
Green Economy and Climate Action

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Outline

- The green Economy
- Climate Change Drivers
- Green Economy and Climate Change Mitigation
- Green Economy and Climate Change Adaptation
- Co-Benefits: Linking Mitigation and Adaptation in a Green Economy
- Key Challenges and Recommendations

The Green Economy

Transformative Nature of Green Economy

- A green economy is first and foremost about transforming the way economies grow.
- Currently, growth is typically generated from investments in high-emission, heavily polluting, waste-generating, resource-intensive, and ecosystem-damaging activities.
- A green economy requires investments to shift towards low-carbon, clean, waste-minimizing, resource-efficient, and ecosystem-enhancing activities.

The green economy: progress & well-being

A green economy can contribute to societal progress and human well-being in two ways:

- Redirecting investments toward green goods and services
- Redirecting investments toward the strengthening of human and social capital.

Transition to a green economy: main pillars

- The importance of **policy** is to develop markets, facilitate private sector participation, and generate investment through green strategies.
- A significant area of potential systemic policy impact is associated with the **greening of the financial system** which can have a particular impact in scaling-up environmentally sustainable private finance.
- Carbon pricing schemes and other **market-based instruments** introduce price signals for environmental externalities to trigger economy-wide and sectoral systemic effects.
- **Legislation, regulations, and standards** are required to support the effective implementation of strategies and policies.

Transition to a green economy: priority areas

The main selection criteria for priority areas to transition to a green economy may include for example:

- Areas with the highest potential opportunities
- Potentials for scale-up activities
- Innovation potentials.

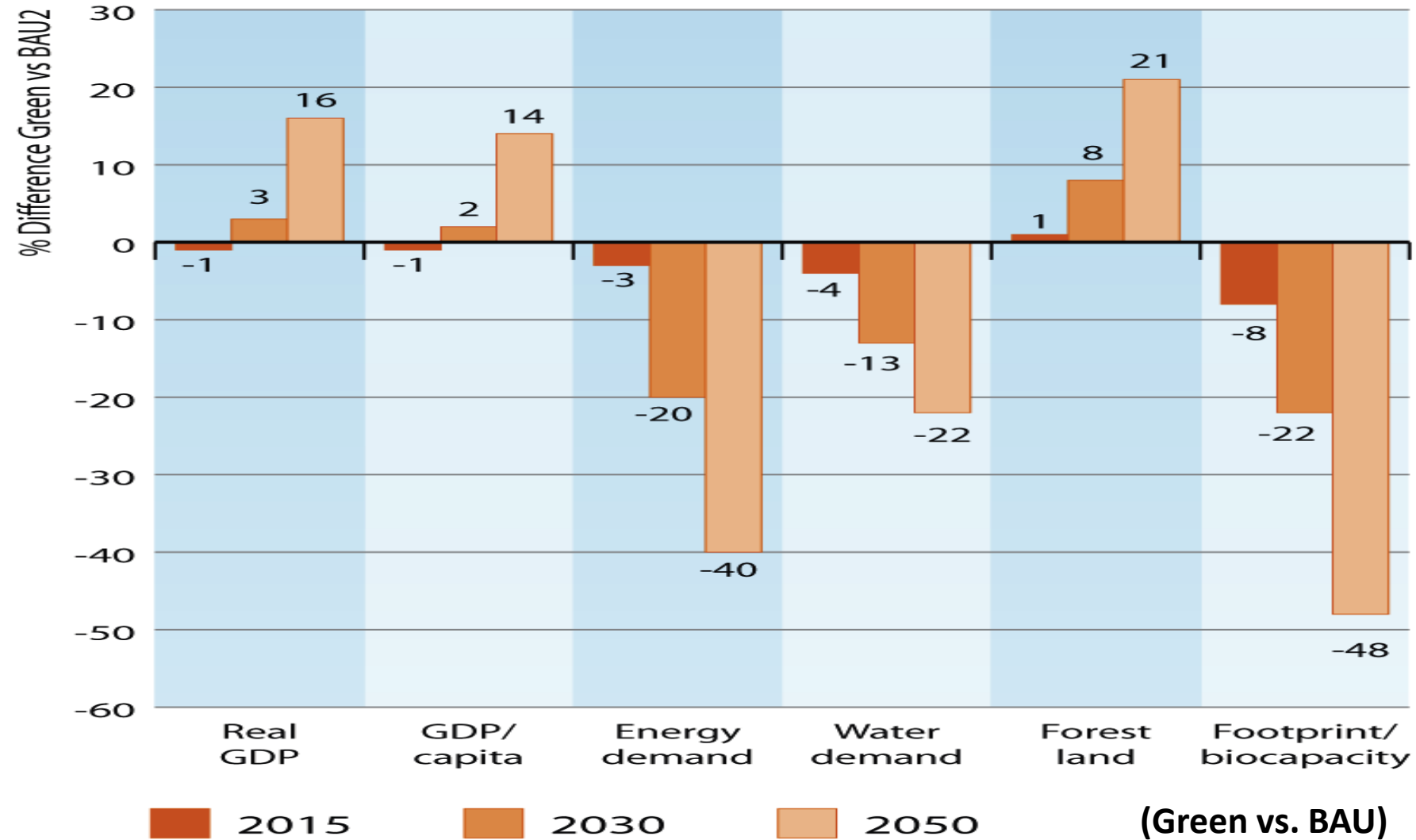
Transition to a green economy: priority areas

Certain general priority areas can lead the transition to a green economy including for example:

- Renewable energy.
- Green buildings.
- Sustainable transport.
- Water management.
- Waste management.
- Land management. (Karl Burkart)

However, it's not a standard list, but it should be based on prevailing economic, socio-cultural, and environmental conditions in each country.

