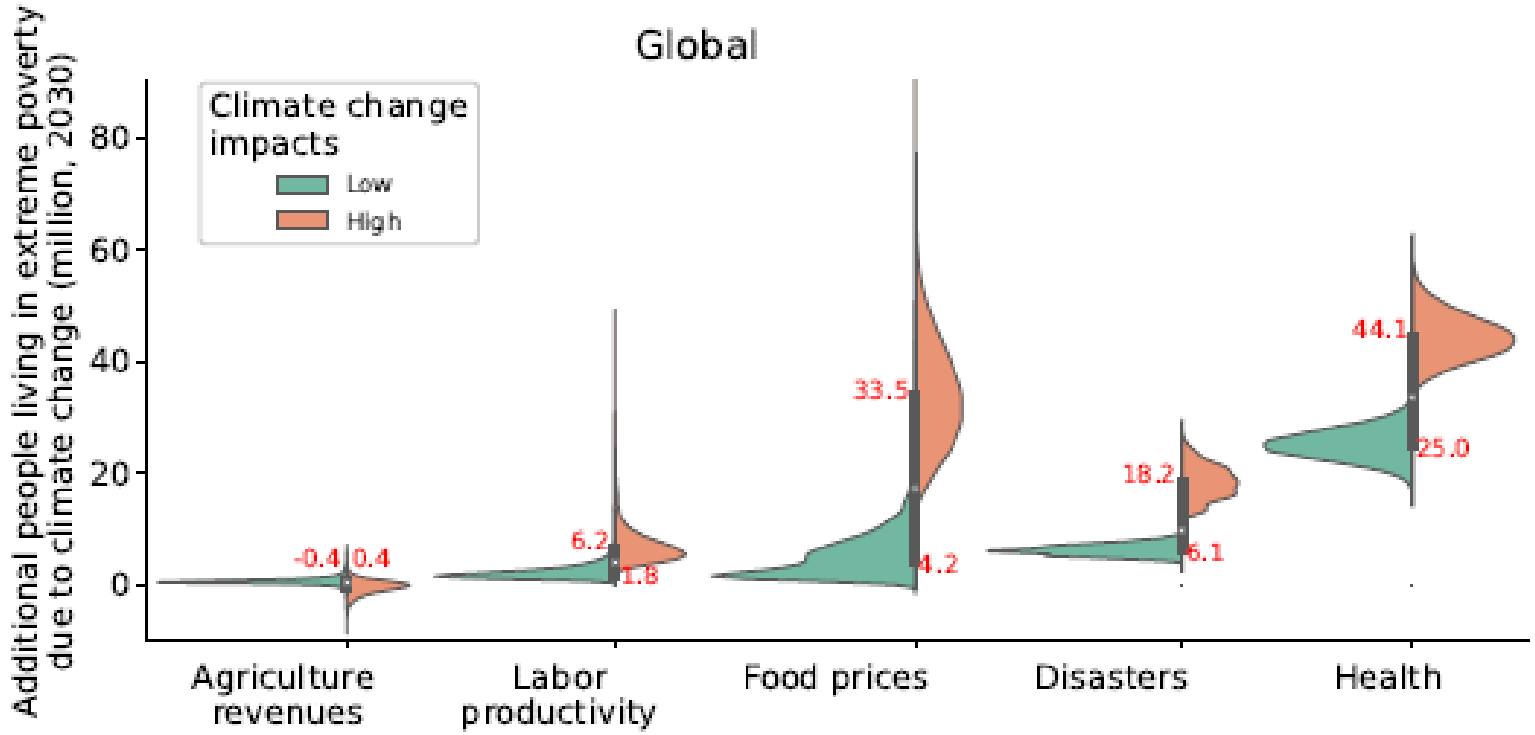
Slower economic recovery

Greater vulnerability to future shocks

Source: “The Effect of Weather Shocks on Economic Activity: How Can Low-Income Countries Cope?”. World Economic Outlook (October 2017), Chapter 3, IMF.

Climate change and poverty

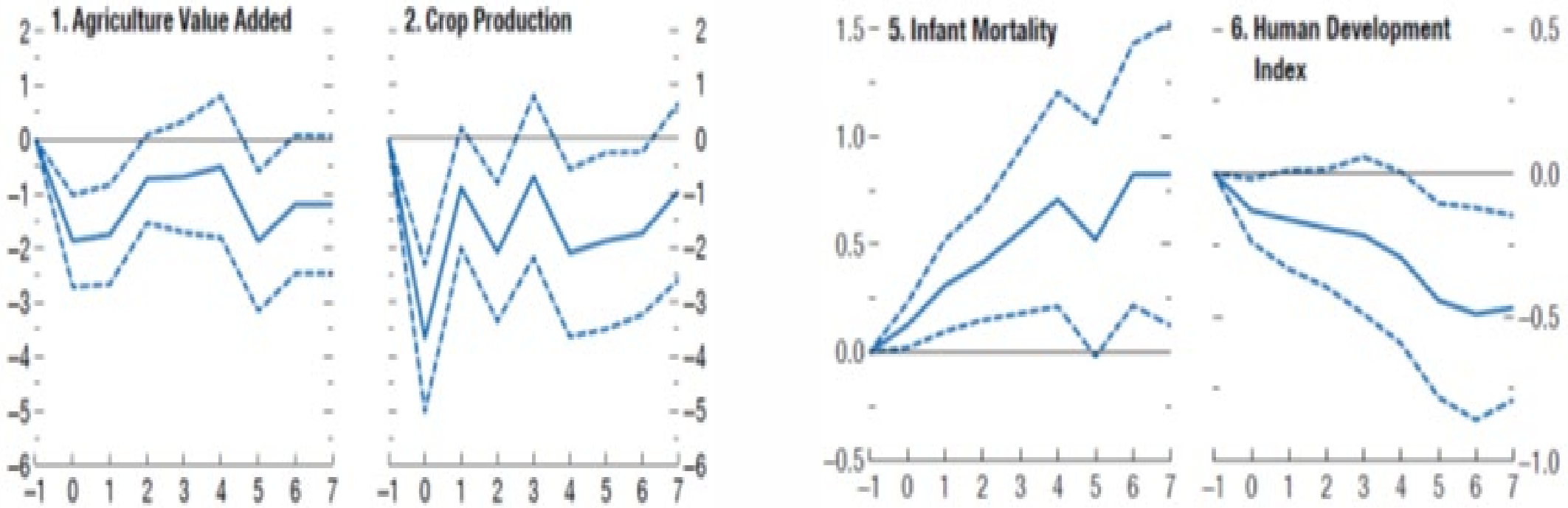
Impacts of individual channel to the number of people falling into extreme poverty in 2030.



