

The state of climate action

Anand Patwardhan

School of Public Policy

University of Maryland, College Park

Email: apat@umd.edu

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Outline

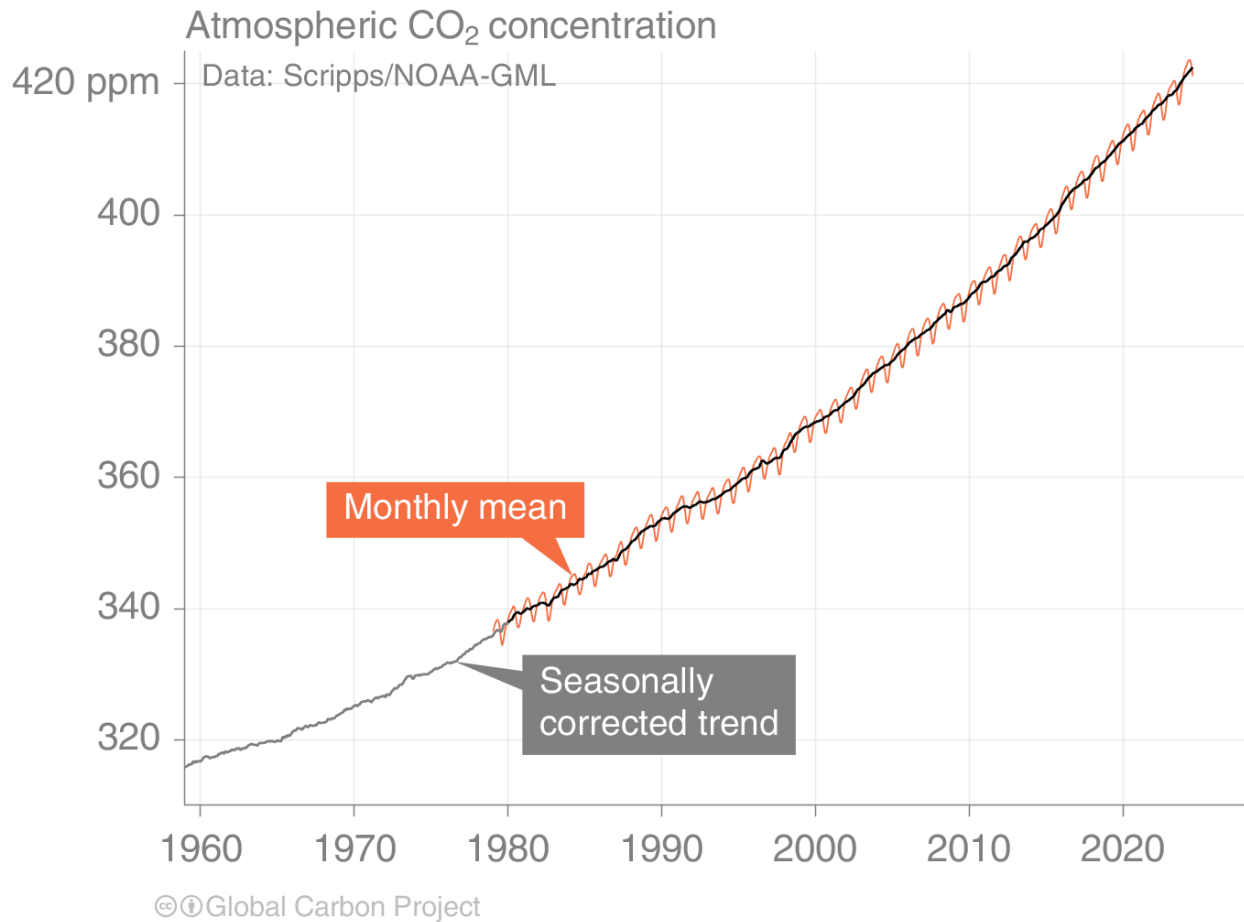
- Emissions
- Mitigation
- Adaptation
- Finance
- Key take-aways

Sources

- [Global Carbon Project](#)
- UNFCCC Global Stocktake – [synthesis report](#) of the Technical Dialogue
- [IPCC AR6](#)
- UNEP [Emissions Gap Report](#)
- UNEP [Adaptation Gap Report](#)
- [CPI State of Climate Finance](#)
- [Climate Action Tracker](#)

Atmospheric CO₂ concentration continues to increase

The global CO₂ concentration increased from ~277 ppm in 1750 to 422.5 ppm in 2024 (up 52%)

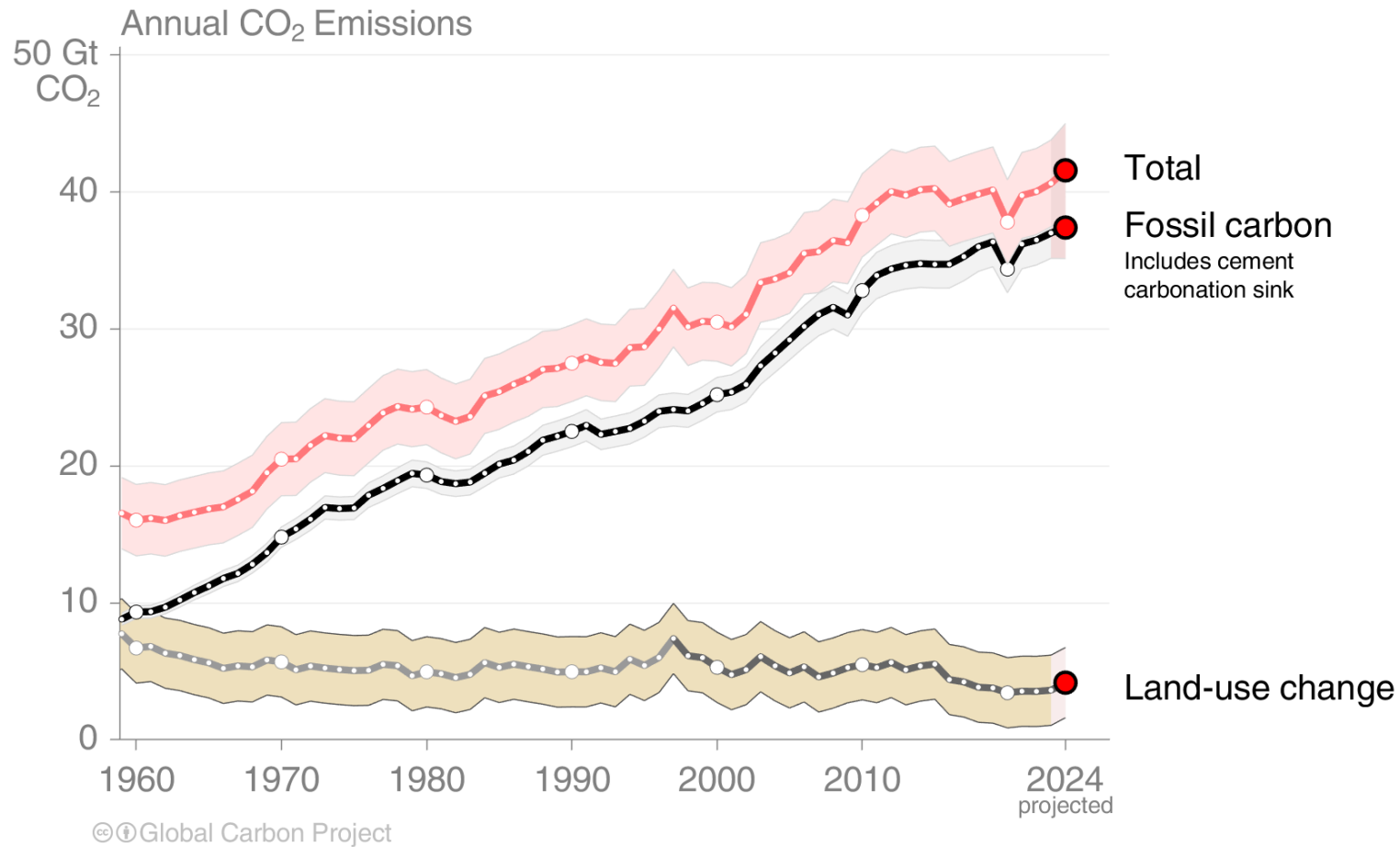


Globally averaged surface atmospheric CO₂ concentration. Data from: NOAA-GML after 1980; the Scripps Institution of Oceanography before 1980

Source: [NOAA-GML](#); [Scripps Institution of Oceanography](#); [Friedlingstein et al 2024](#); [Global Carbon Project 2024](#)

That is because global emissions continue to increase

Total global emissions, projected to reach 41.6 ± 3.2 GtCO₂ in 2024, 51% over 1990
 Percentage land-use change: 42% in 1960, 10% averaged 2014–2023