Transition to a green economy: Benefits



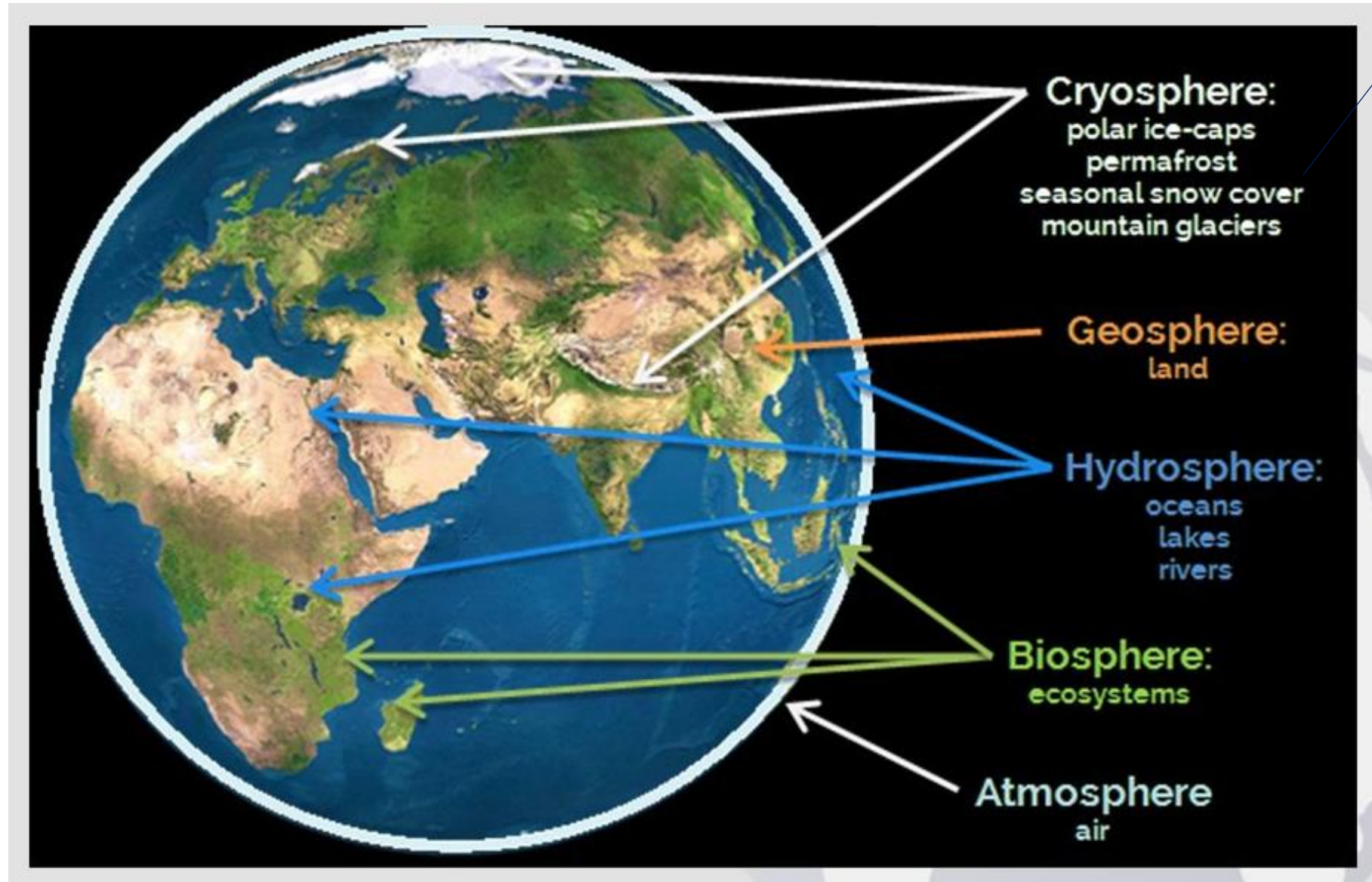
Source: UNDP, 2011, Towards a green economy

Economic and employment implications (1)

- Moving towards a green economy means structural changes in the economy, both in terms of investment and job opportunities.
- More investment and job opportunities means the provision of qualified labor, while less jobs in the polluting and high GHG-emission sectors
- There's a need for social protection measures, such as unemployment insurance and adequate pension and healthcare schemes are necessary to protect workers at risk.
- Access to long-term, low-cost debt to finance green economy priority projects.