Source: Jafino, Bramka Arga; Walsh, Brian; Rozenberg, Julie; Hallegatte, Stephane. 2020. Revised Estimates of the Impact of Climate Change on Extreme Poverty by 2030. Policy Research Working Paper;No. 9417. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/34555

Note: Highlighted red numbers are the median of the distribution

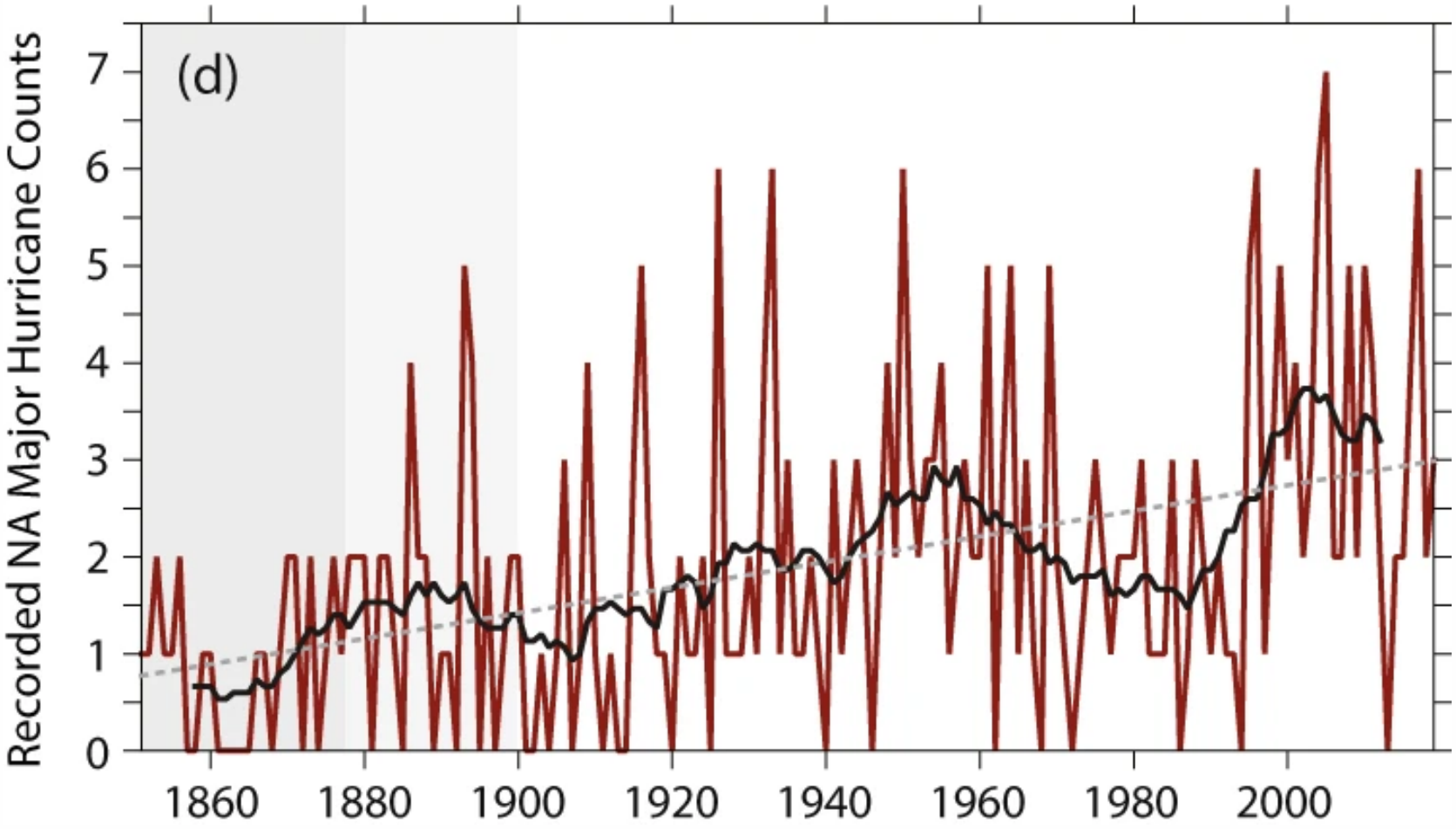
Welfare effects



Source: “The Effect of Weather Shocks on Economic Activity: How Can Low-Income Countries Cope?”. World Economic Outlook (October 2017), Chapter 3, IMF.

Note: The panels depict the effect of a 1°C increase in temperature estimated at the median low-income developing country temperature (25°C). Horizon 0 is the year of the shock. Heat-exposed industries include agriculture, forestry, fishing, and hunting, construction, mining, transportation, utilities, and manufacturing.