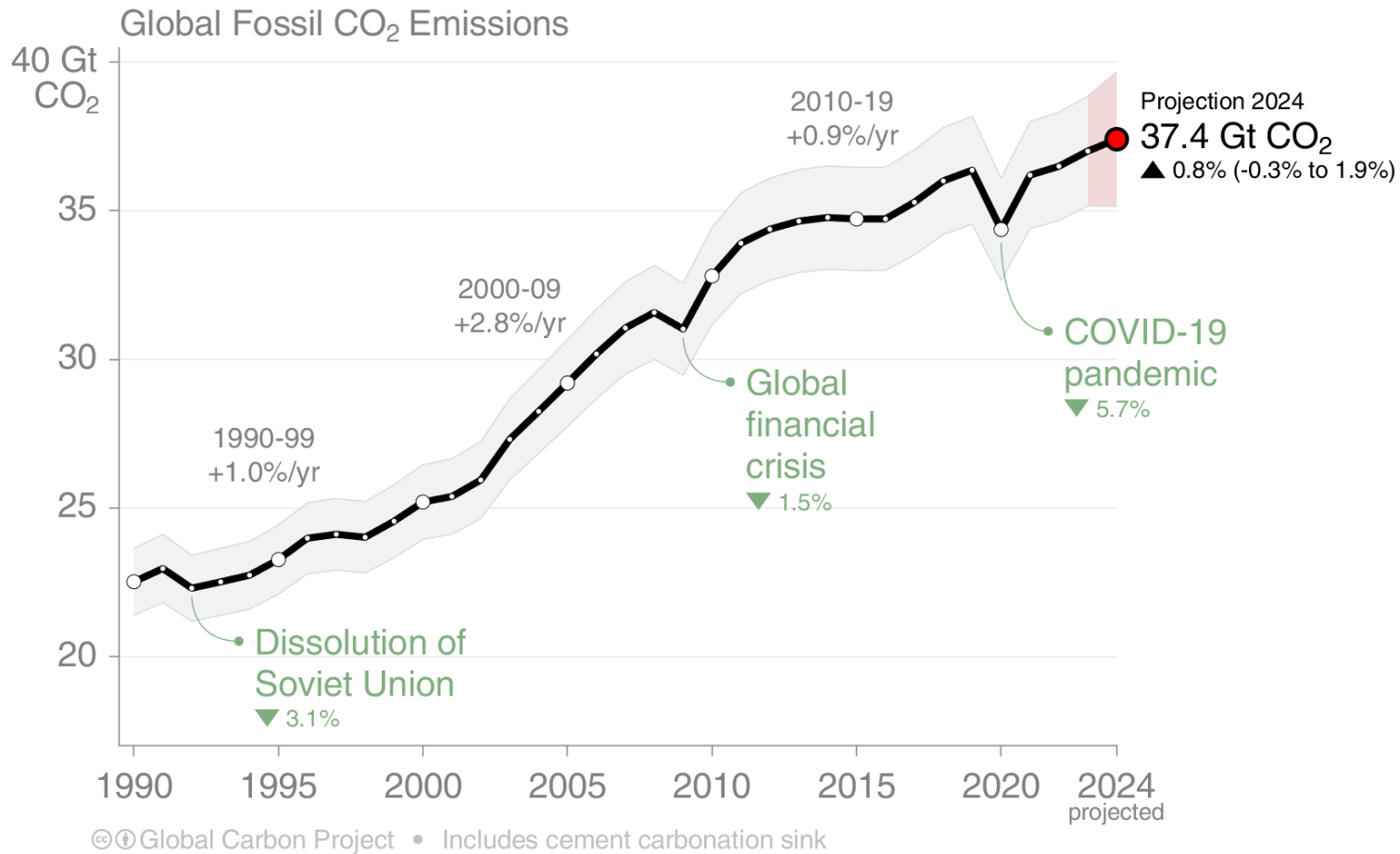


Land-use change estimates from four bookkeeping models, using fire-based variability from 1997
 Source: [Friedlingstein et al 2024](#); [Global Carbon Project 2024](#)

Global Fossil CO₂ Emissions

Global fossil CO₂ emissions: 37.0 ± 2 GtCO₂ in 2023, 66% over 1990

● Projection for 2024: 37.4 ± 2 GtCO₂, 0.8% [-0.3% to +1.9%] higher than 2023



Uncertainty is ±5% for one standard deviation (IPCC “likely” range)

Effects of COVID and the financial crisis were visible, but short-lived

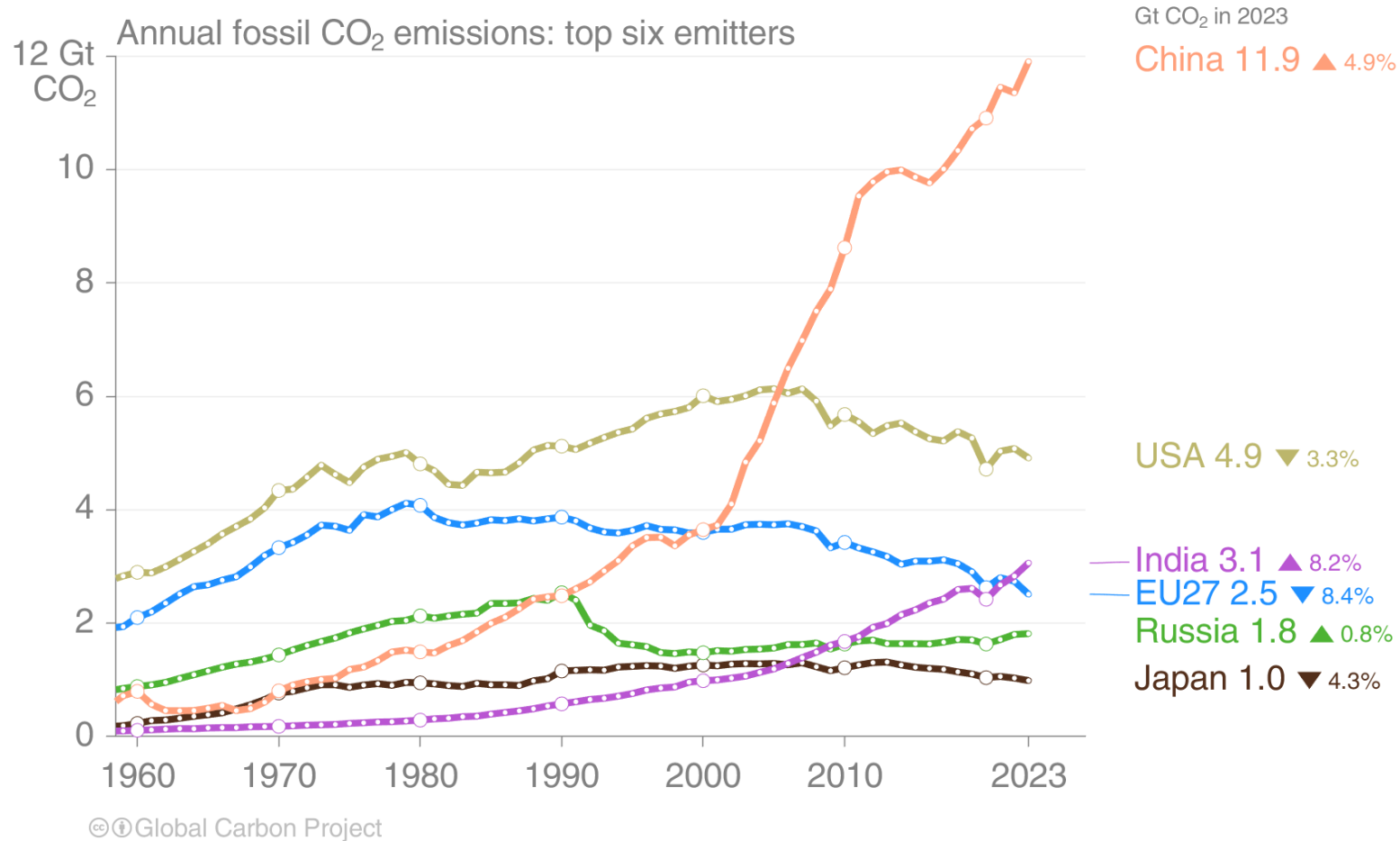
The increase has slowed, but not peaked yet

The 2024 projection is based on preliminary data and modelling. The global total includes a cement carbonation sink of 0.8 GtCO₂.

Source: [Friedlingstein et al 2024](#); [Global Carbon Project 2024](#)

Top emitters: Fossil CO₂ emissions to 2023

The top six emitters in 2023 covered 68% of global emissions
 China 32%, United States 13%, India 8%, EU 7%, Russia 5%, and Japan 3%