Climate Change Drivers

The climate system: components



The system is generally in balance

Climate change: definitions

IPCC definition refers to any change in climate over time, whether due to natural variability or as a result of human activity.

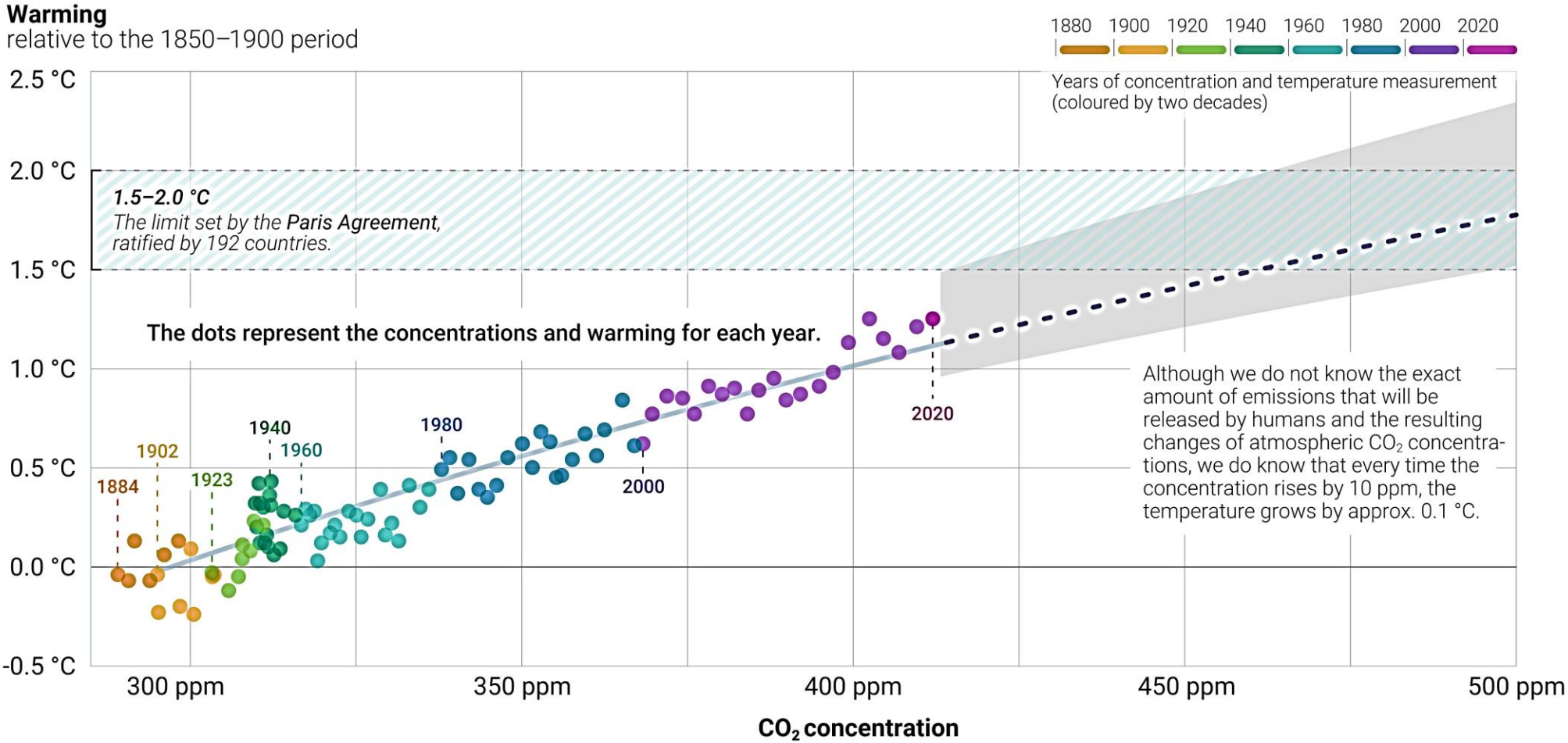
Climate change (IPCC):

- “a change in the state of the climate that can be identified (e.g. using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer.

Climate Change (UNFCCC) :

- “a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods.