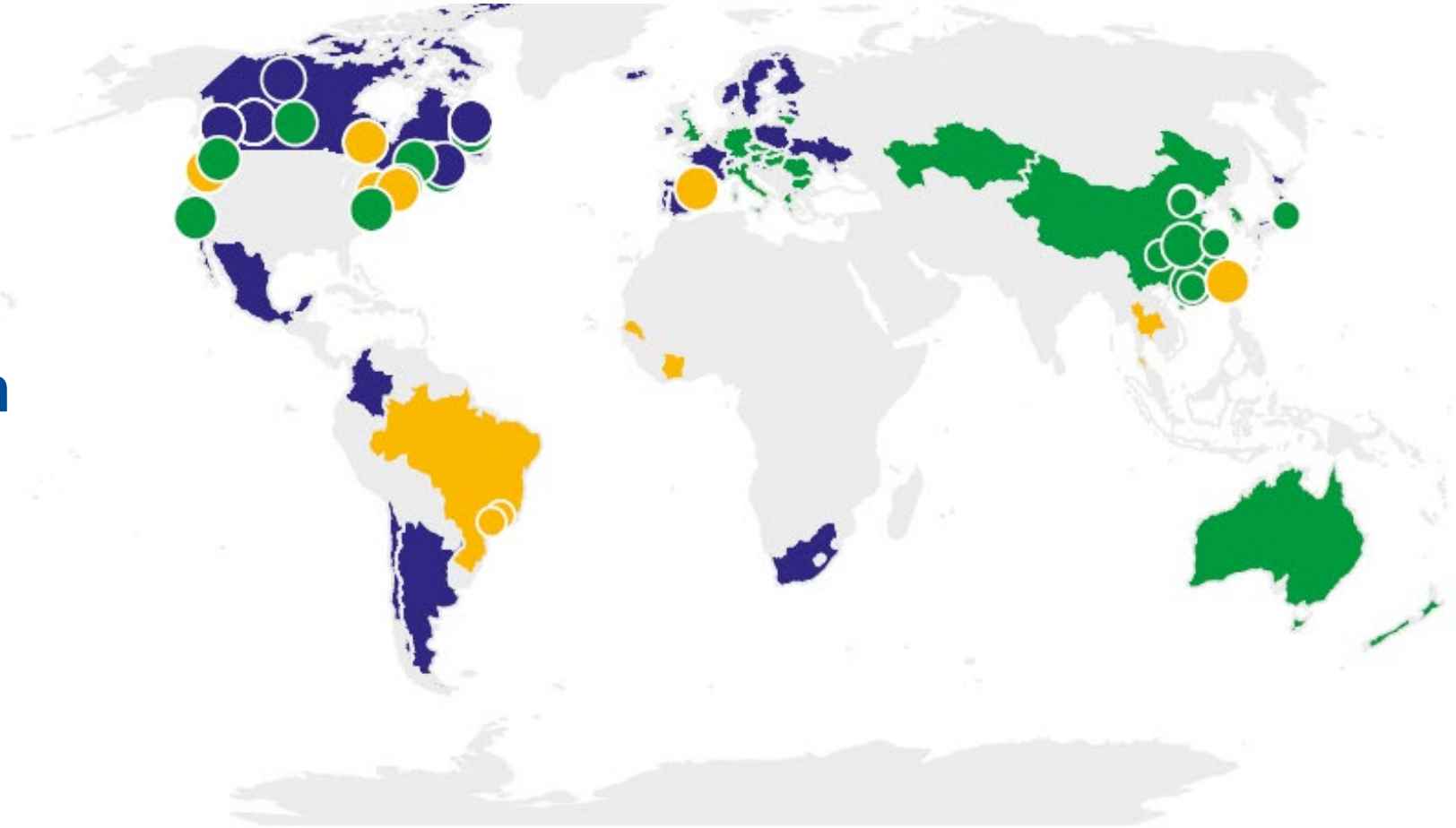
Physical Risks



Source: Vecchi et al., 2021

Transition Risks

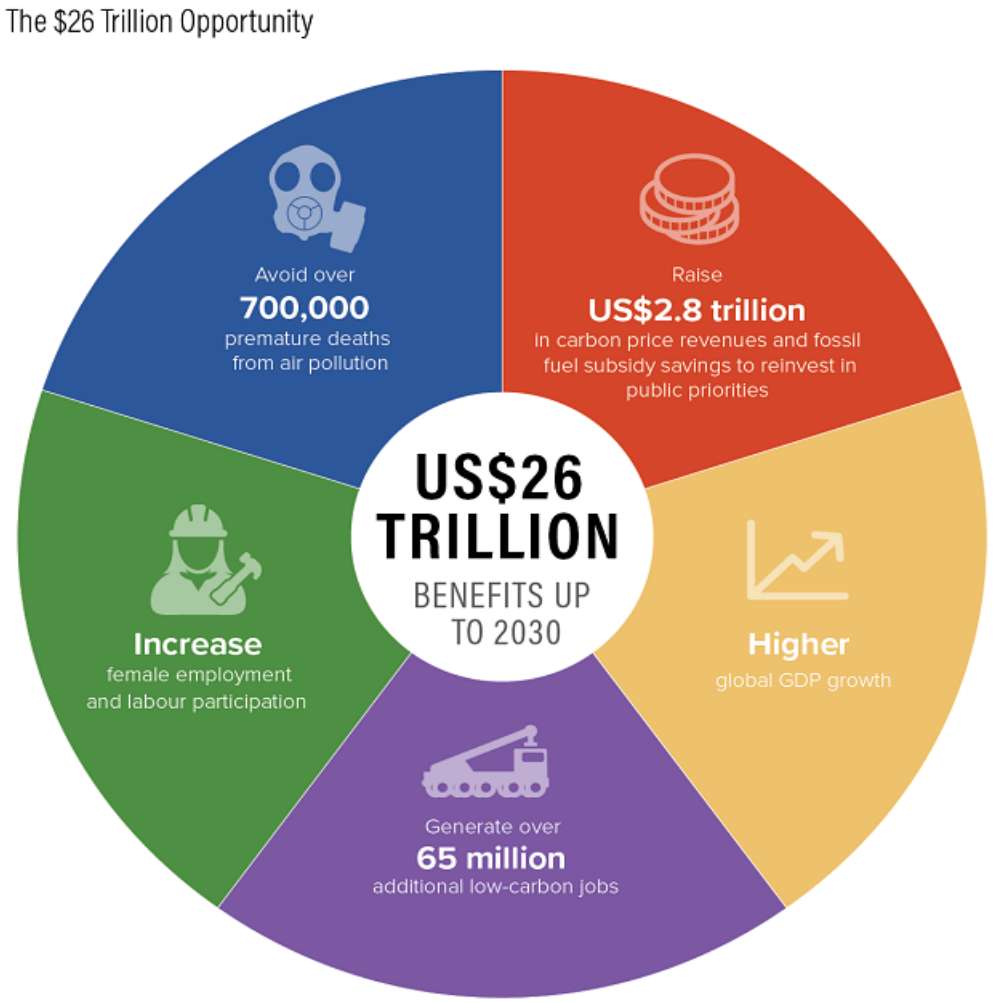
Global Carbon Pricing Initiatives



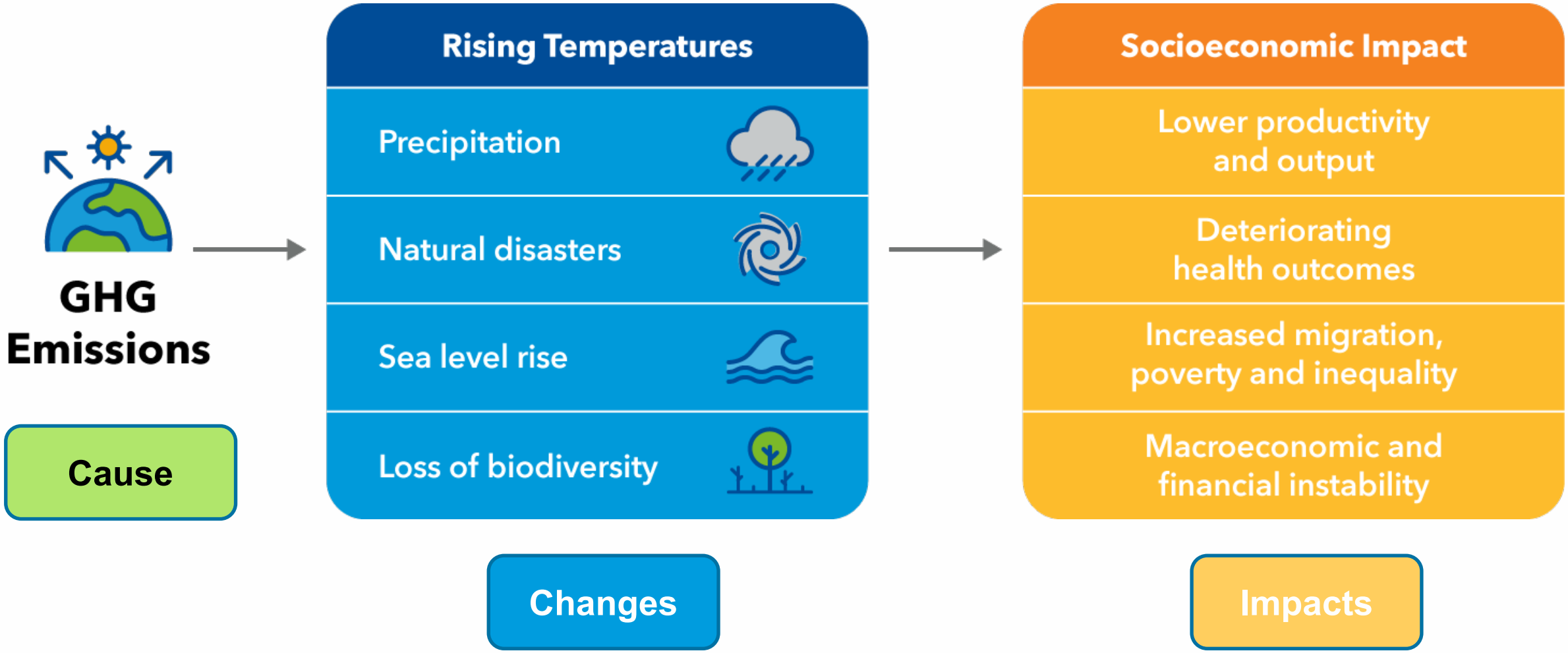
Source: https://carbonpricingdashboard.worldbank.org/map_data

