

Are We on Track? NDCs, Technology, and the Energy Transition in a Changing World



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Are We on Track? NDCs, Technology, and the Energy Transition in a Changing World

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Moderator



Dr. Selam Kidane Abebe,
Senior Research Fellow,
University of Oxford

Speakers



Prof. Dr. Elmar Kriegler, Head
of Research Department, PIK



Dr. Ioannis Dafnomilis,
Senior Researcher, PBL

NEW PATHWAYS and the Energy Transition in a Changing World

Elmar Kriegler

Potsdam Institute for Climate Impact Research

SB64, Bonn, June 2026



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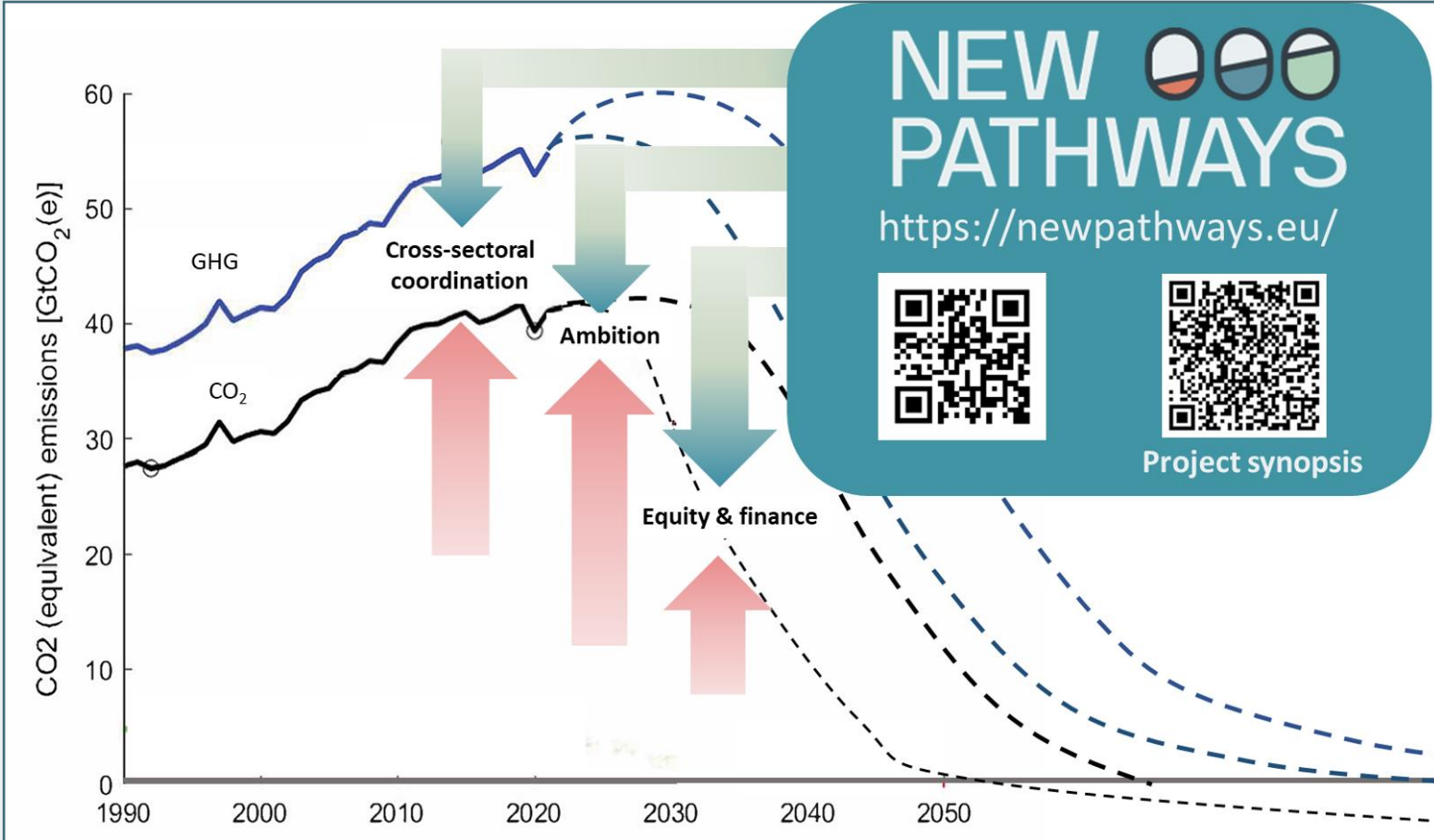
2026: Entering a new period of climate change and climate policy

- Increasing climate impacts in a $\sim 1.25^{\circ}\text{C}$ warmer world (2016-2025 average)
 - Rapid progress of green technologies (Renewables, batteries, ...)
 - Slow progress on climate action, in some cases backsliding
 - The global GHG emissions curve has not been bent in 2025, exceeding 1.5°C warming (human induced, 10 year average) in the next decade is now very likely
- ➔ What does it mean for pathways towards achieving the Paris Agreement and the Global Stocktake in 2028?