GHG Concentrations and Global Warming

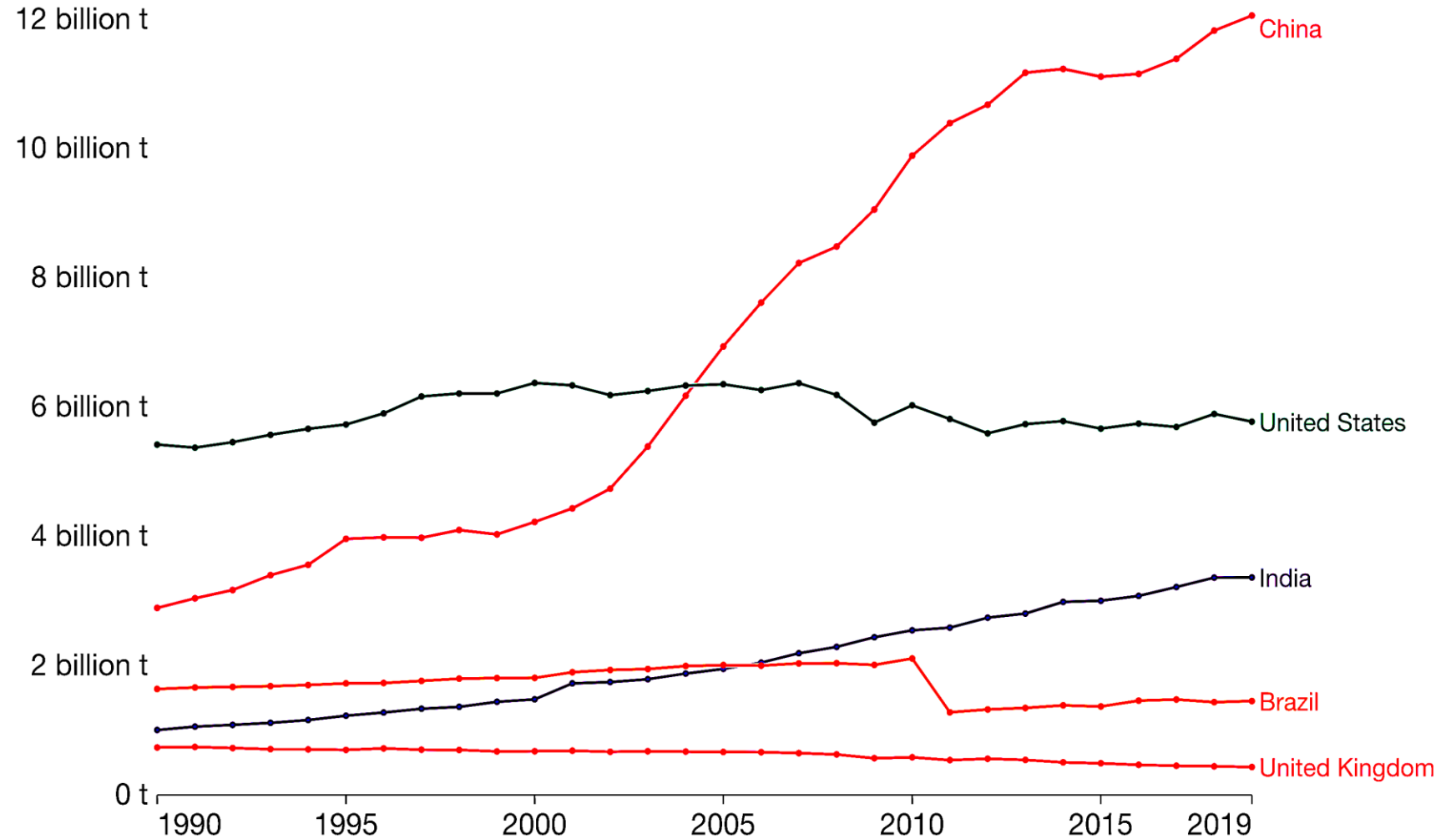


Data source: NOAA, NASA Goddard Institute for Space Studies

Total greenhouse gas emissions by country, (1990 – 2020)