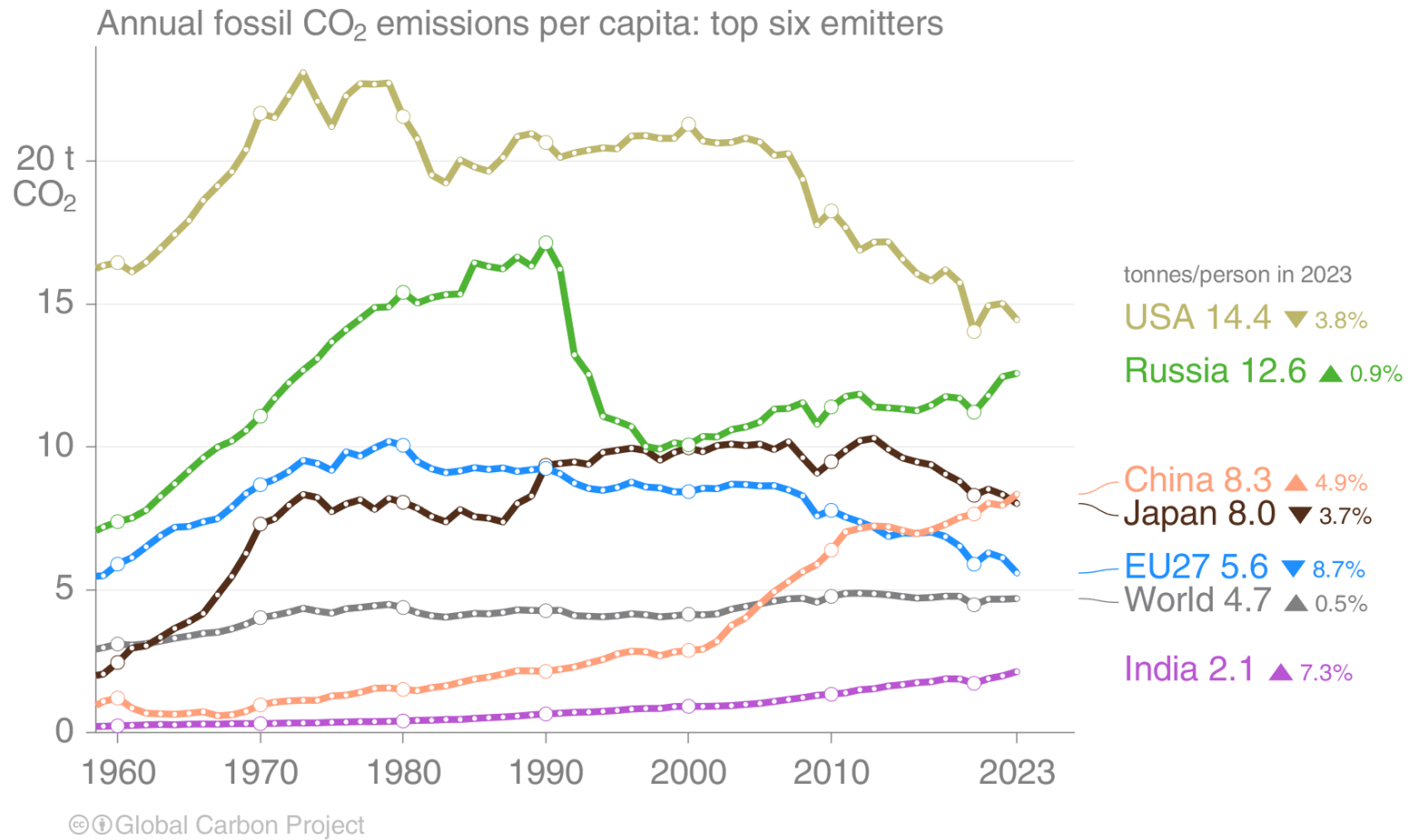
The G20 account for almost 80% of global emissions

International aviation and maritime shipping (bunker fuels) contributed 3.0% of global emissions in 2023.

Source: [Friedlingstein et al 2024](#); [Global Carbon Project 2024](#)

Top emitters: Fossil CO₂ emissions per capita to 2023

Countries have a broad range of per capita emissions reflecting their national circumstances

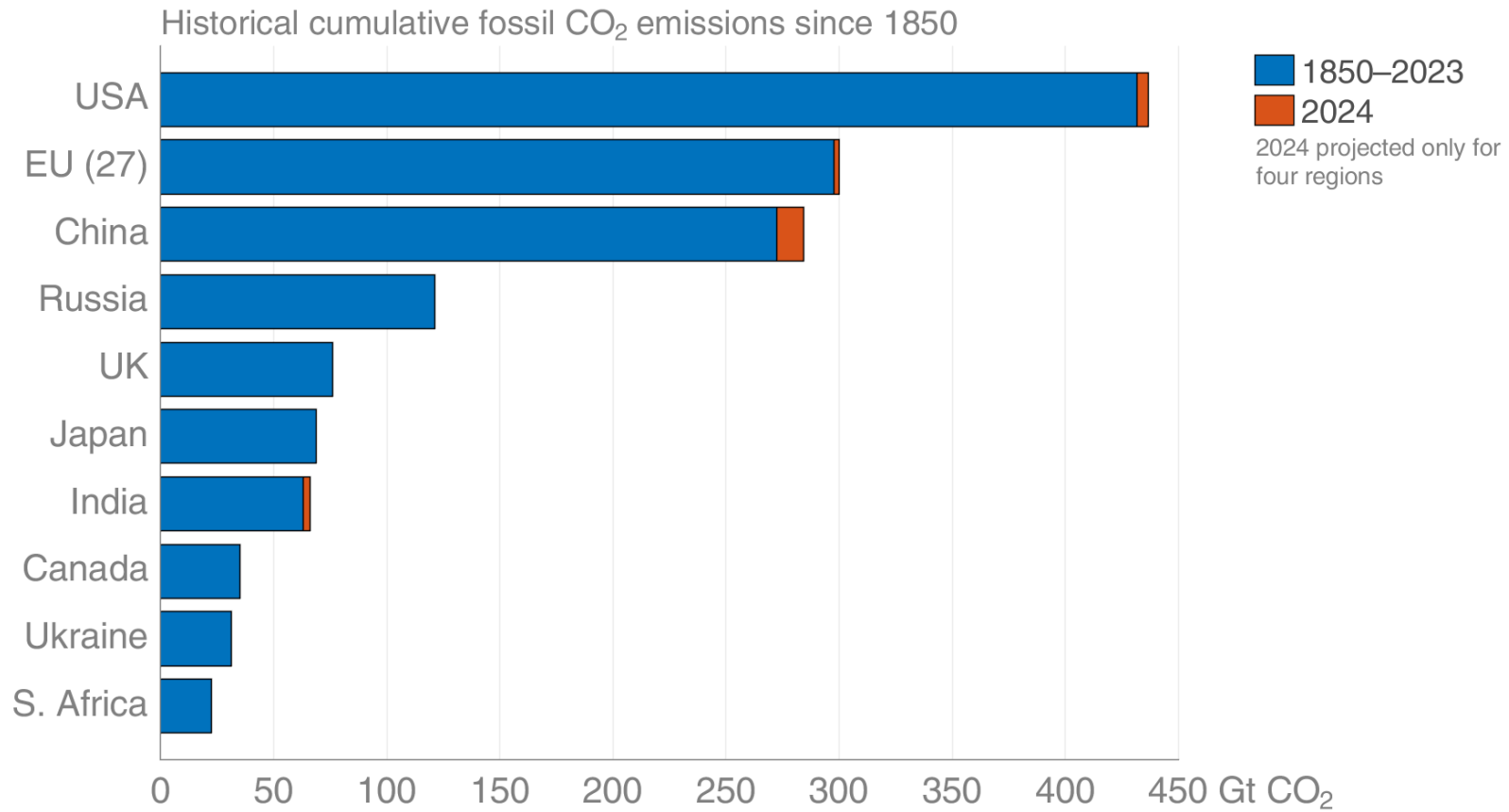


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Source: [Friedlingstein et al 2024](#); [Global Carbon Project 2024](#)

Historical cumulative fossil CO₂ emissions

The USA and EU have the highest accumulated fossil CO₂ emissions since 1850, but China is a close third.

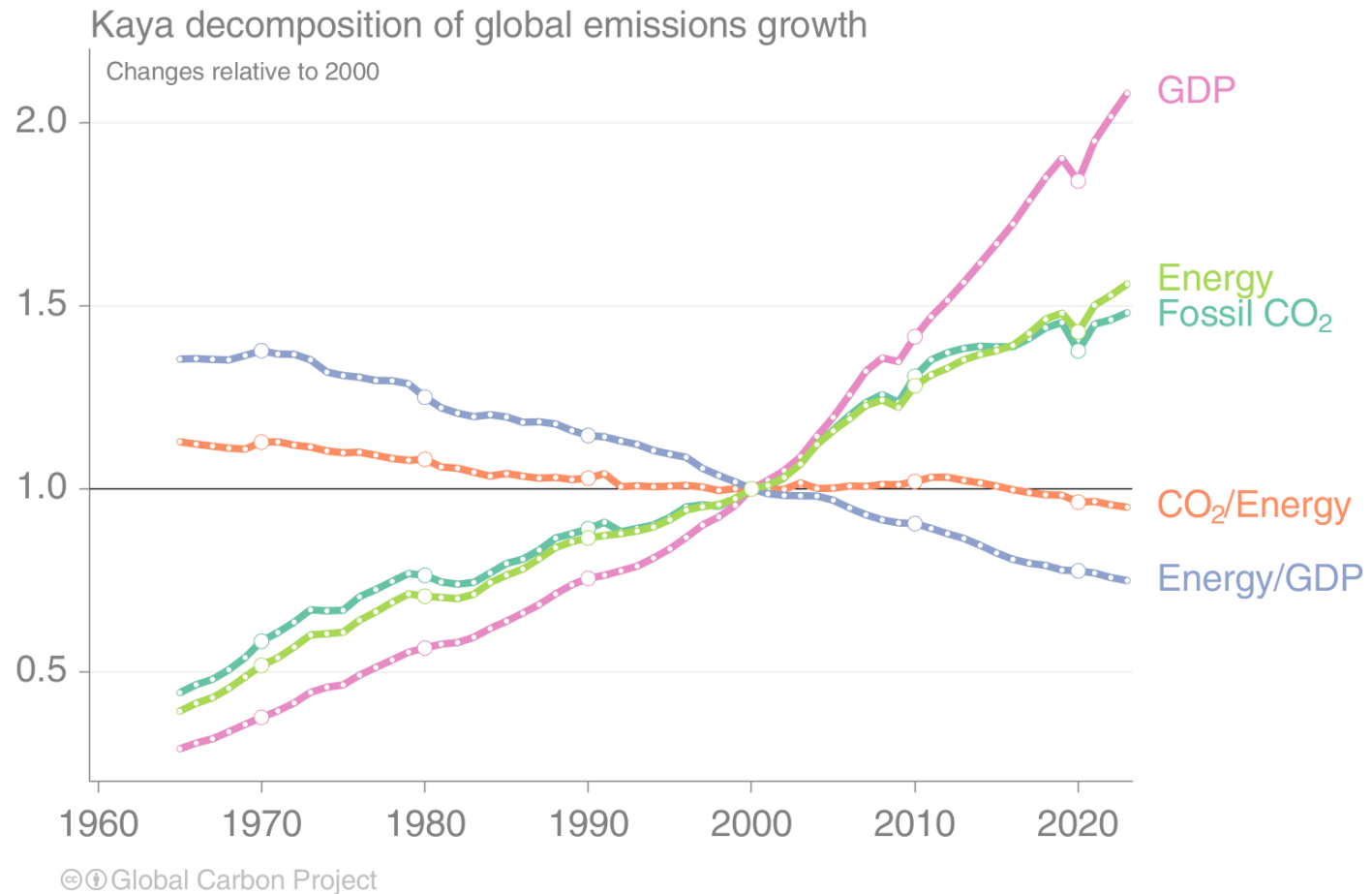


© Global Carbon Project

Calculated using territorial emissions.
 Source: [Friedlingstein et al 2024](#); [Global Carbon Project 2024](#)