Time for NEW PATHWAYS

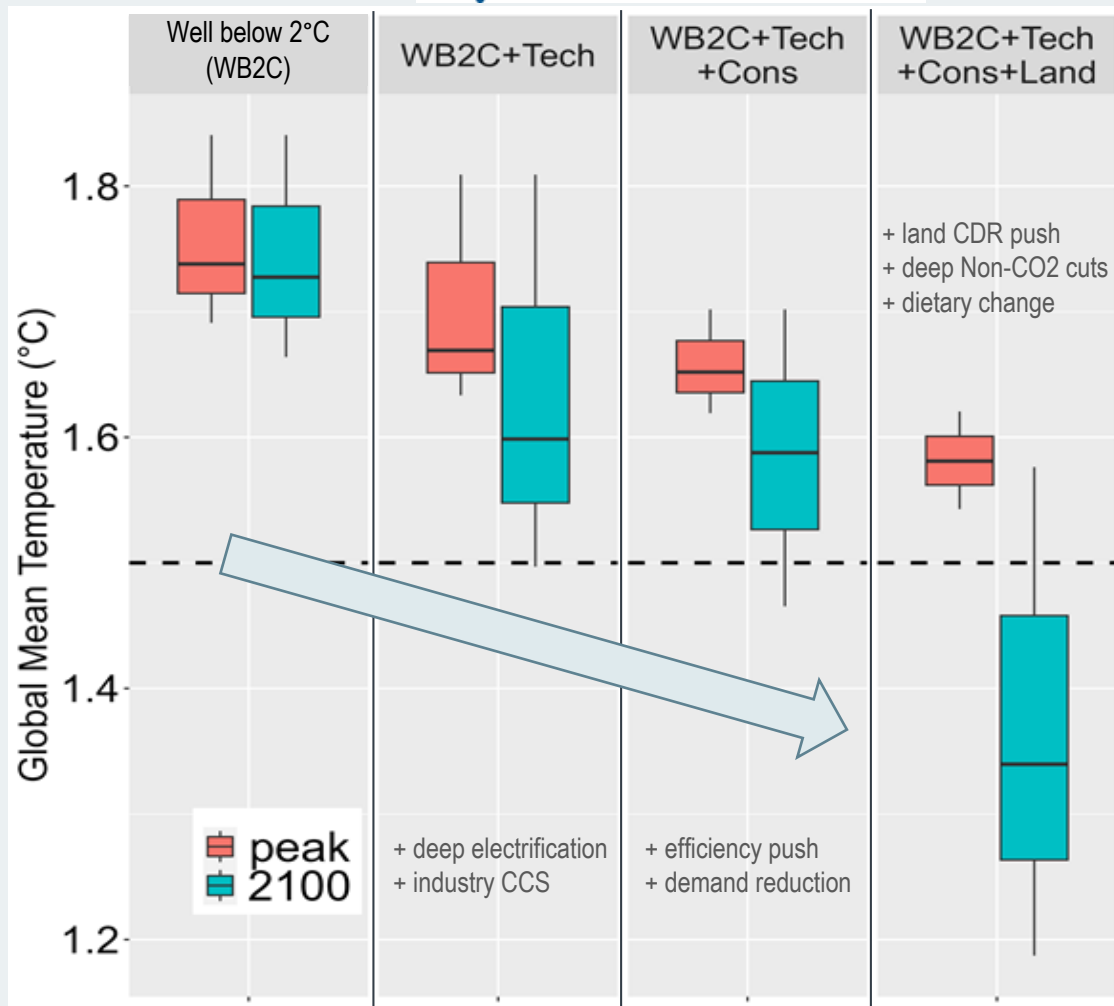
responding to a changing world.

- New **global mitigation pathways** with temporary and limited 1.5°C overshoot, development focused socio-economics, and equitable climate action
- New **national low-carbon development pathways** exploring synergies between national objectives and climate action
- Pathway design and appraisal in terms of **feasibility, efficiency, equity, sustainability** together with stakeholders to inform GST2
- combining to a common vision for equitable climate action in line with the Paris Agreement and sustainable development



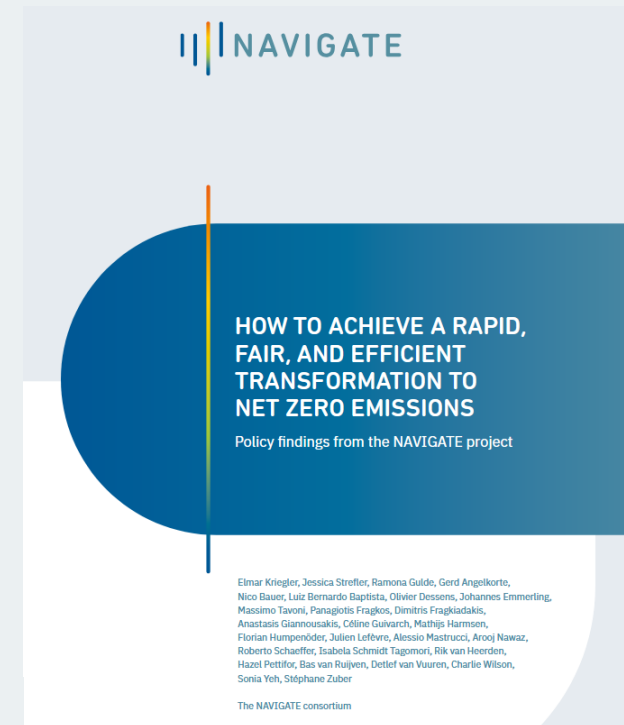
Project Consortium

Limiting overshoot requires cross-sectoral transformation



Accelerating and deepening emissions reductions by broad portfolio of transformative action across sectors

Energy transition combined with deep reduction in AFOLU emissions and carbon dioxide removal



Strefler et al. (2026) A mix of policies is needed to close the climate ambition gap. In review.

Kriegler et al. (2023) Policy findings from the NAVIGATE project.

Stakeholder dialogue and outreach

Newsletter



The NEWPATHWAYS project aims to inform solutions to strengthen climate action by developing and analysing next-generation Paris-aligned global and national low-emission transformation pathways for the Global Stocktake in 2028. Stay up to date on project developments with our newsletter.

[SUBSCRIBE TO OUR NEWSLETTER](#)

Catch up on previous newsletters:

[SEPTEMBER 2025 ISSUE](#)



Stakeholder Dialogue



Global Stakeholder Workshop II (SB64) — From Ambition to Action: Aligning Equity, Finance, and Climate Pathways towards 1.5°C

Stakeholder Workshops

Date: Friday, June 12, 2026 Time: 13:30-18:00 CEST
Location: Bonn, Germany, and online (Zoom) As countries pursue the 1.5°C goal of the Paris Agreement, the focus is...

[READ MORE](#)



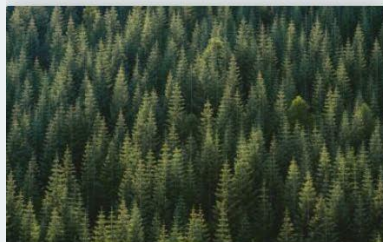
Global Stakeholder Workshop I (SB62): Co-Shaping the Net-Zero Transition

Stakeholder Workshops

Date and Time: Friday, 20th June 2025, 16:00-18:00 CEST (Registrations open from 15:30) Organised and hosted by Climate Strategies with support from The Potsdam...