Total greenhouse gas emissions

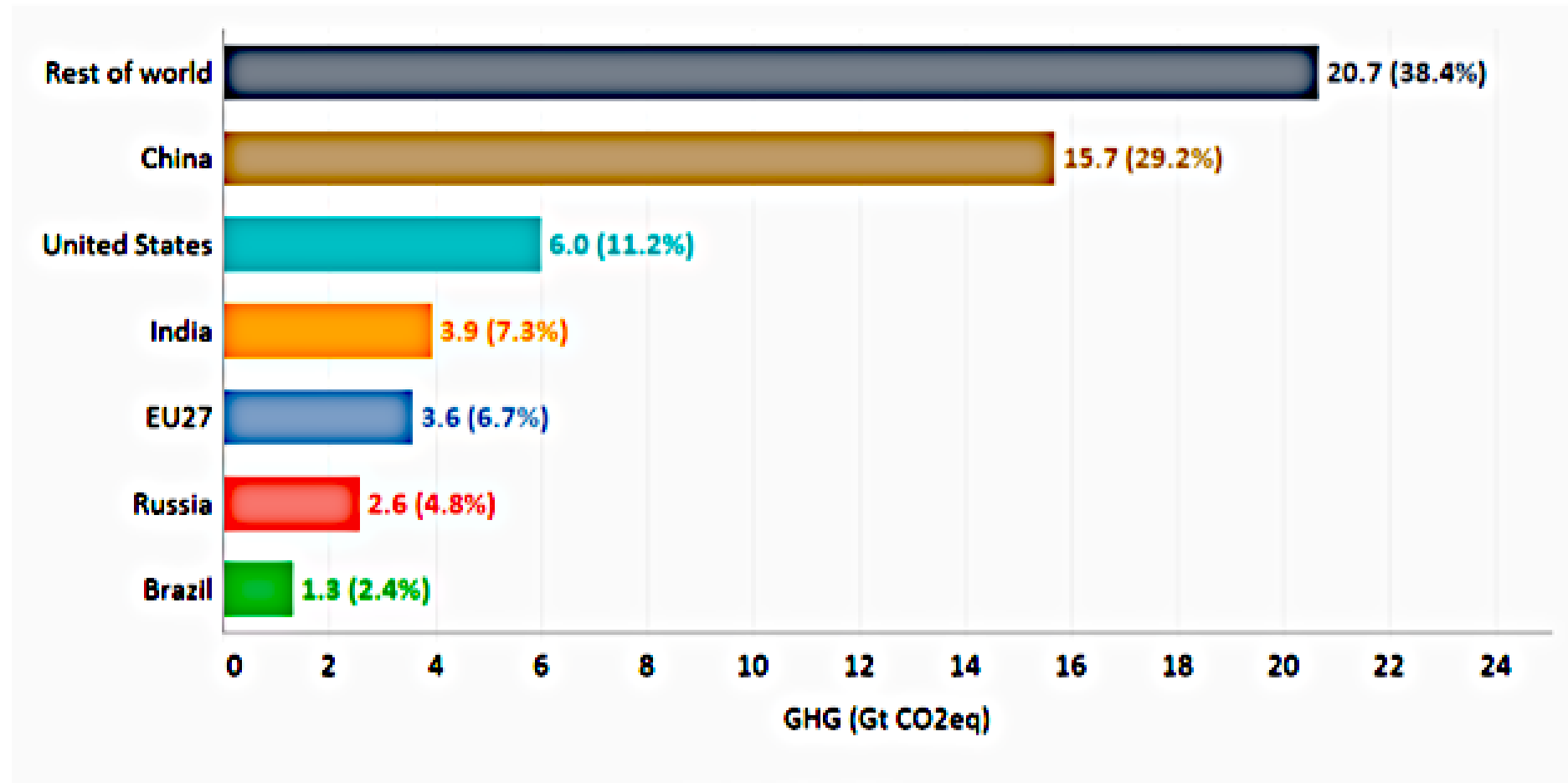
Greenhouse gas emissions¹ are measured in carbon dioxide-equivalents (CO₂eq)². Emissions from land use change – which can be positive or negative – are taken into account.



Source: Our World in Data based on Climate Analysis Indicators Tool (CAIT).
OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

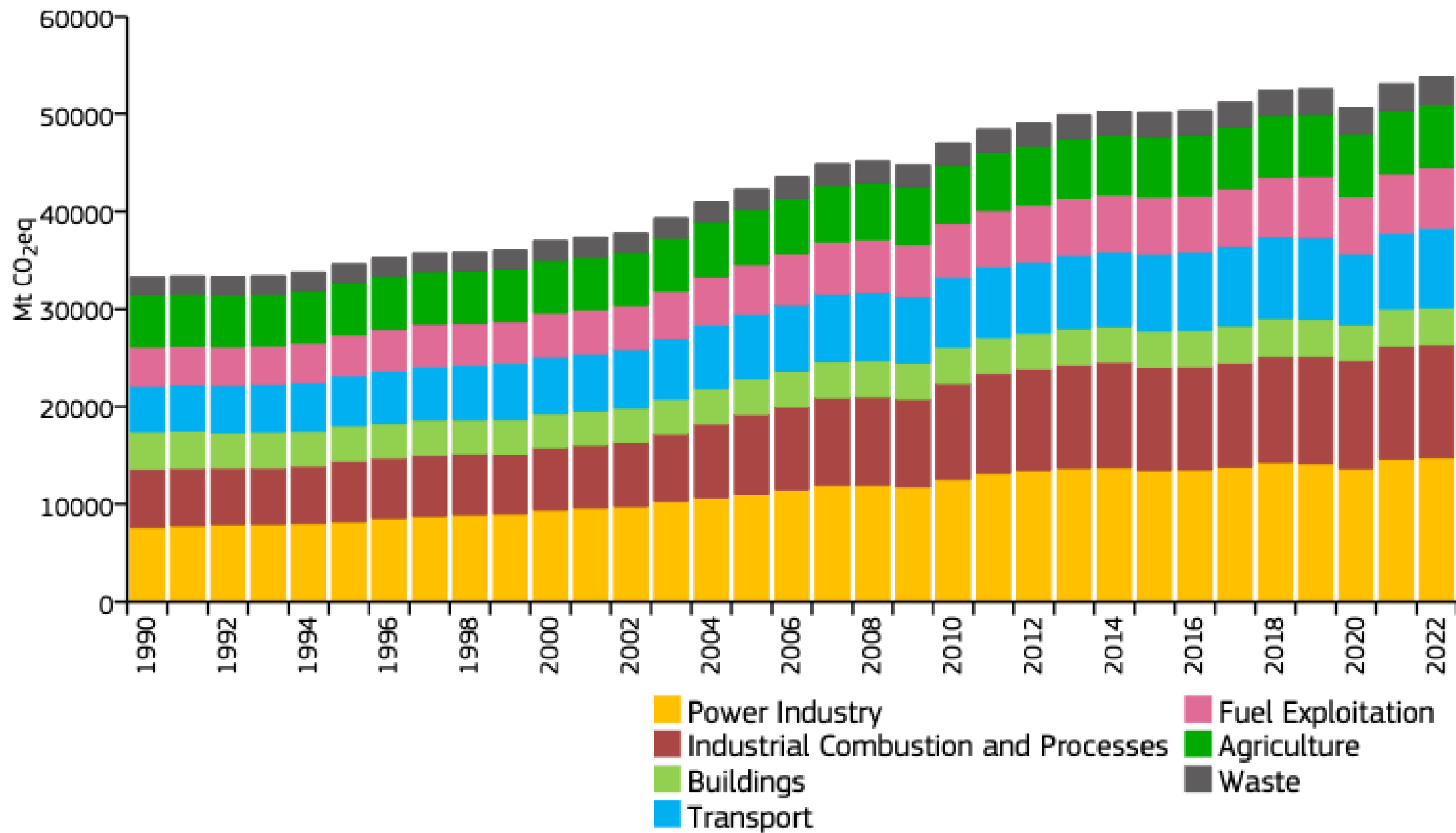
GHG emission (in Gt CO₂), in 2023 per country