Historical trends in emission drivers: GDP, Energy demand, Energy supply

Relative decoupling of economic growth from CO₂ emissions is happening, and has been on-going for a while – driven mostly by improved energy intensity (Energy/GDP) and, recently, carbon intensity of energy (CO₂/Energy)



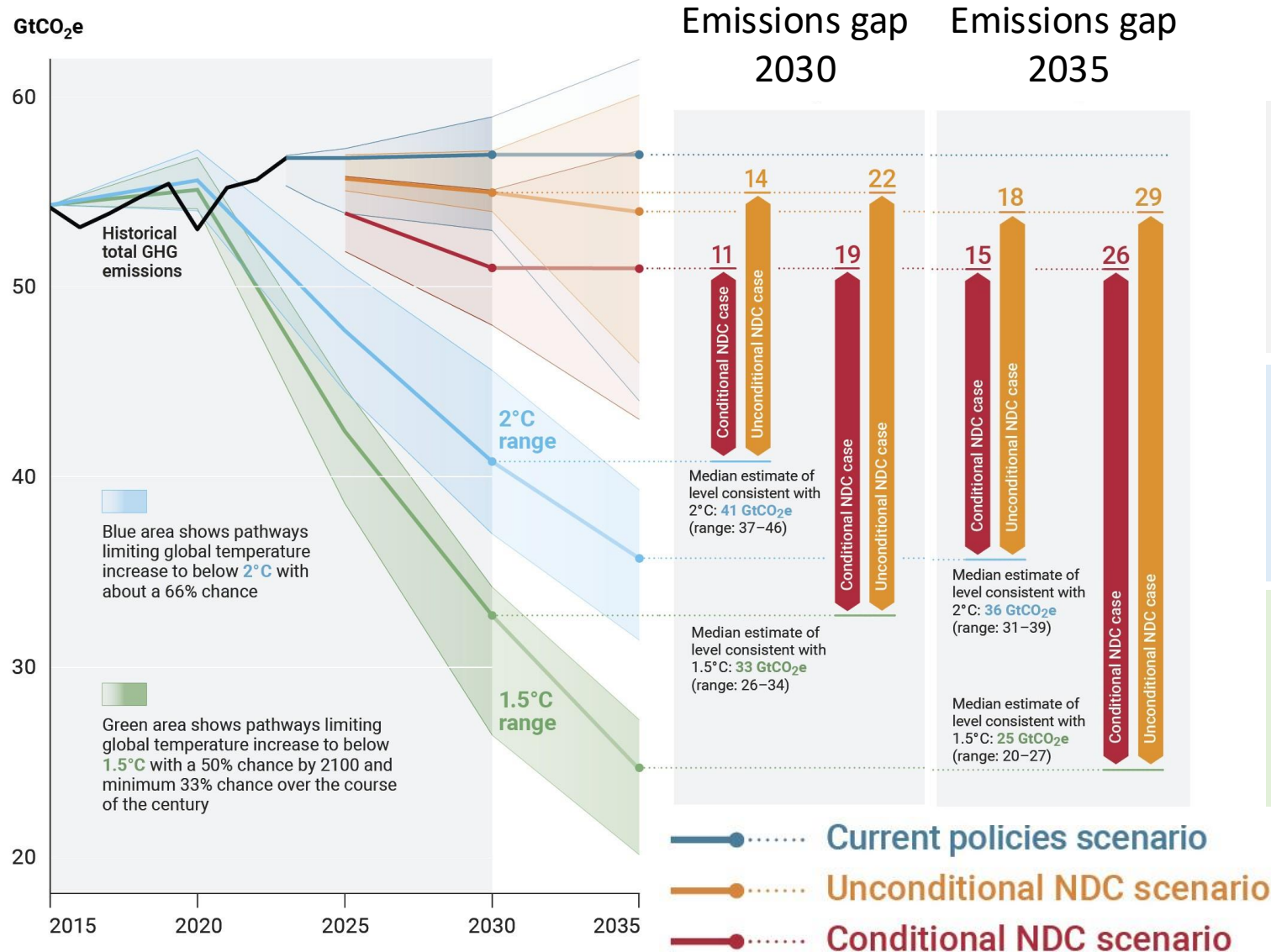
GDP: Gross Domestic Product (economic activity)
Source: [Friedlingstein et al 2024](#); [Global Carbon Project 2024](#)

Conclusions of the Global Stocktake Technical Dialogue with regard to Mitigation

1. Global emissions are not in line with modelled global mitigation pathways consistent with the temperature goal of the Paris Agreement, and there is a rapidly narrowing window to raise ambition and implement existing commitments in order to limit warming to 1.5 °C above pre-industrial levels.
2. Much more ambition in action and support is needed in implementing domestic mitigation measures and setting more ambitious targets in NDCs to realize existing and emerging opportunities across contexts, in order to reduce global GHG emissions by 43 per cent by 2030 and further by 60 per cent by 2035 compared with 2019 levels and reach net zero CO₂ emissions by 2050 globally.
3. Achieving net zero CO₂ and GHG emissions requires systems transformations across all sectors and contexts, including scaling up renewable energy while phasing out all unabated fossil fuels, ending deforestation, reducing non-CO₂ emissions and implementing both supply- and demand-side measures.
4. Just transitions can support more robust and equitable mitigation outcomes, with tailored approaches addressing different contexts.
5. Economic diversification is a key strategy to address the impacts of response measures, with various options that can be applied in different contexts.



There is a large gap in ambition for reducing emissions



Unconditional and **conditional** NDCs reduce 2030 emissions by 4% and 10% respectively, relative to 2019 levels

Reductions required to align with 2°C pathways:
2030: 28%
2035: 37%

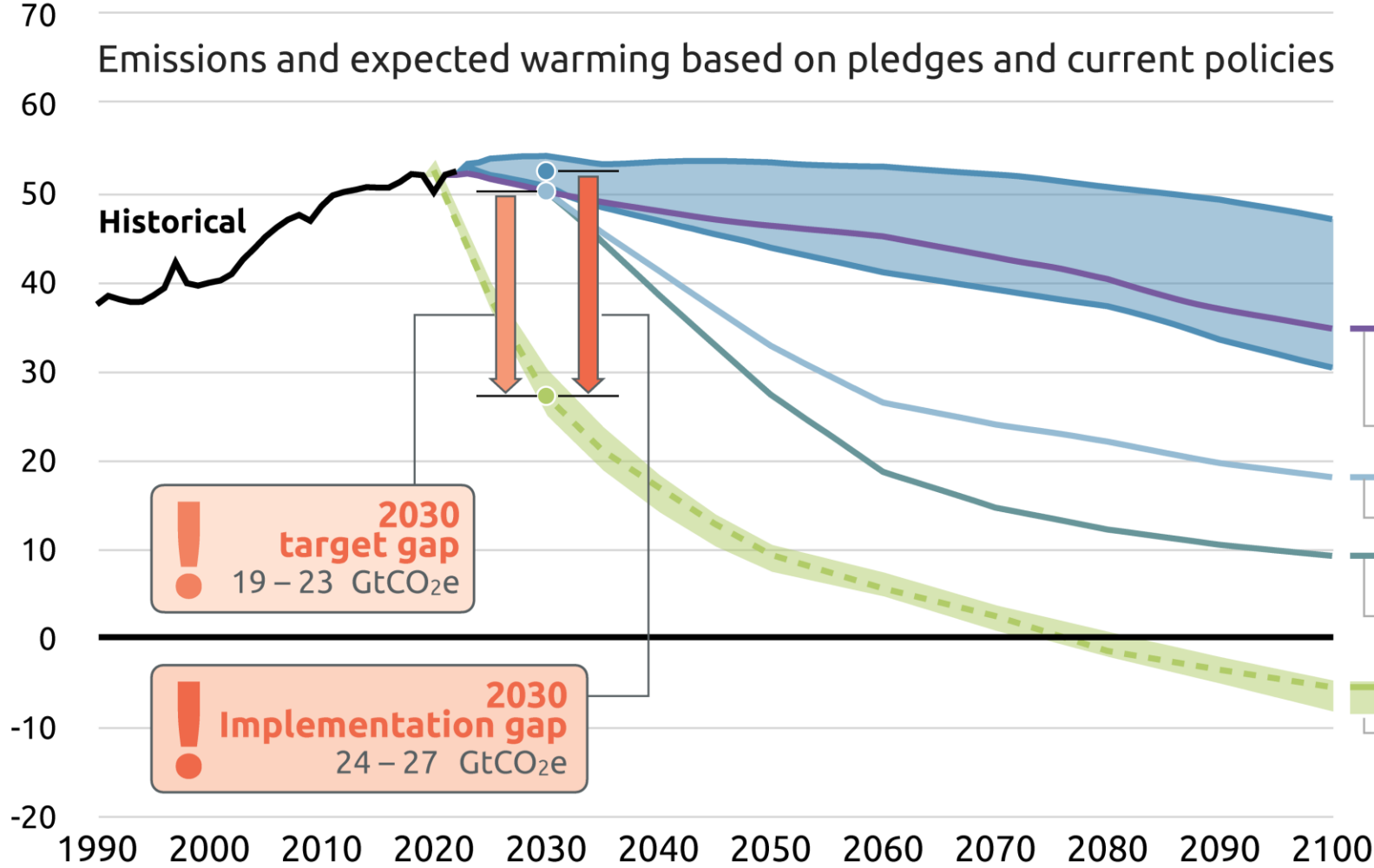
Reductions required to align with 1.5°C pathways:
2030: 42%
2035: 57%