[READ MORE](#)

Events



Biodiversity Side Effects of Carbon-Focused Reforestation under Paris-Aligned Transition Pathways

Events

Date: Wednesday, May 20, 2026 Time: 15:00 CEST Location: Online (Zoom) This webinar, hosted by CMCC, explored the role of large-scale afforestation and reforestation (AR)...

[READ MORE](#)



From Net-Zero to Zero-Fossil in Transforming the EU Energy System

Events

Date & Time: Tuesday, 17 March 2026, 14.00 CET Location: Online (Zoom, registration link below) Speaker: Felix Schreyer, Potsdam Institute for Climate Impact...

[READ MORE](#)



Do the New Climate Targets Make a Difference? An Analysis of 2035 NDCs

Events

Date & Time: 19 February 2026, 15.00 CET Location: Online (Zoom, registration link below) Speakers: Janna Hoppe and Luka Scheewel, New Climate...

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Global Stakeholder Workshop: Co-Shaping the Net-Zero Transition

Workshop Summary

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NEWPATHWAYS Global Stakeholder Workshop II

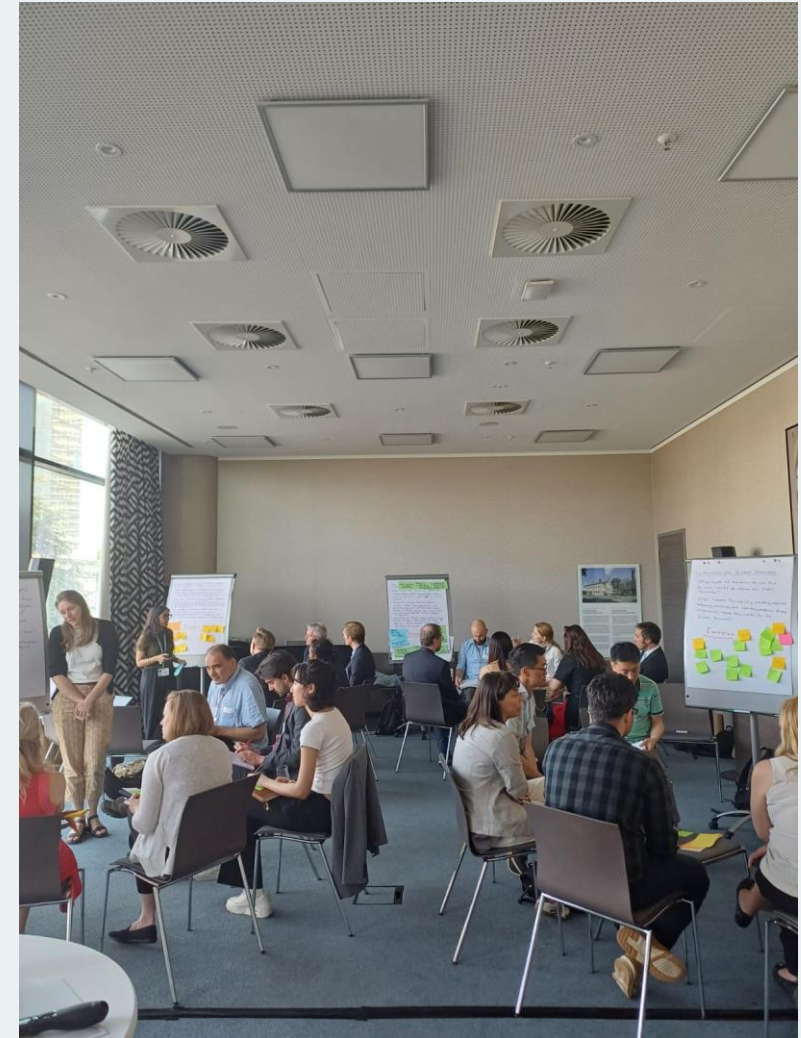
From Ambition to Action: Aligning Equity, Finance, and Climate Pathways towards 1.5°C