Figure 1. GHG emissions (in Gt CO_{2eq}) and contribution of the major emitting economies and the rest of the world in 2022, (in Gt CO_{2eq})



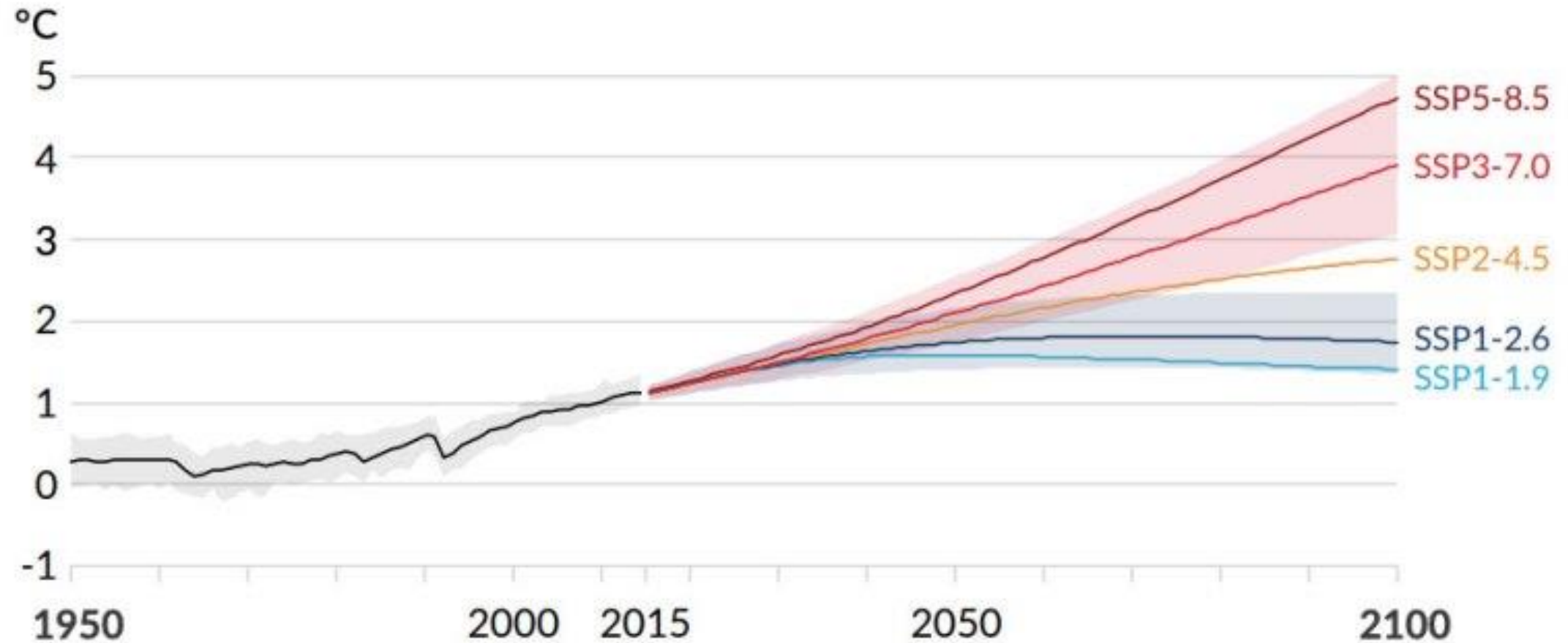
Source: JRC, 2023

Distribution of GHG emissions in 2023, by sector



AR5: Projected global average surface temperature

a) Global surface temperature change relative to 1850-1900



Green Economy & Climate Change Mitigation

Economics of climate change mitigation

- Mitigation is about Climate change mitigation refers to any action taken to reduce or prevent greenhouse gases or to enhance carbon sinks.
- IPCC WGII found that implementing mitigation measures to reduce emissions enough to limit probable warming to:
 - 2°C entails losses to global GDP of 1.3% and 2.7% in 2050
 - 1.5°C, losses are between 2.6% and 4.2%.
- However, cutting emissions this way would also entail benefits, likely to outweigh global mitigation costs over the 21st century.