Missed opportunities from delayed action

- Delaying mitigation efforts makes 1.5°C an impossible target to achieve
- Acting now reduces the costs and increases the gains from decarbonization

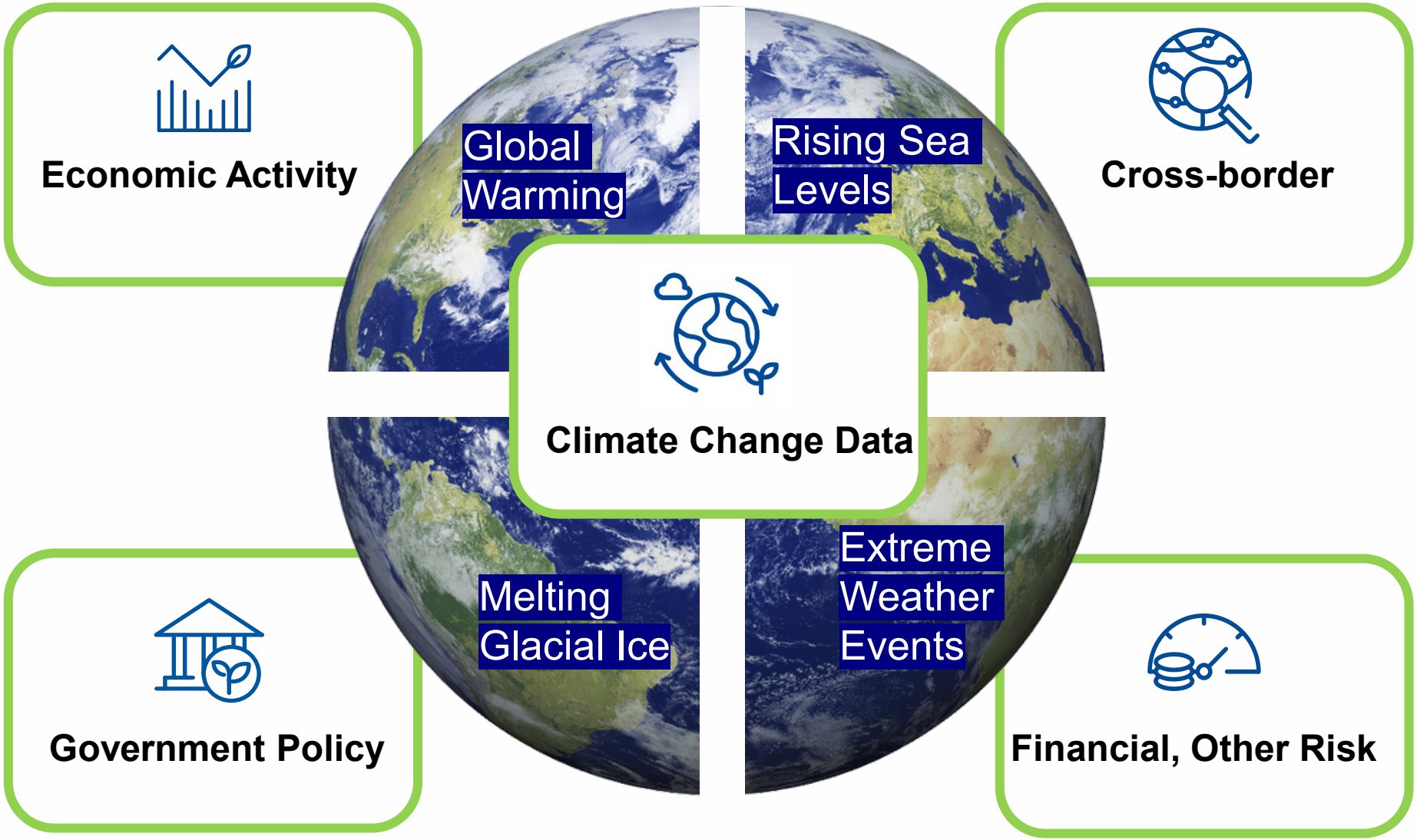


In a nutshell, the dimensions of monitoring are…



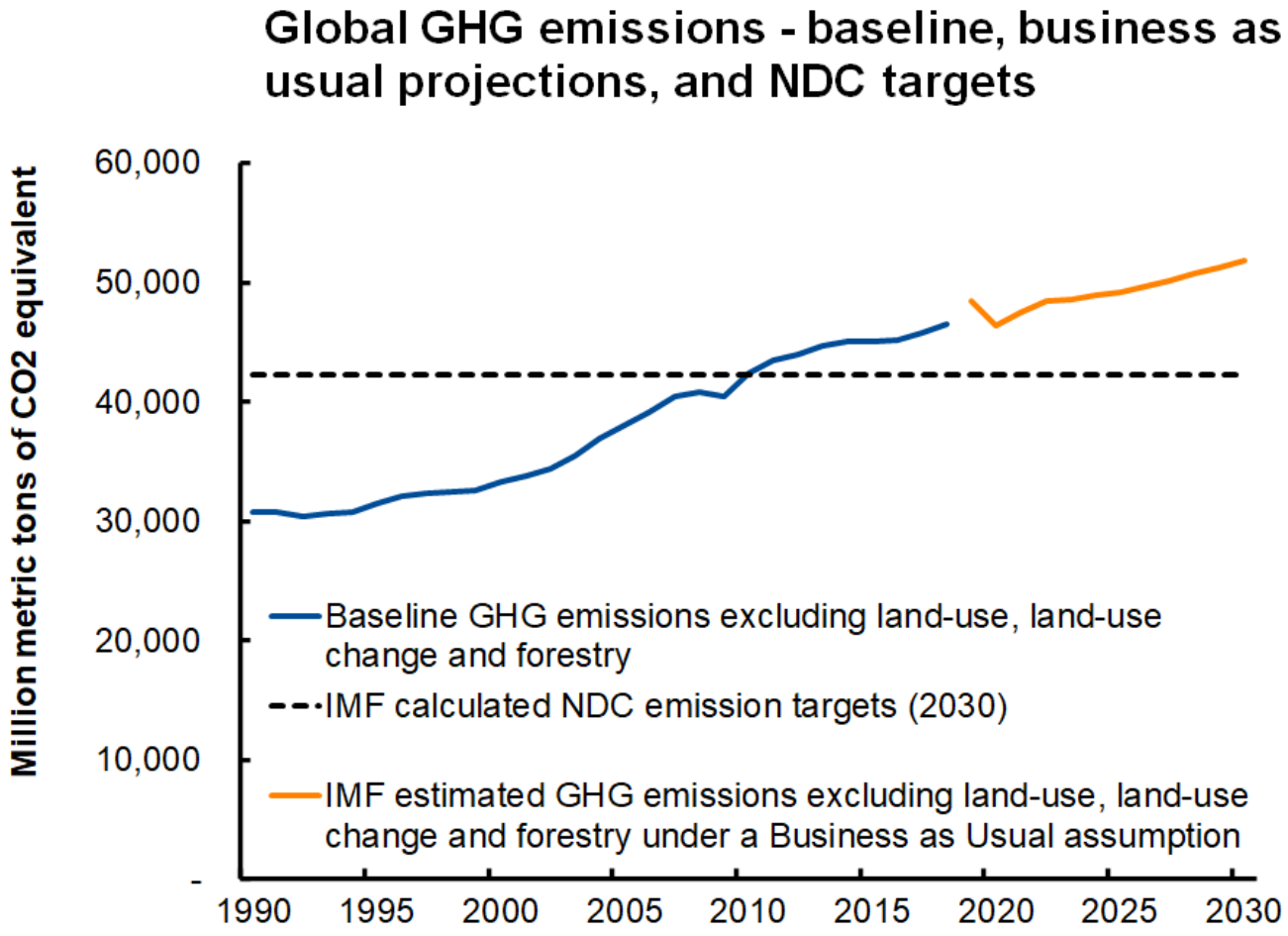
How the System of Environmental Economic Accounting is helping policymakers design effective macroeconomic / finance policies.