Date: Friday, June 12, 2026

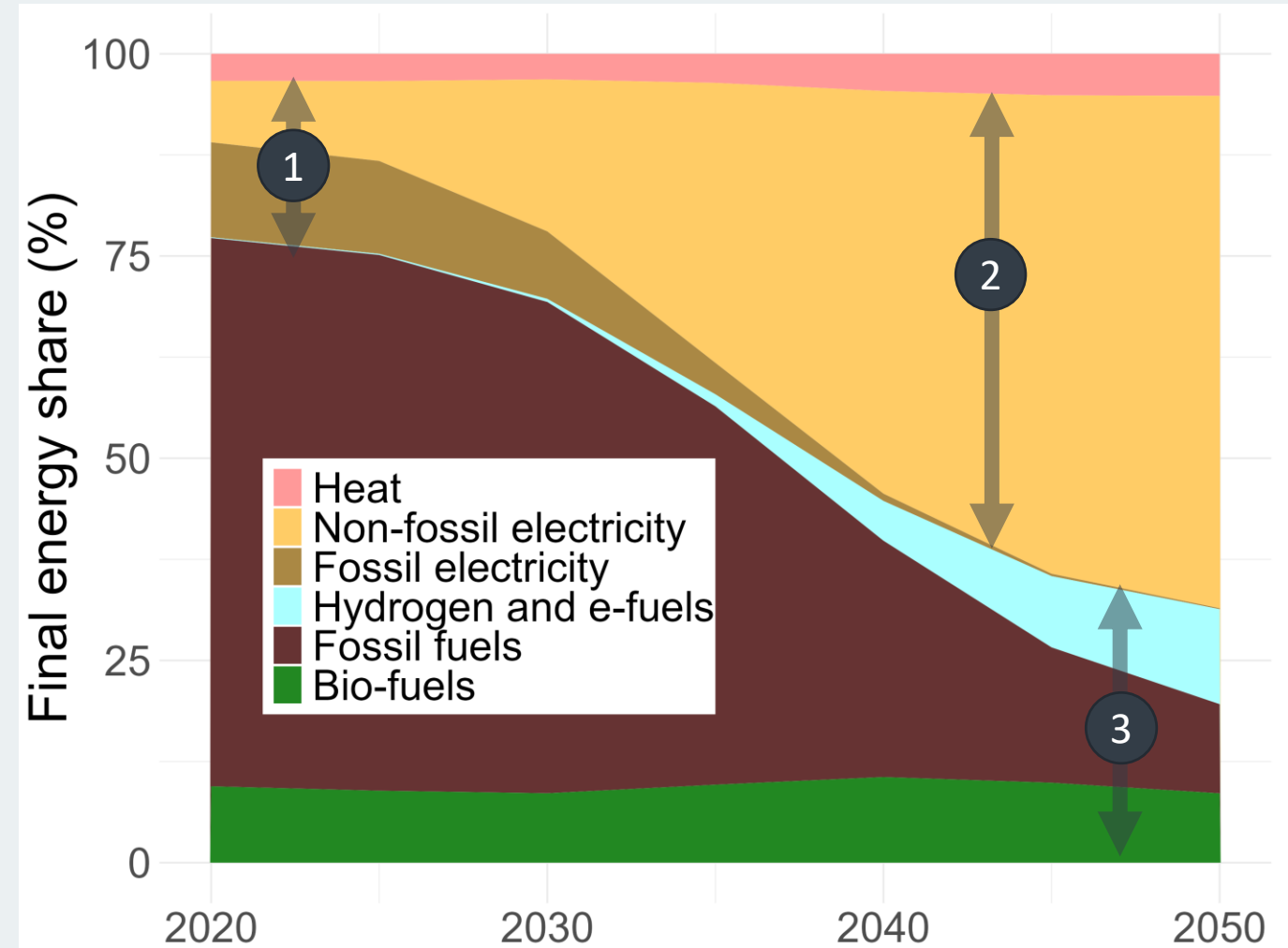
Time: 13:30-18:00 CEST | Finger food

Networking reception: 18:00-19:00

You can register here to attend, in-person or online:



Energy system integration



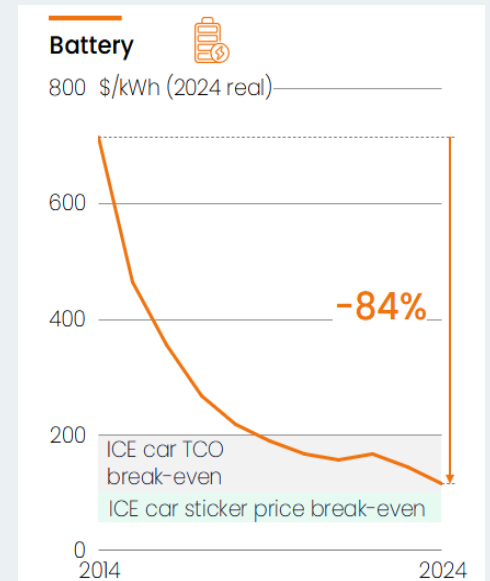
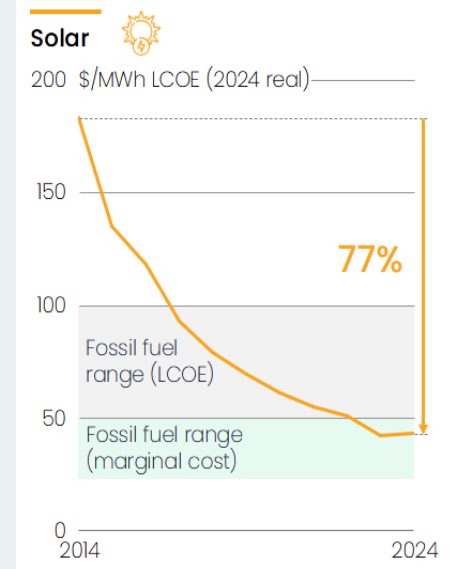
REMIND scenario of the *Rescuing 1.5°C* report, November 2025
<https://doi.org/10.5281/zenodo.18234421>

PIK Energy Transition Lab

<https://www.pik-potsdam.de/en/institute/labs/energy-transition>



- 1 Cheap renewables to replace fossil power
- 2 Deep electrification of all sectors (transportation, heating)
- 3 Green molecules replace fossil hydrocarbons (sustainable bio-fuels, hydrogen)



The Electrotech Revolution, September 2025
<https://ember-energy.org/app/uploads/2025/09/Slidedeck-The-Electrotech-Revolution-PDF.pdf>