Economics of climate change mitigation (2)

- Note that there would be positive mitigation costs e.g., energy demand reduction, renewable energy development, and green investments.
- Science shows that to avert the worst impacts of climate change, global temperature increase needs to be limited to 1.5°C above pre-industrial levels.
- To keep global warming to no more than 1.5°C emissions need to be reduced by 45% by 2030 and reach net zero by 2050, requiring a complete transformation of how we produce, consume, and move about.

Green Economy-Based Mitigation Strategies (1)

a. Renewable Energy Transition

- Shifting investments from fossil fuels to renewable energy sources (solar, wind, geothermal, biomass, hydropower), a green economy lowers carbon intensity in power generation.
- Scaling up renewable energy could reduce global CO₂ emissions by more than 70% by 2050 (IRENA, 2021).

b. Energy Efficiency

- Promoting efficiency in buildings, transportation, and industry and reducing emissions by lowering demand for fossil fuels.
- Efficiency improvements could deliver more than 40% of the emissions reductions needed to meet the Paris Agreement targets (IEA, 2020) .

Green Economy-Based Mitigation Strategies (2)

c. Sustainable Transport Systems

- Expanding public transport, electrification of vehicles, and investments in non-motorized transport (cycling, walking) lower reliance on fossil fuels.
- Reduce CO₂ emissions and improve air quality in cities (Creutzig et al., 2015, *Nature Climate Change*).

d. Sustainable Agriculture and Forestry

- Climate-smart agriculture reduces emissions from fertilizer use, livestock, and deforestation while improving food security.
- A green economy invests in agroecology, organic farming, and reforestation, all of which enhance carbon sinks (FAO, 2019).

Green Economy & Climate Change Adaptation

Climate change adaptation

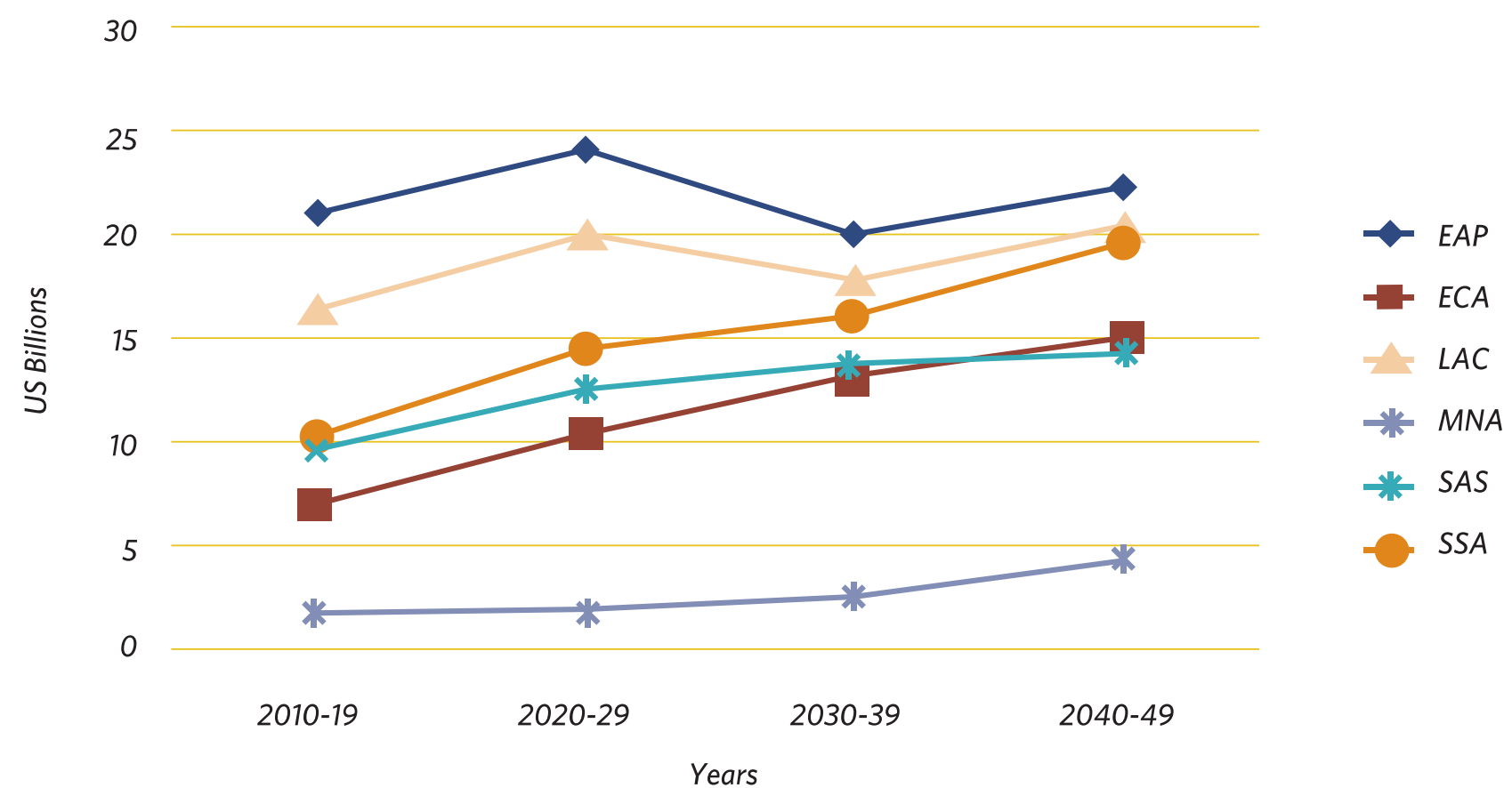
- Adaptation Climate adaptation means taking action to prepare for and adjust to the current and projected impacts of climate change.
- There is an increasing need for adaptation as resources available to decision-makers are limited, a better understanding of the costs and benefits of adaptive actions is needed.
- For example, the EEA estimated that the total economic losses from weather- and climate-related events between 1980 and 2021 amounted to more than EUR 560 billion (based on euro values in 2021) in the 27 EU Member States.