EMISSIONS PATHWAYS TO 2100

Climate Action Tracker **Nov 2024**
Update

Emissions and expected warming based on pledges and current policies

Global GHG emissions GtCO_{2e}/year

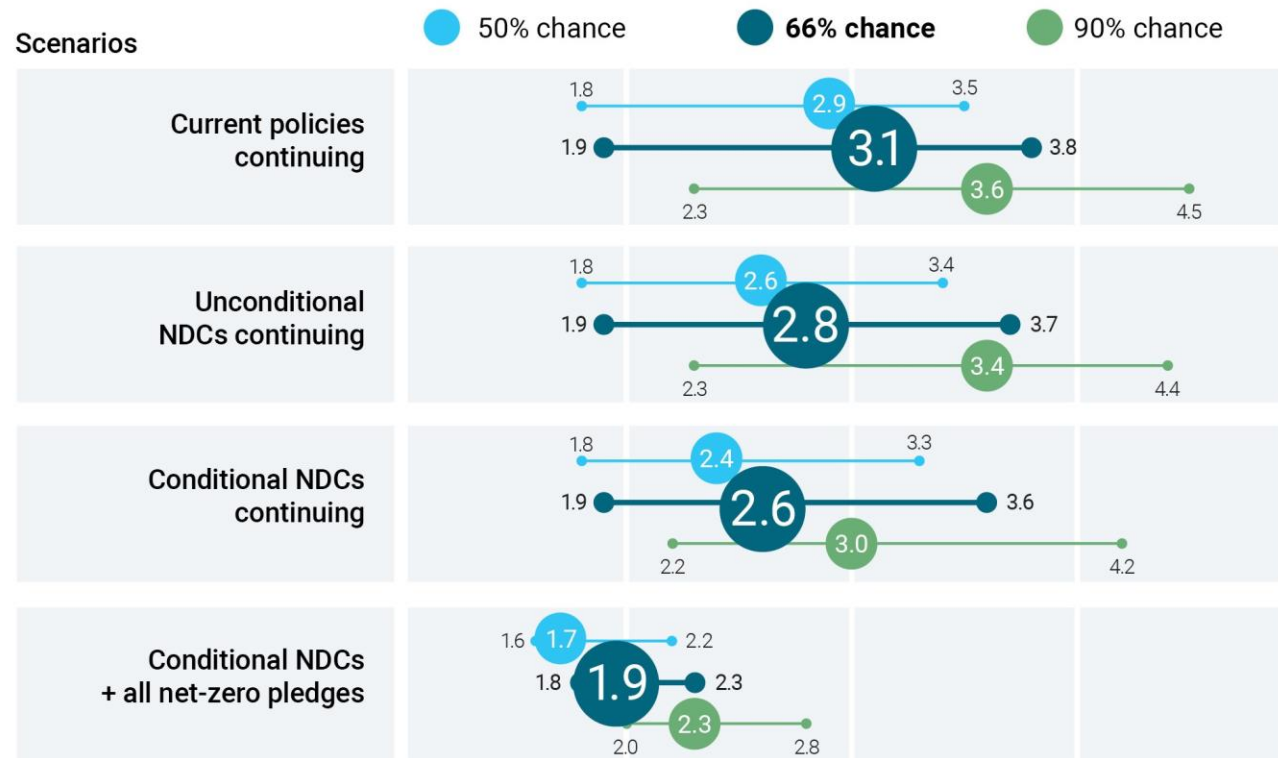
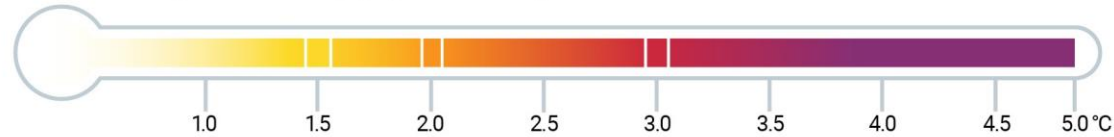


Warming projected by 2100

- +2.9°C High
- Policies & action**
- +2.5°C Low
- 2030 targets only**
- +2.6°C
- Pledges & targets**
- +2.1°C
- Optimistic scenario**
- +1.9°C
- 1.5°C compatible**

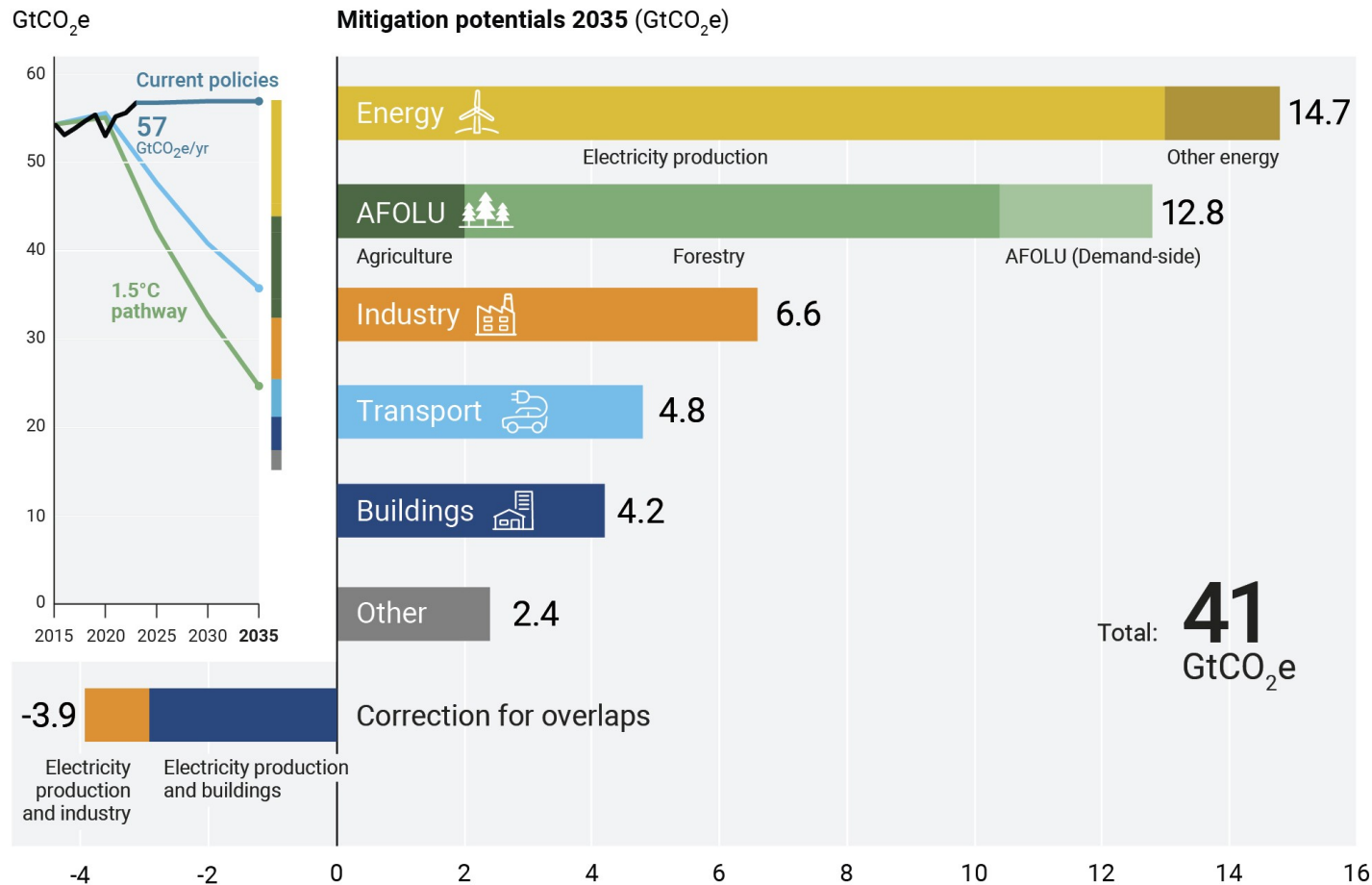
Immediate action matters for temperature projections

Peak warming over the twenty-first century (°C) relative to pre-industrial levels



- Temperature projections based on the conditional NDC scenario are 0.5°C lower than those based on existing policies
- Only under the most optimistic scenario do temperature projections get closer to the Paris Agreement goal