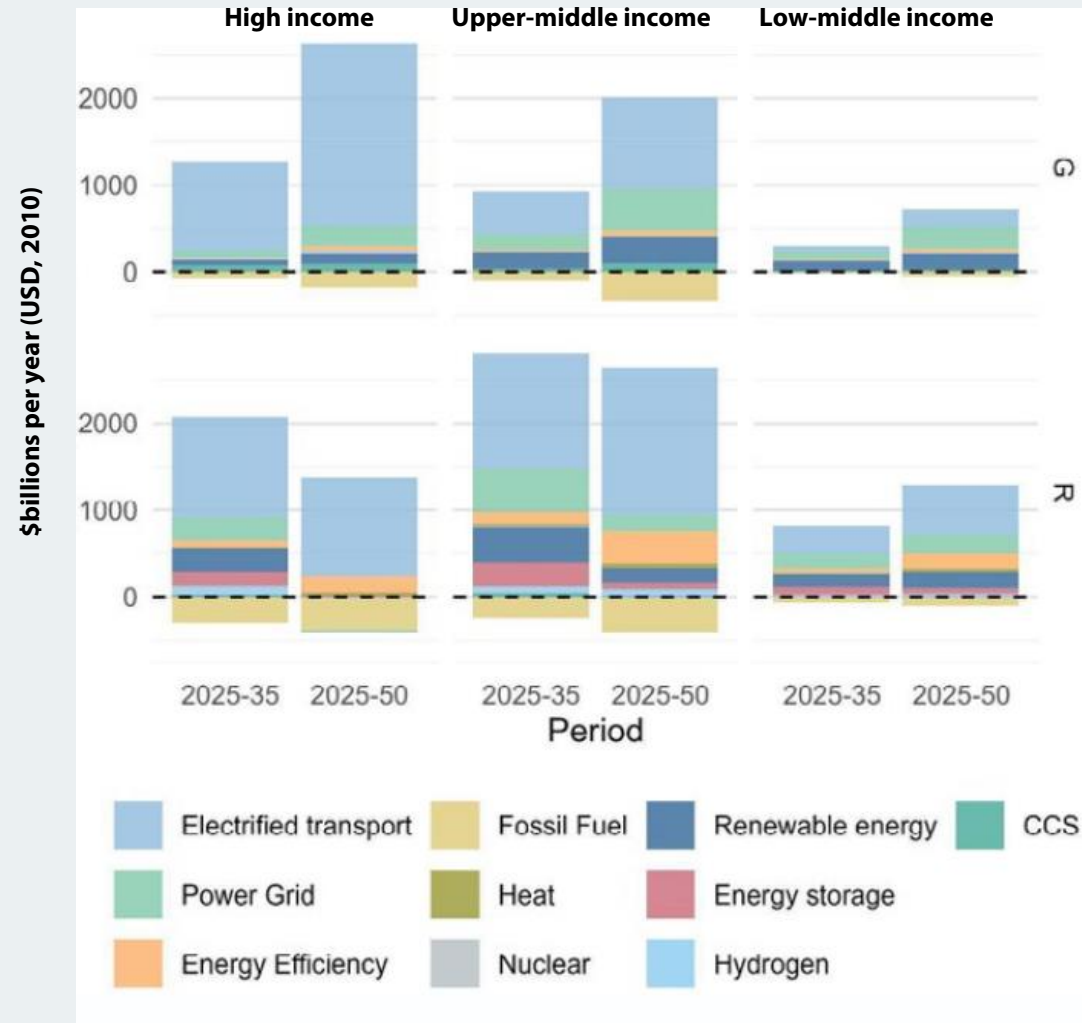
EMBER

Energy investments

Regional energy investment upscaling for Net Zero 2050



Scenarios Portal

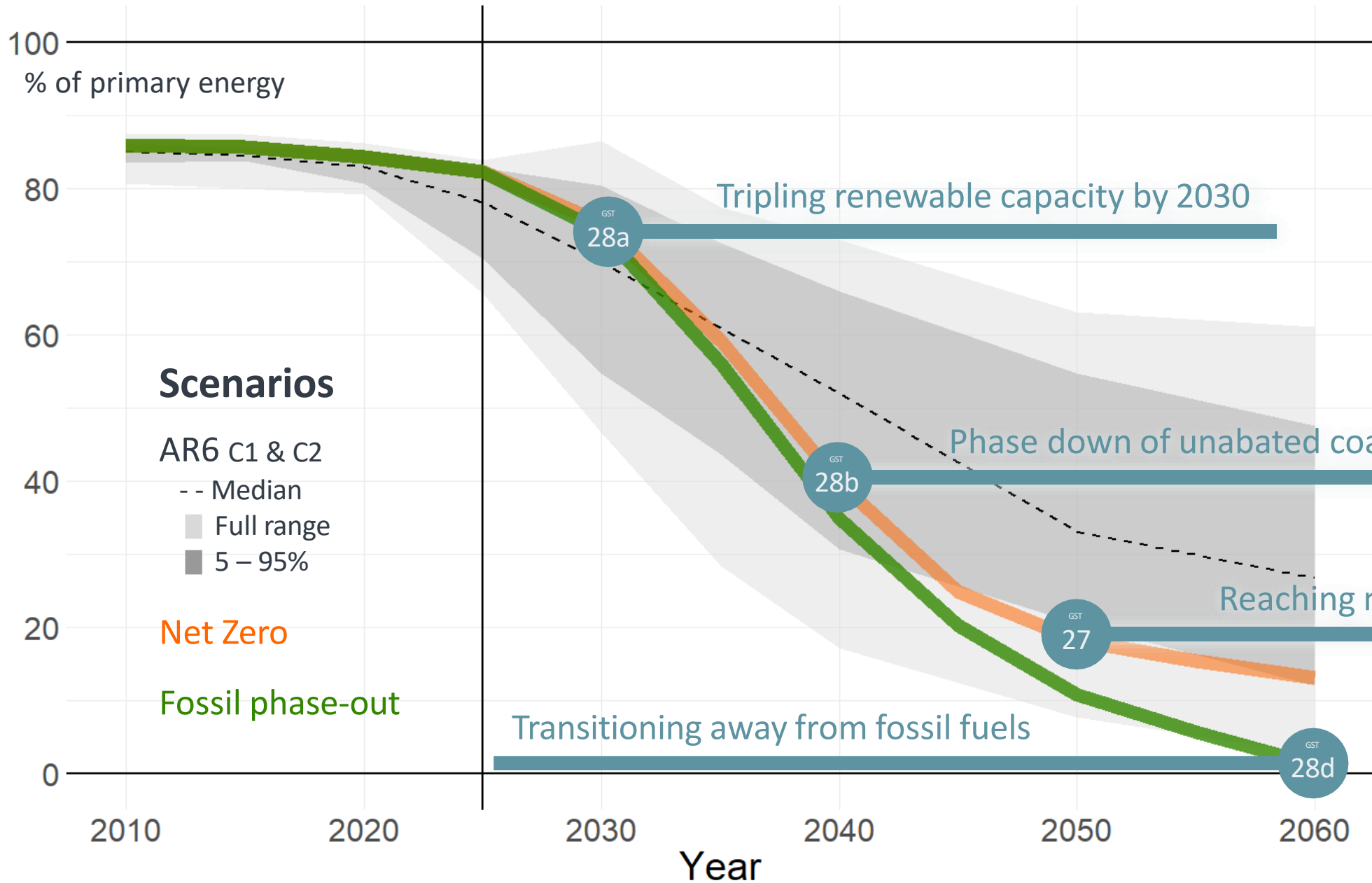


- Current global energy investments (~3 trillion USD annually) insufficient for a Paris-aligned transition.
- Annual investments must increase by ~5 trillion USD until 2050.
- Largest investment needs for electromobility and power grids, significant decline in fossil fuel investments.