IMF's Climate Change Statistical Framework



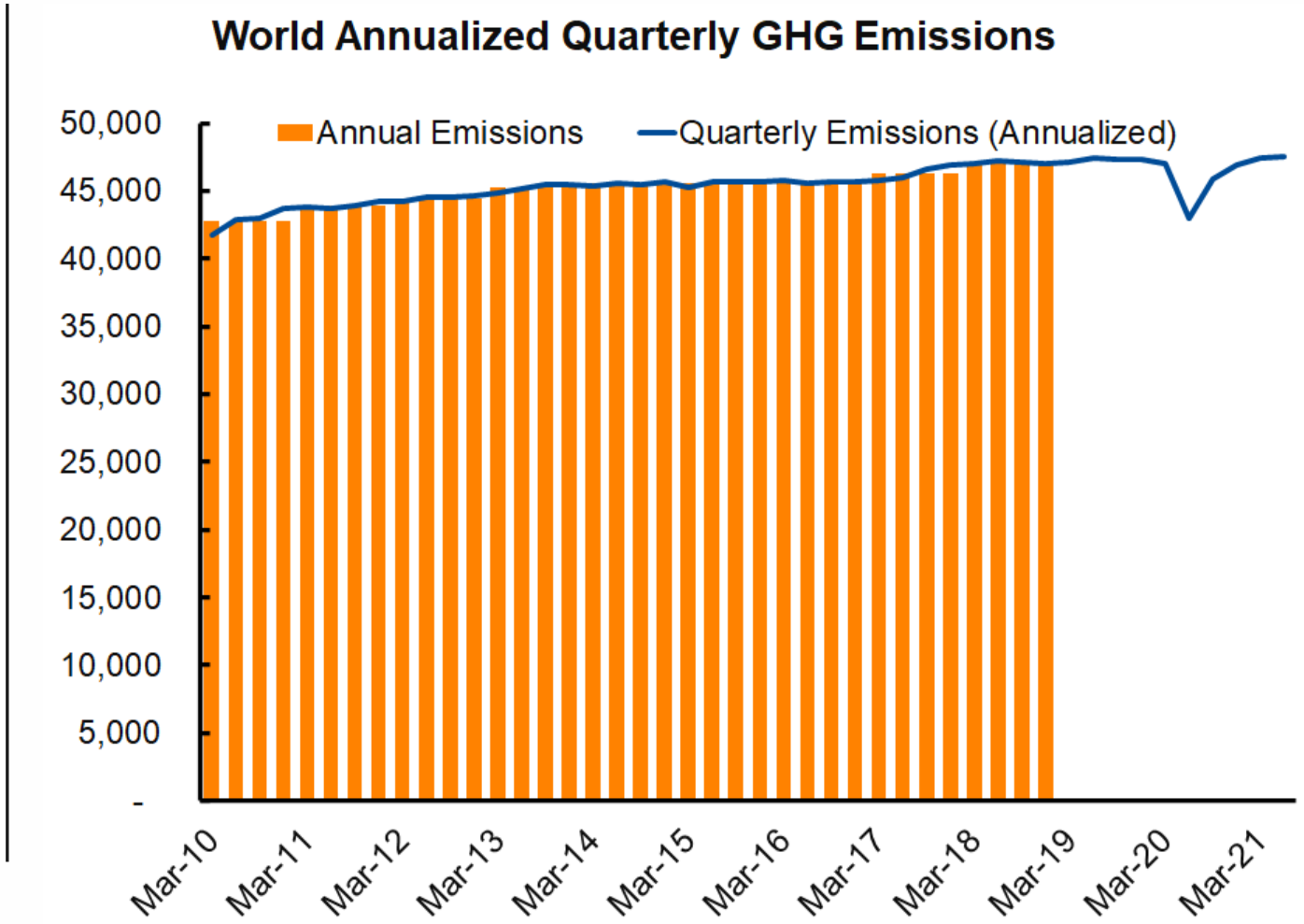
Tracking Emission Targets

Worldwide 2030 emissions targets are 10% below 2018 levels…. well above what is needed to limit warming to 2º Celsius by 2050.