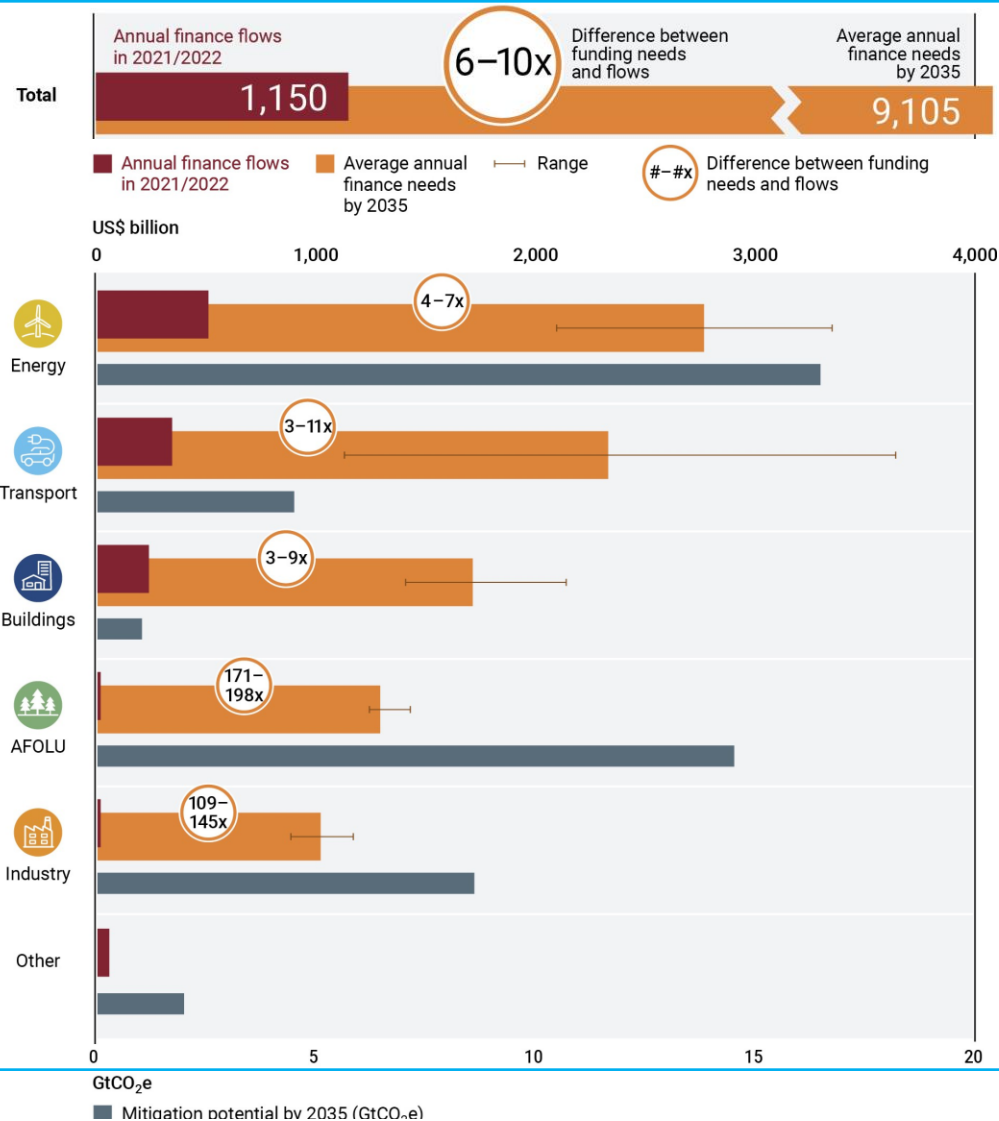
It is technically feasible to bridge the emissions gap



- Total mitigation potential about twice what is required for 2°C-alignment and about 30% above 1.5°C-alignment requirements for 2030 and 2035
- Options in wind, solar PV and forestry alone account for about half the potential
- Demand-side and efficiency measures, and electrification and fuel switching in buildings, transport and industry sectors important
- Realizing the potentials requires overcoming persisting challenges and massively boosting policies, support and finance

Note: techno-economic mitigation potential at costs <US\$200/tCO₂e
 Half of the total potential available at costs <US\$20/tCO₂e

At least a sixfold increase in investment required for 1.5°C alignment



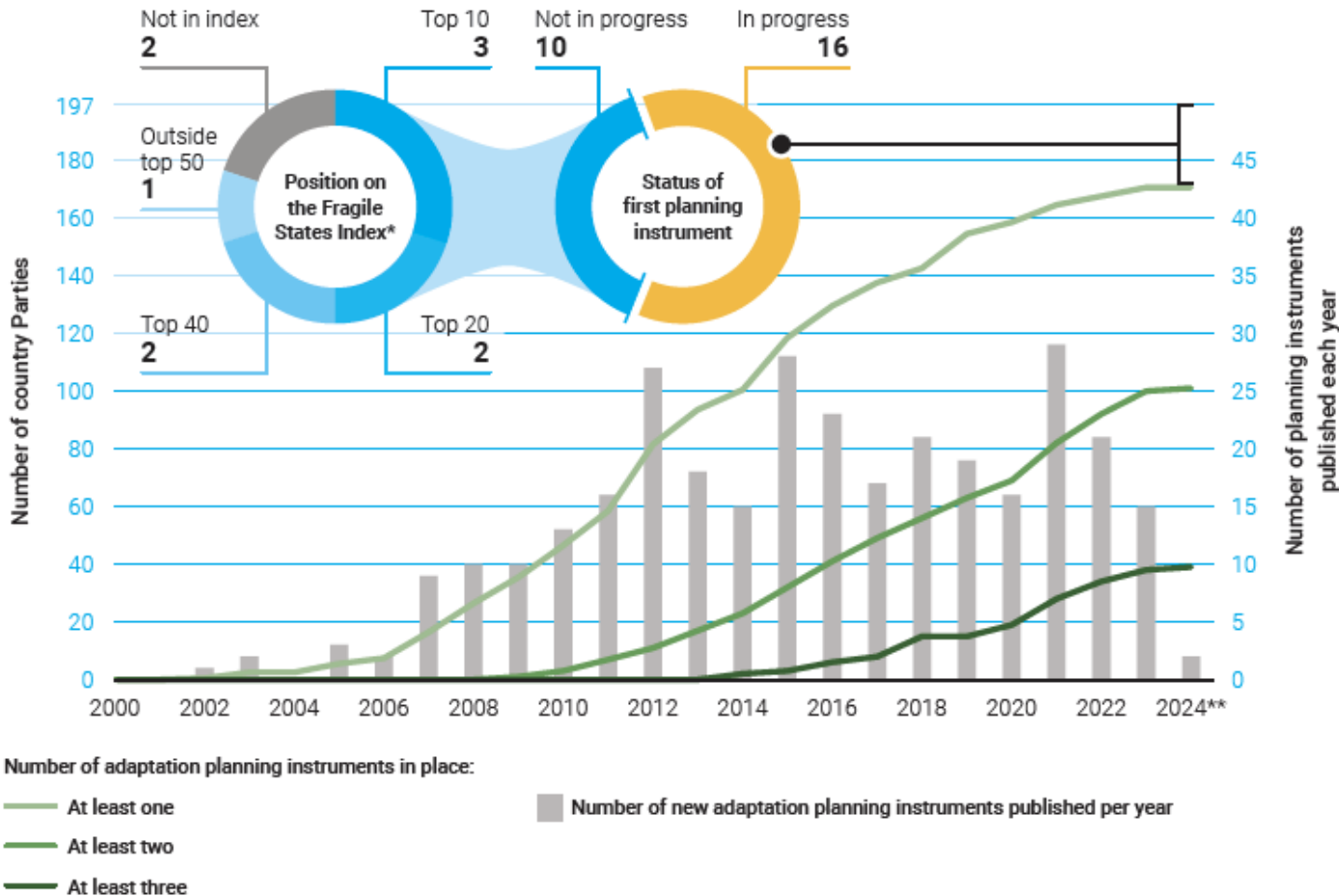
- Only US\$0.9 trillion to US\$2.1 trillion annually would be incremental, manageable within the US\$110 trillion global economy
- Large differences between funding needs and flows across sectors and geographies
- A shift in investment patterns, directing international funding towards emerging market and developing economies (EMDEs) outside of China is essential.
- Next NDCs: EMDEs can detail the means of implementation needed, including international support and finance to achieve ambitious NDC targets for 2035

Conclusions of the Global Stocktake Technical Dialogue with regard to Adaptation

1. As climate change threatens all countries, communities and people around the world, increased adaptation action as well as enhanced efforts to avert, minimize and address loss and damage are urgently needed to reduce and respond to increasing impacts, particularly for those who are least prepared for change and least able to recover from disasters.
2. Collectively, there is increasing ambition in plans and commitments for adaptation action and support, but most observed adaptation efforts are fragmented, incremental, sector-specific and unequally distributed across regions.
3. When adaptation is informed and driven by local contexts, populations and priorities, both the adequacy and the effectiveness of adaptation action and support are enhanced, and this can also promote transformational adaptation.
4. Averting, minimizing and addressing loss and damage requires urgent action across climate and development policies to manage risks comprehensively and provide support to impacted communities.
5. Support for adaptation and funding arrangements for averting, minimizing and addressing loss and damage need to be rapidly scaled up from expanded and innovative sources, and financial flows need to be made consistent with climate-resilient development to meet urgent and increasing needs.