Guo et al. (2025), Network for Greening the Financial System.
 Guo et al. (2026), Revisiting Global and Regional Energy Transition Investments for Net Zero 2050. (in preparation)

Regional energy investment upscaling for Net Zero 2050 in 2035 and 2050, compared to 2025 level
 Note that totals are not directly comparable as the scope of covered categories differs across models
 ("G": GCAM, "R": REMIND-MAGPIE) [Figure 5 in Guo et al. 2025, NGFS, adjusted]

Initial results: Fossil fuels in Paris-aligned pathways and relation to UEA Consensus



Lécuyer et al.,
Work in progress

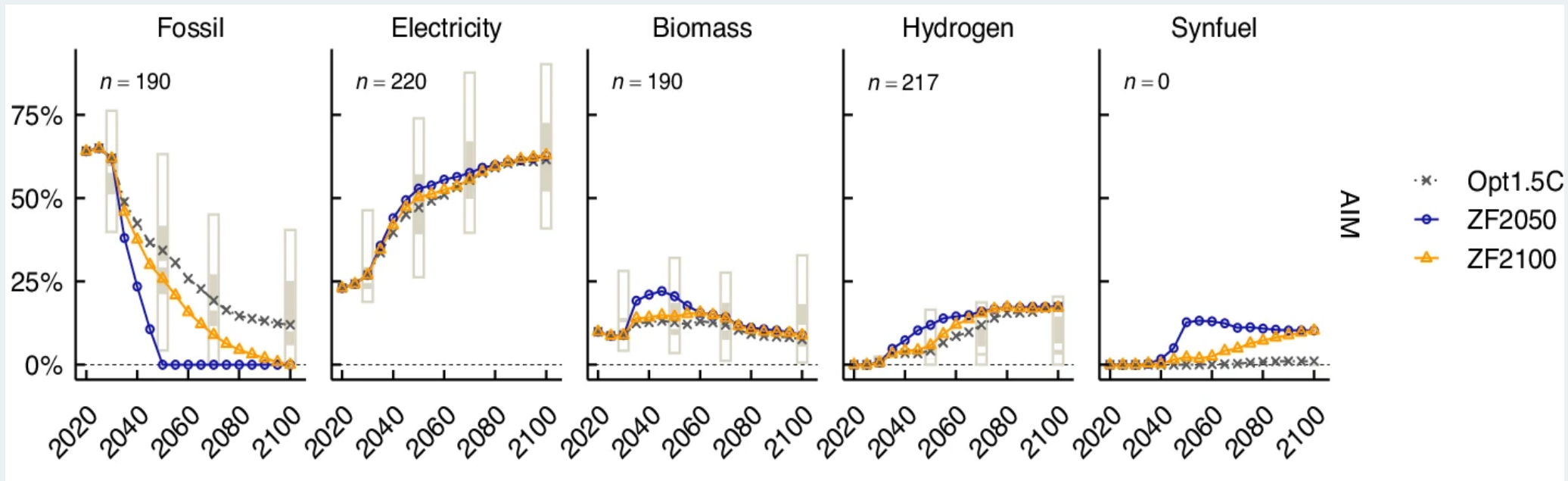
Scenarios

- AR6 C1 & C2
- Median
- Full range
- 5 – 95%

Net Zero

Fossil phase-out

Energy consumption under the 1.5°C goal



Shares in total final energy consumption in the Opt1.5 C, ZF2100, and ZF2050 scenarios during the period 2020–2100

Source: Figure 2 in Mori, S., Joshi, S., Krey, V. *et al.* Challenges and opportunities of the full phase-out of fossil fuels under the 1.5 °C goal. *Nat Commun* 17, 4379 (2026), adjusted

Deep decarbonisation of energy demand relies on:

- Increased electrification, complemented by biomass, hydrogen and synthetic fuels
- Substantial reductions in fossil fuel consumption

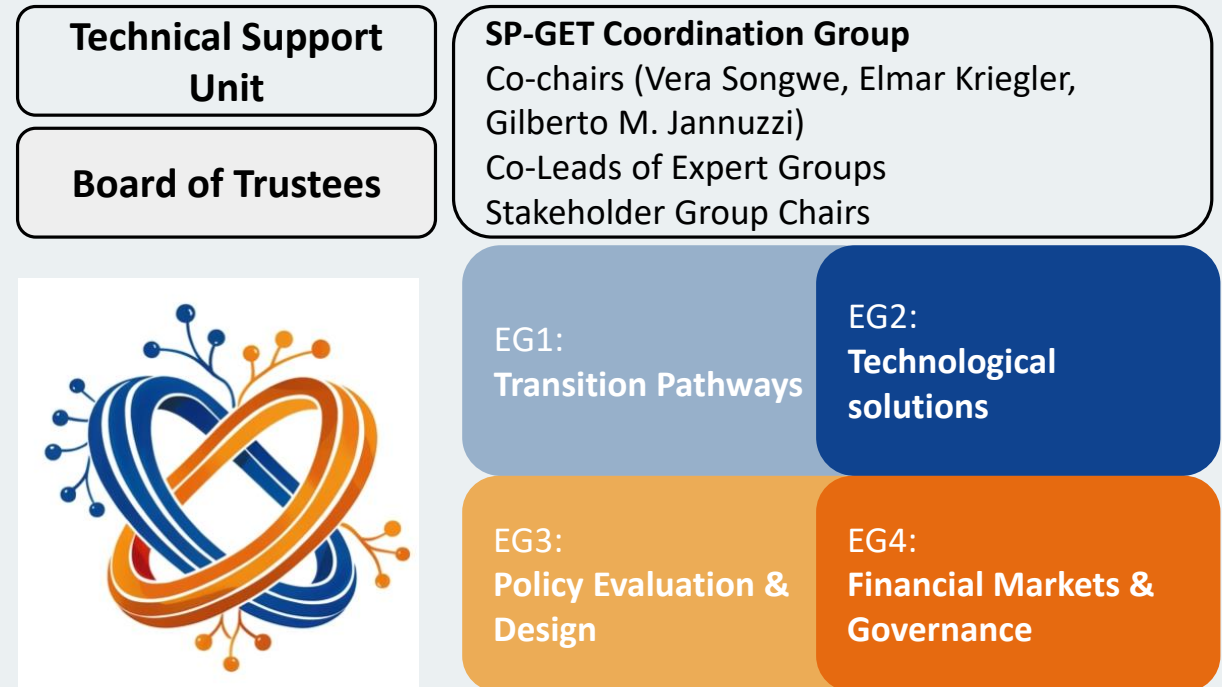
Mori, S., Joshi, S.,
Krey, V. *et al.* (2026)