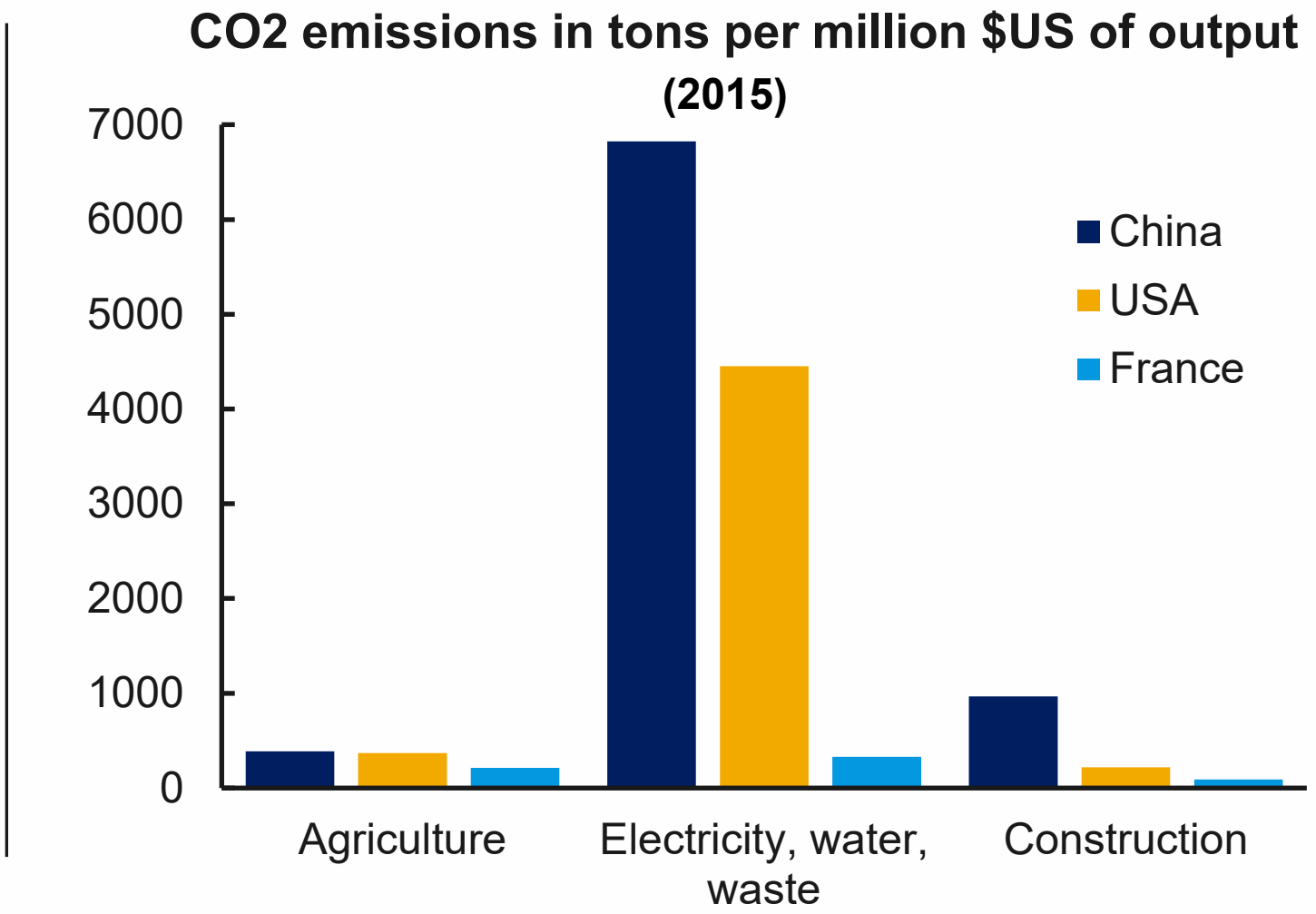
Quarterly Greenhouse Gas Emissions

COVID-19 resulted in a large temporary(?) decline in GHG emissions worldwide.



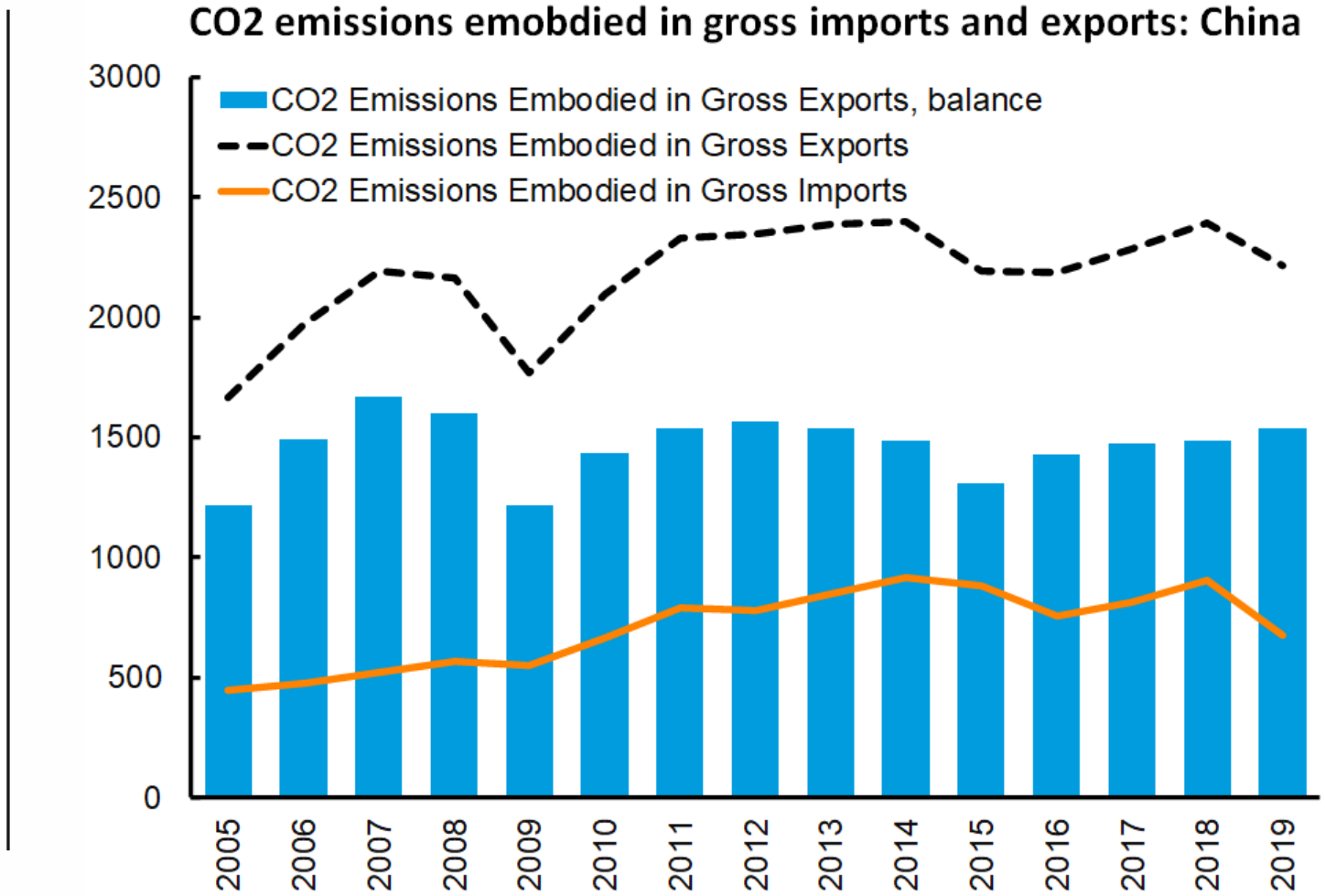
CO2 Emissions

CO2 emissions per unit of output from the electricity, water and waste industry in China and the USA far exceed those in France