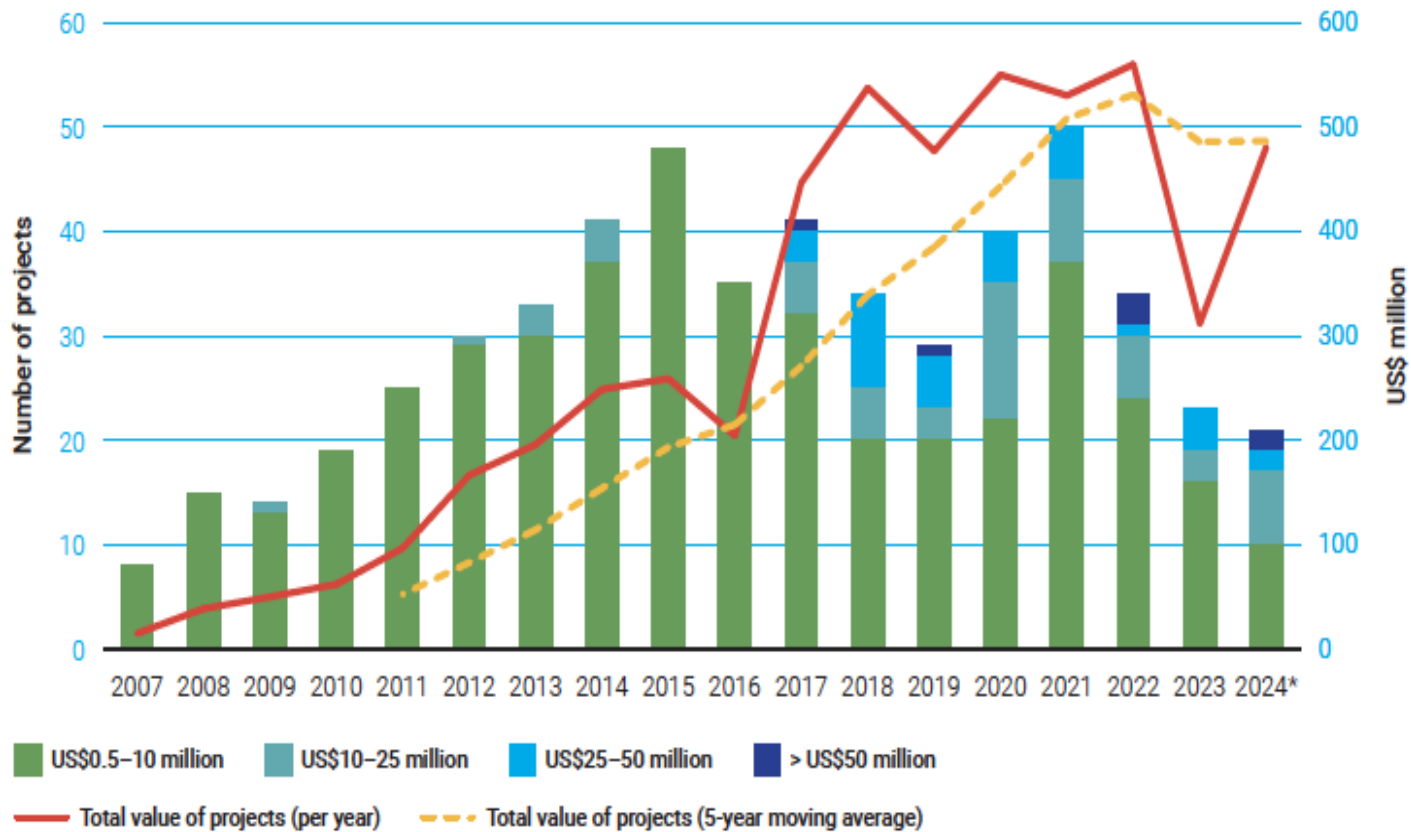
Countries are undertaking national adaptation planning



- 87% of countries have at least 1 national adaptation planning instrument.
- 50% countries have 2 or more national-level instruments.
- Reaching some countries without a national planning instrument will be hard.
- Potential effectiveness of adaptation planning is mixed.
- Alignment of NAPs and NDCs needs to be improved.

*Average position between 2020 and 2024 **Until 5 August 2024

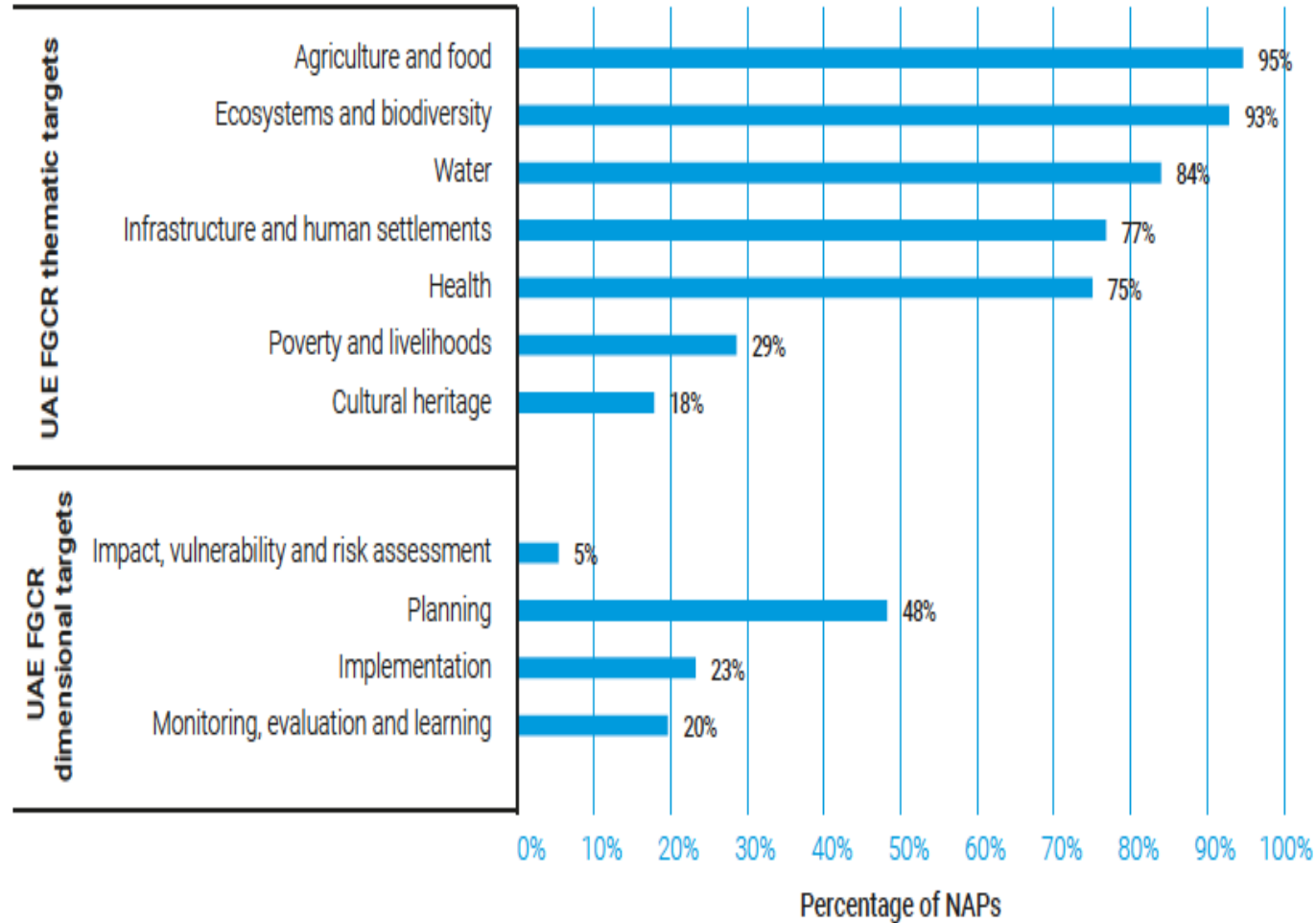
Countries must ramp up implementation to prepare for mounting climate impacts



- Adaptation actions largely on upward trend.
- Pace of implementation is slow.
- 50% of analysed projects rated not satisfactory/ likely unsustainable.
- Implementation of NAPs hampered by barriers.
- Adequacy and effectiveness of national adaptation response is insufficient.