Science Panel for the Global Energy Transition

Objective: Service decision makers with relevant and accurate science on the global energy transition away from fossil fuels

- **Map and develop** promising policy mixes, financial instruments, sustainable technology solutions, justice dimensions.
- **Policy-oriented assessment** of pathways transitioning away from fossil fuels.
- **Co-produce** scientific products with broad group of stakeholders.
- **Contribute** to the development of national energy transition roadmaps.



Status update

- ❖ Born at COP30 in Belem, launched in Santa Marta
- ❖ Working groups and stakeholder group now being constituted
- ❖ First products planned in time for COP31 in Antalya

Thanks for listening

Elmar Kriegler

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<https://newpathways.eu/>



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Tracking climate progress of the NDCs 3.0

Ioannis Dafnomilis & Janna Hoppe
PBL Netherlands Environmental Assessment Agency &
NewClimate Institute

SB64, Bonn, June 2026

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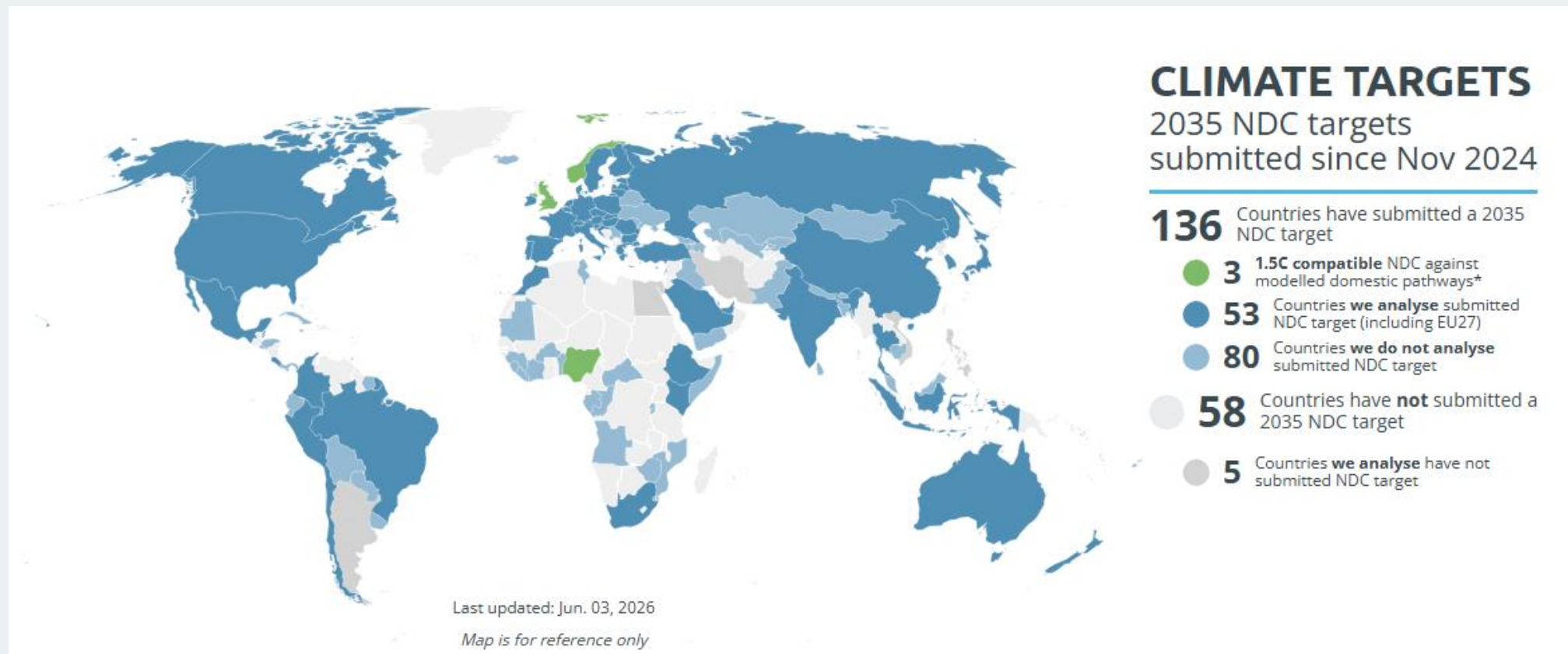
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1. Introduction
2. NDC 3.0 impact – Global
3. NDC 3.0 impact – National
4. Geopolitical landscape
5. Takeaway messages