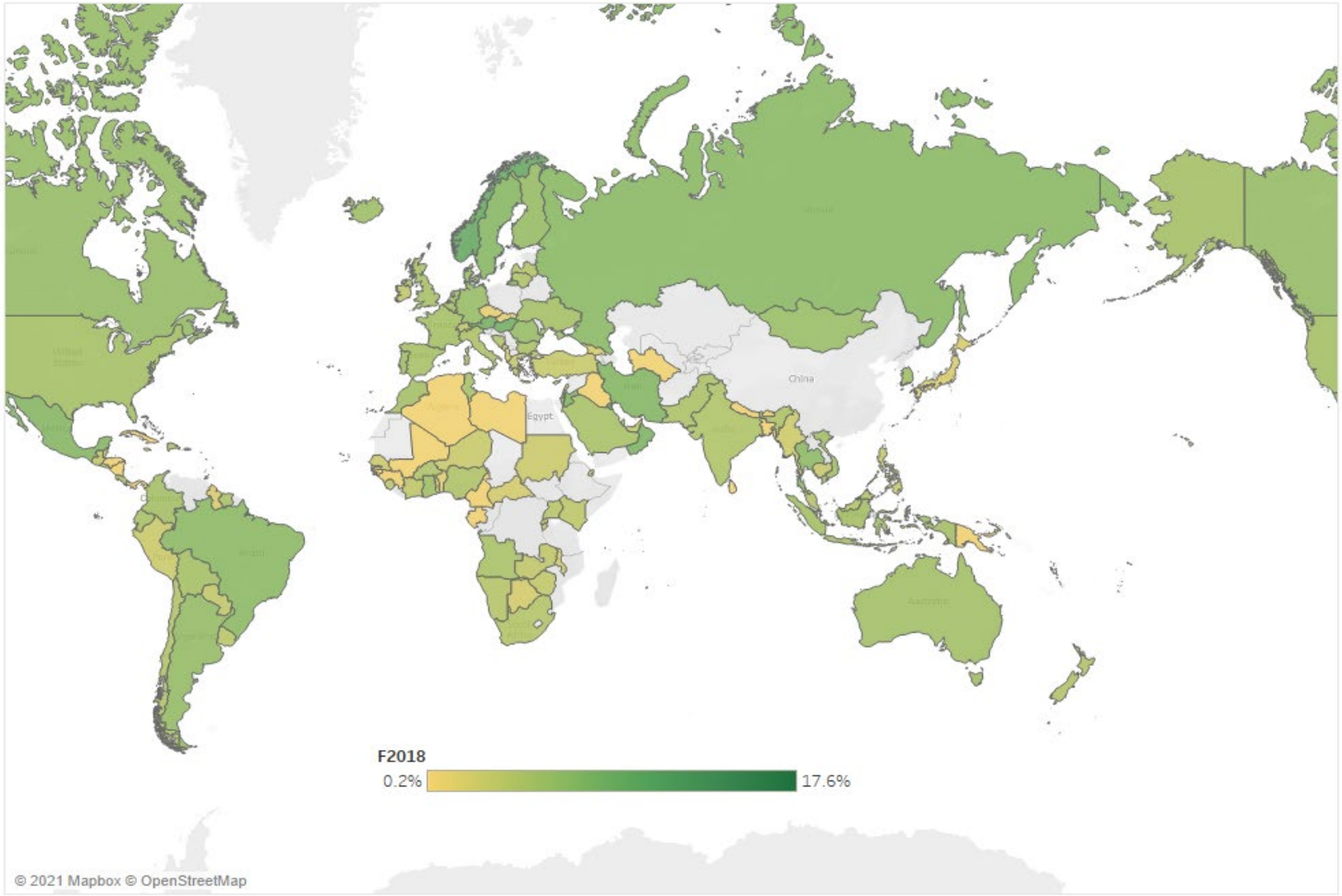


CO2 Emissions Embodied in Trade

- Whether a country is a net exporter or net importer largely reflects the difference between a country's production of CO2 emissions and its demand for them
- Therefore, we need structural changes in both demand and production to reduce global emissions