Green Economy as a Framework for Adaptation (1)

- A green economy is fundamentally concerned with sustainable development, encompassing environmental protection, resource efficiency, and social equity.
- Within this framework, climate change adaptation involves adjustments in natural or human systems to mitigate negative impacts or exploit beneficial opportunities arising from climate change.
- Key connections include:
 - Sustainable Development as an Enabler
 - Green Growth Strategies
 - Sustainable Finance Initiatives
 - Green Manufacturing and Circular Economy

Annual adaptation costs by region and time period

TOTAL ANNUAL COST OF ADAPTATION FOR THE NATIONAL CENTRE FOR ATMOSPHERIC RESEARCH (NCAR) SCENARIO, BY REGION AND DECADE (\$ billions at 2005 prices, no discounting)



Note: EAP is East Asia and Pacific, ECA is Europe and Central Asia, LAC is Latin America and Caribbean, MNA is Middle East and North Africa, SAS is South Asia, and SSA is Sub-Saharan Africa.
Source: World Bank 2010a.

Green Economy-Based Adaptation Strategies (1)

a. Ecosystem-Based Adaptation (EbA)

- Protecting and restoring ecosystems such as mangroves, wetlands, and forests provide natural buffers against floods, storm surges, and droughts.
- EbA is often more cost-effective and sustainable than hard infrastructure solutions (UNEP).

b. Climate-Resilient Infrastructure

- A green economy directs finance to resilient infrastructure (e.g., flood-resistant housing, climate-proof roads, water-saving irrigation systems).
- This reduces vulnerability to extreme weather and minimizes economic losses (Hallegatte et al., 2016, *World Bank*).

Green Economy-Based Adaptation Strategies (2)

c. Diversification of Livelihoods

- Investing in green jobs (renewable energy, sustainable tourism, circular economy activities) helps communities reduce dependence on climate-sensitive sectors like rain-fed agriculture.
- This strengthens adaptive capacity, especially in developing countries (UNDP, 2020).

• d. Sustainable Water and Agriculture Management

- Efficient irrigation, drought-resistant crops, and integrated water resources management ensure food and water security under changing climate conditions.
- These measures directly align with green economy principles of resource efficiency (IPCC, 2022, AR6 WGII).

Co-Benefits: Mitigation & Adaptation in a Green Economy

Creating synergies between mitigation and adaptation

- Urban green spaces reduce heat stress (adaptation) while absorbing CO₂ (mitigation).
- Renewable energy reduces GHG emissions (mitigation) while providing reliable energy for climate adaptation needs like water pumping or cooling during heatwaves.
- Agroforestry sequesters carbon (mitigation) while improving soil fertility and resilience to drought (adaptation).

Key Challenges and Recommendations

Challenges

- While the green economy offers a pathway for climate action, challenges include:
 - High initial investment costs for renewable energy and infrastructure.
 - Institutional capacity and governance gaps in developing countries.
 - Risk of “greenwashing” if policies are not genuinely aligned with sustainability goals.
 - Mitigation Bias in Green Finance, where mitigation efforts are usually prioritized overlooking critical adaptation needs.
 - Lack of Integration between banking and national climate plans
 - Perceived Lack of Profitability
 - Systemic Barriers such as absence of unified standards, insufficient data, and inadequate policy and regulatory support and incentives

Thank you