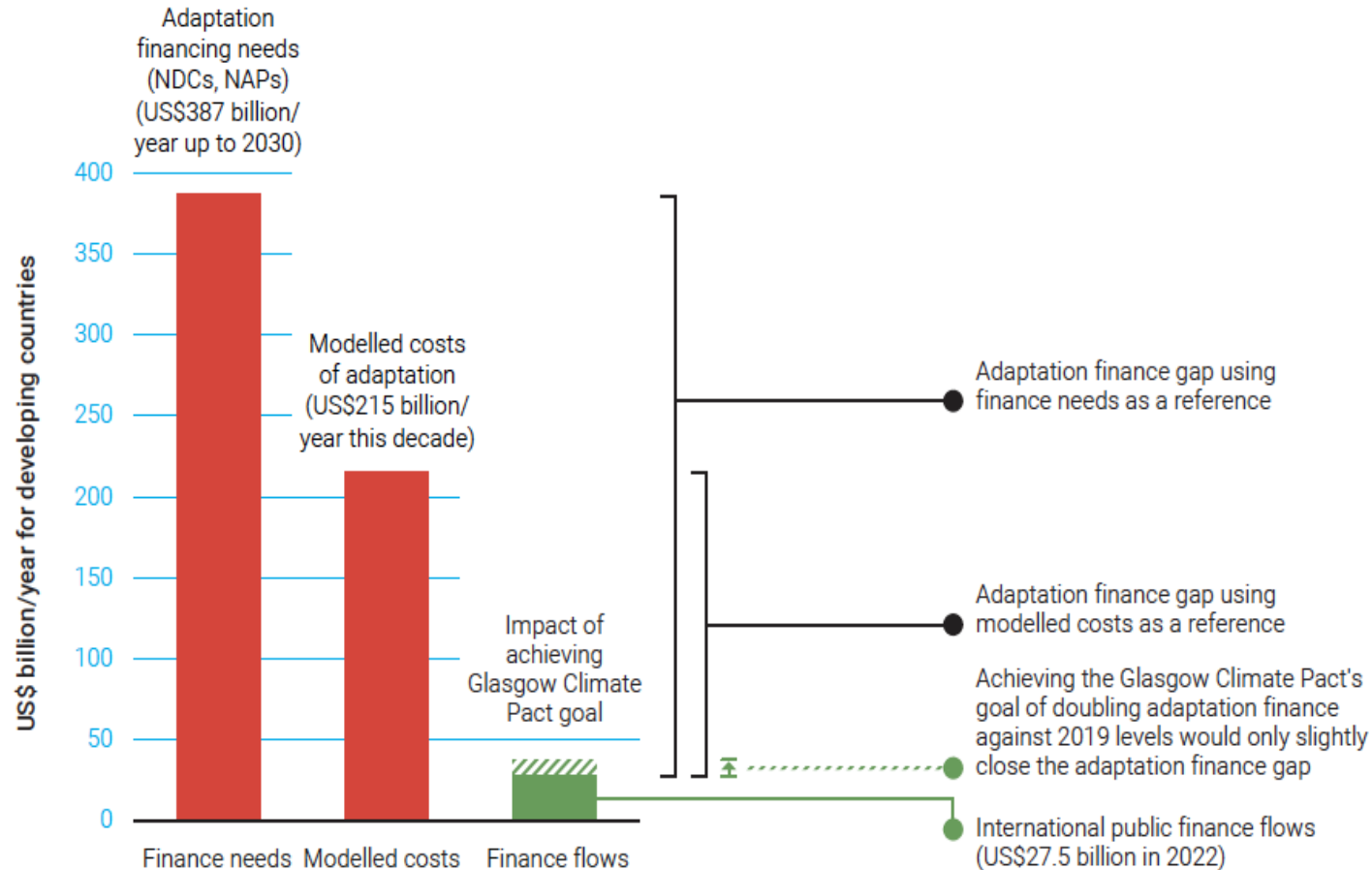
*Until 31 August 2024

Increase adaptation efforts to reach 2030 targets of the UAE Framework for Global Climate Resilience (FGCR)



- UAE FGCR meant to track progress towards GGA.
- NAPs reference at least one thematic target and 1/3 refer to elements of dimensional targets.
- Information about future impacts, vulnerabilities and risks is uneven and needs to improve.
- Reaching global coverage of four dimensional targets by 2030 will require increased efforts.

There is an enormous adaptation finance gap



- International public adaptation finance to developing countries reached **\$28bn in 2022**.
- Progress towards Glasgow Climate Pact to at least **double 2019 finance flows** by 2025.
- Adaptation finance gap estimated at **\$187-359 bn** per year.
- Reaching Glasgow Climate Pact goal would only reduce gap by about **5%**.
- Adaptation finance gap important in context of the New Collective Quantified Goal (NCQG) for climate finance

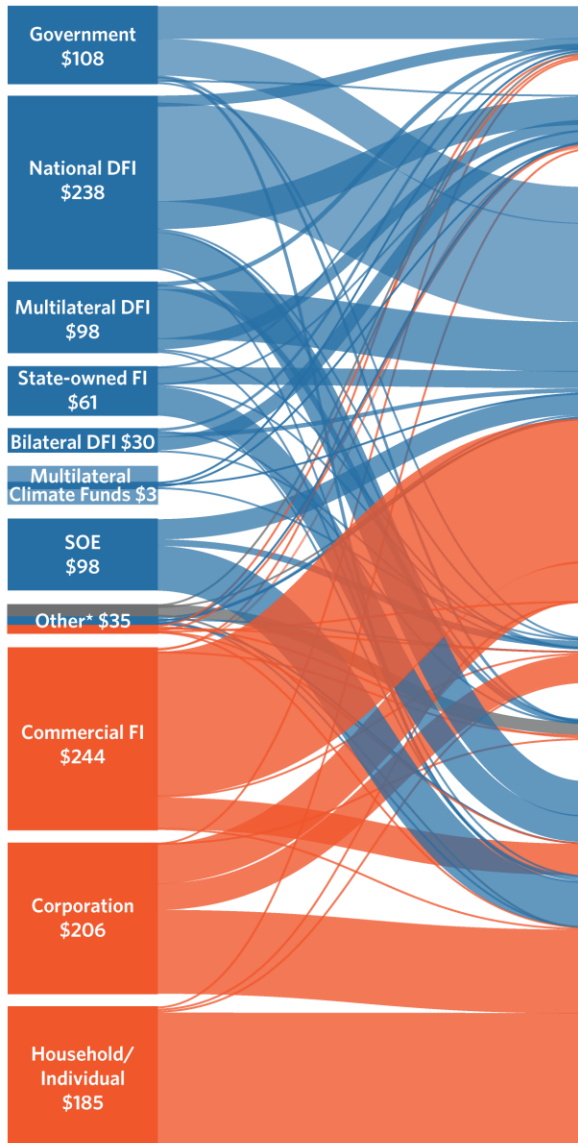
LANDSCAPE OF CLIMATE FINANCE IN 2021/2022

Global climate finance flows along their life cycle in 2021 and 2022. Values are averages of two years' data to smooth out fluctuations, in USD billions



SOURCES AND INTERMEDIARIES

Which type of organizations are sources or intermediaries of capital for climate finance?



INSTRUMENTS

What mix of financial instruments is used?

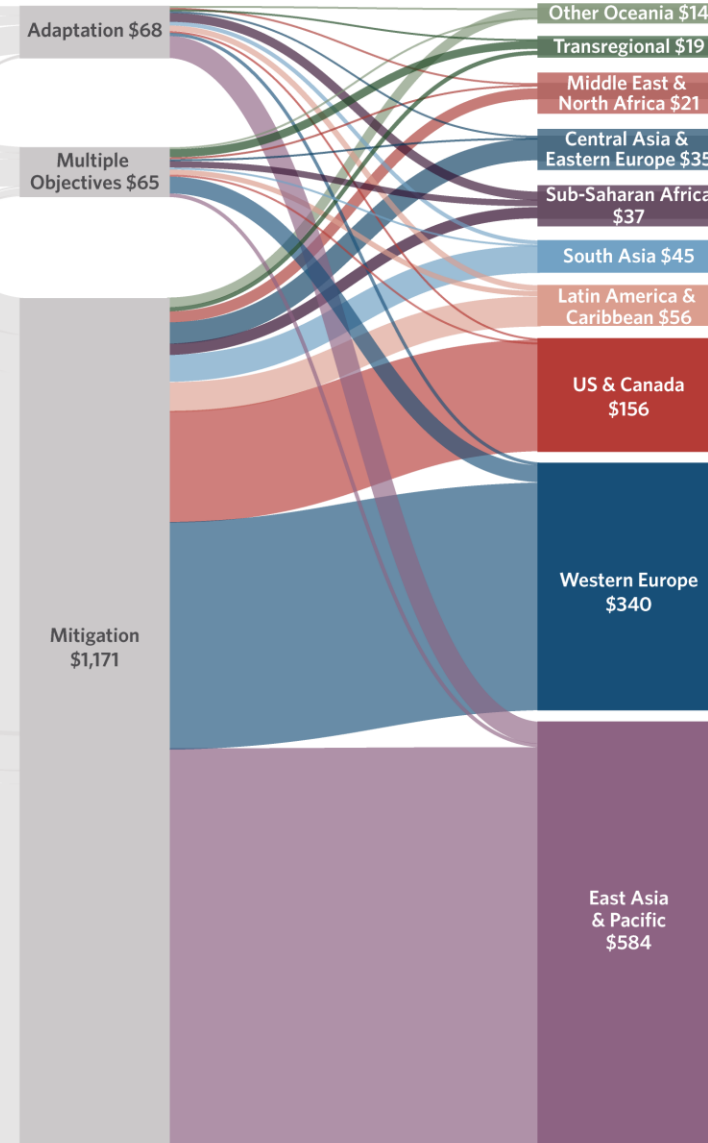
USES

What types of activities are financed?

1.3 TRILLION USD ANNUAL AVERAGE

DESTINATION

Where are the flows directed by region?



Most climate finance is:

- 1) Private
- 2) For mitigation and not adaptation
- 3) From and for developed countries and large emerging economies
- 4) Loans (or equity) and not grants

PRIVATE PUBLIC

"Other" public sources include export credit agencies and unknown public funds
 "Other" private sources include institutional investors, funds, and unknown

Source: Climate Policy Initiative

Key take-aways

- The global clean energy transition is well underway (and has been for a while); but is not fast enough
- Cumulative emissions matter – not just the net-zero year, but the peaking year and the rate of decline thereafter
 - Avoiding emissions better than removal – CO₂ removal is costly, risky and limited
- Achieving “well below 2 C” (the Paris Agreement target) is unlikely at current levels of ambition and action; likely warming is in the range of ~2.5 – 2.7 C
 - There is both an “ambition” gap (what countries pledge to do in their NDCs) and an “action” gap (what is actually achieved with regard to emissions)
- Adaptation & resilience are critical, but still lack attention and effort
 - Large opportunity cost of inaction – and benefits of anticipatory action
- There is a large finance gap for both mitigation and adaptation