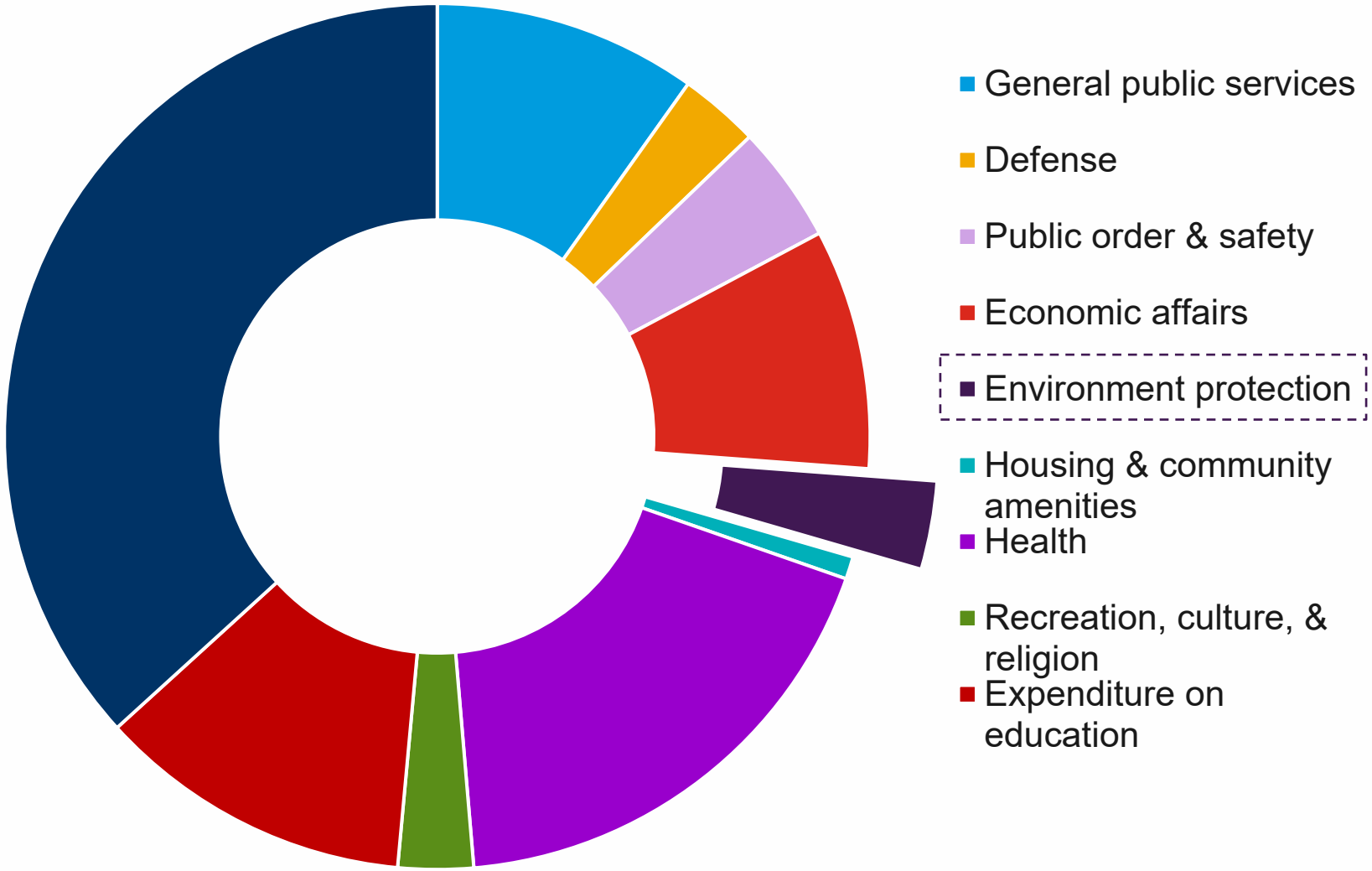


Environmental Goods Imports as Share of Total Imports



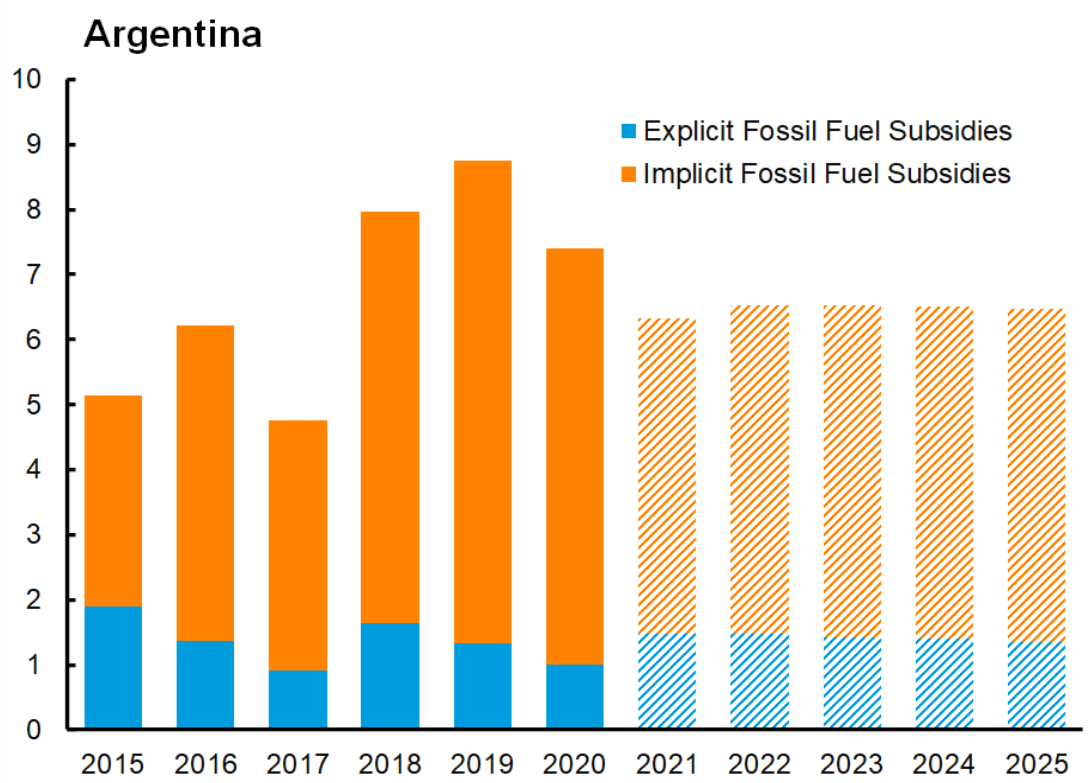
Government Policy Indicators

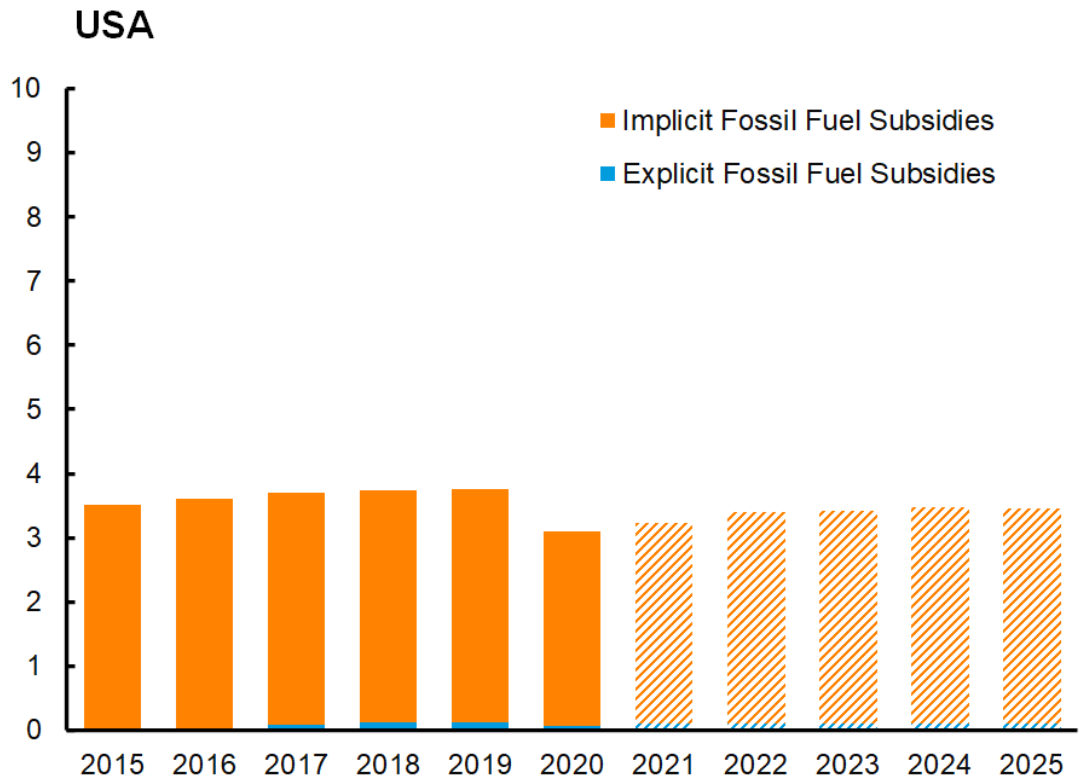
Netherlands
Share of government expenditures, 2019



Government Policy Indicators

Fossil fuel subsidies in percent of constant 2021 price GDP (staff projections for 2021-25)





Questions?

IMF and Climate Change

- Extensive analytical work carried out for supporting better disclosures and standardization
- Climate Change Indicators Dashboard brings together climate-related data needed for macroeconomic and financial policy analysis
- Climate risk analysis incorporated in the Financial Sector Assessment Program
  - to raise awareness and to support increasing the resilience of the financial sector to climate-related risks
- Active support for international efforts, including at the NGFS and standard-setting bodies
  - to bridge data gaps, develop a global set of disclosure standards, and harmonize approaches to align investments with climate goals.

Ferreira, Caio, David Lukáš Rozumek, Ranjit Singh, and Felix Suntheim. 2021. Strengthening the Climate Information Architecture. IMF Staff Climate Note 2021/003, International Monetary Fund, Washington, DC.

How can SEEA help?

Policy Question	Relevant SEEA accounts
Assessment of progress towards emission targets and the transition towards a low carbon economy to understand the efficacy of industrial and structural reforms and their impact on GHG emissions and carbon footprints.	Air Emission Accounts; Carbon Accounts
Direction and magnitude of the transformation of the energy sector	Energy Accounts allow for the calculation of energy intensities and energy footprints; Combined with energy taxes and subsidies, they provide a useful tool for scenario analysis.
Keeping a tab on the offshoring of emissions through trade, investment, and global value chains.	Material Flow Accounts; Air Emission Accounts
Financial implications of measures taken to mitigate the pace of climate change and adapt to the effects of climate change.	Environment Protection Expenditure Accounts, with more detailed information on **domestic and national climate change mitigation and adaptation current and capital expenditures**