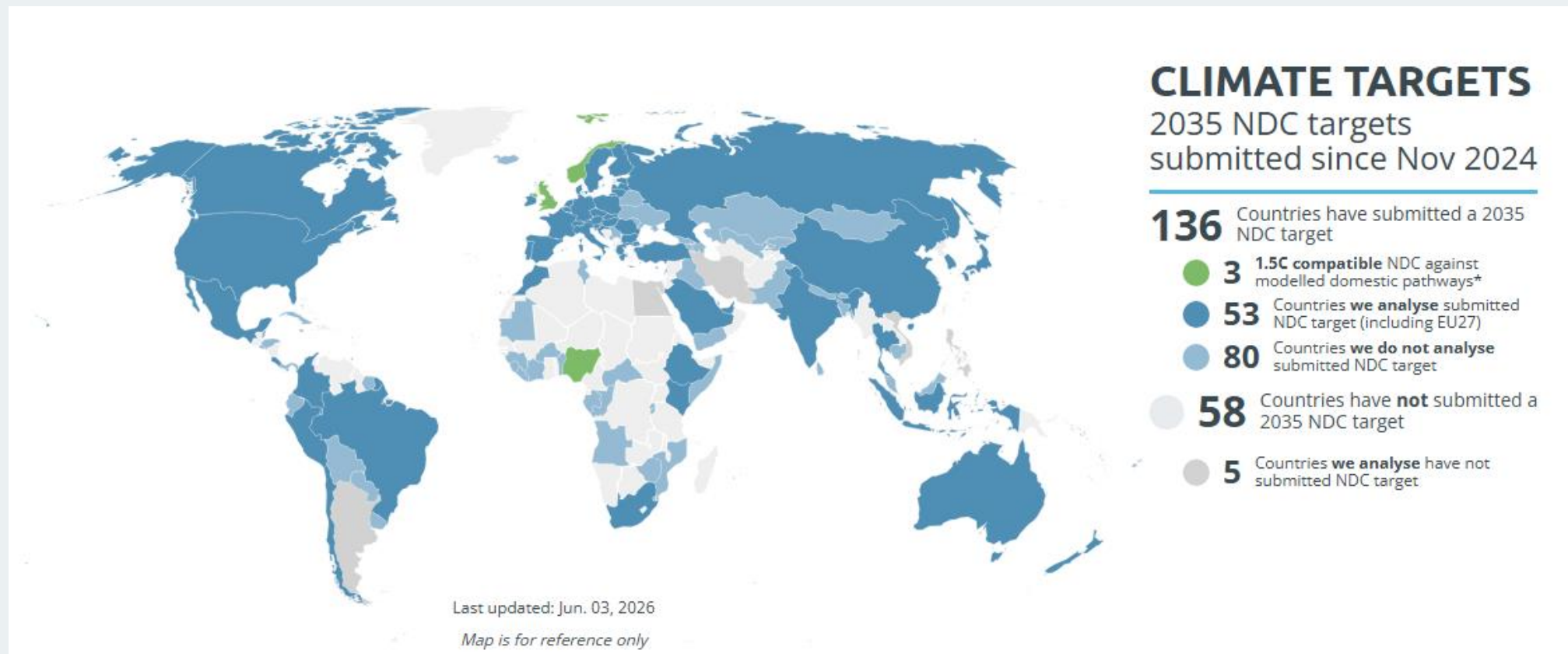
Introduction

By end of May 2026, 136 countries covering 85% of global GHG emissions had announced or submitted NDC 3.0 targets

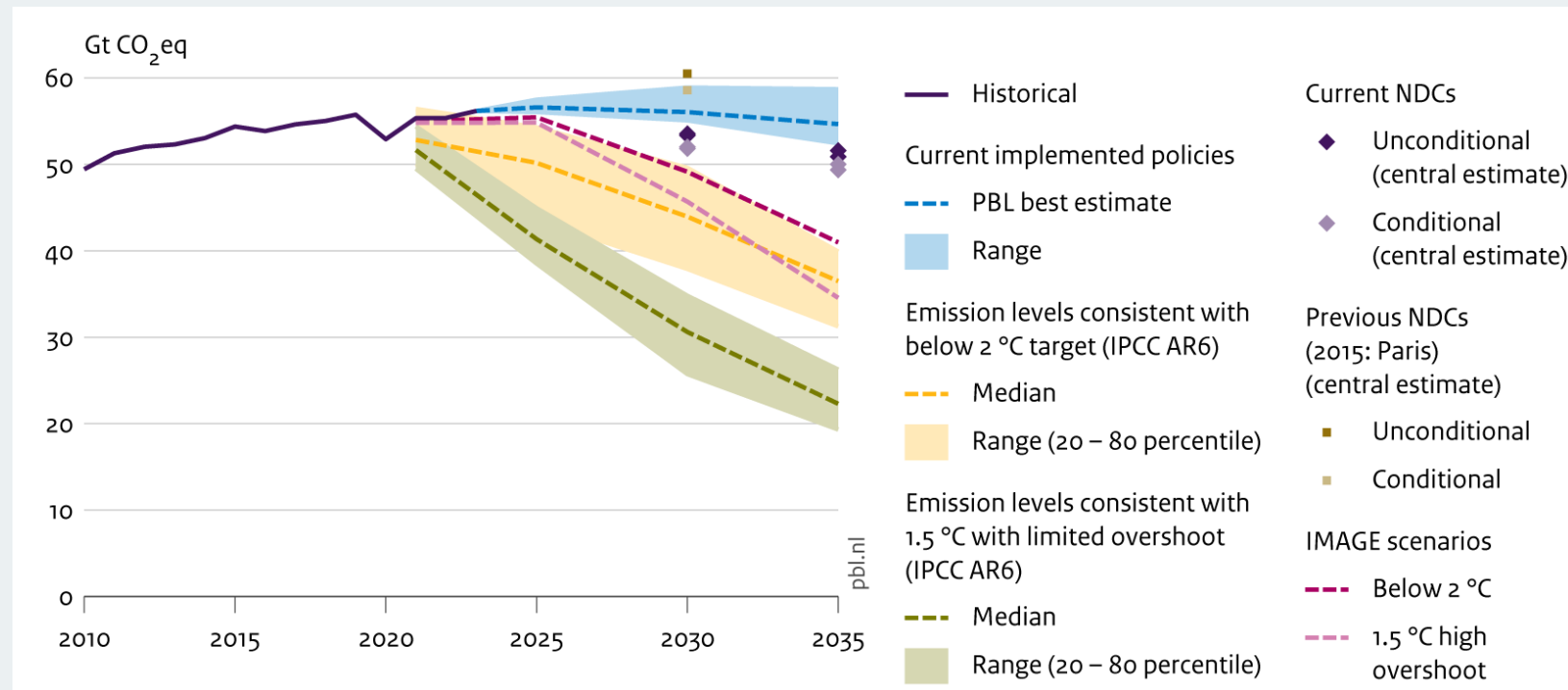


Introduction

1. What is the impact of the NDCs 3.0 on 2035 global & national GHG emissions?
2. Are countries on track to meet their NDC 3.0?



NDC 3.0 impact - Global



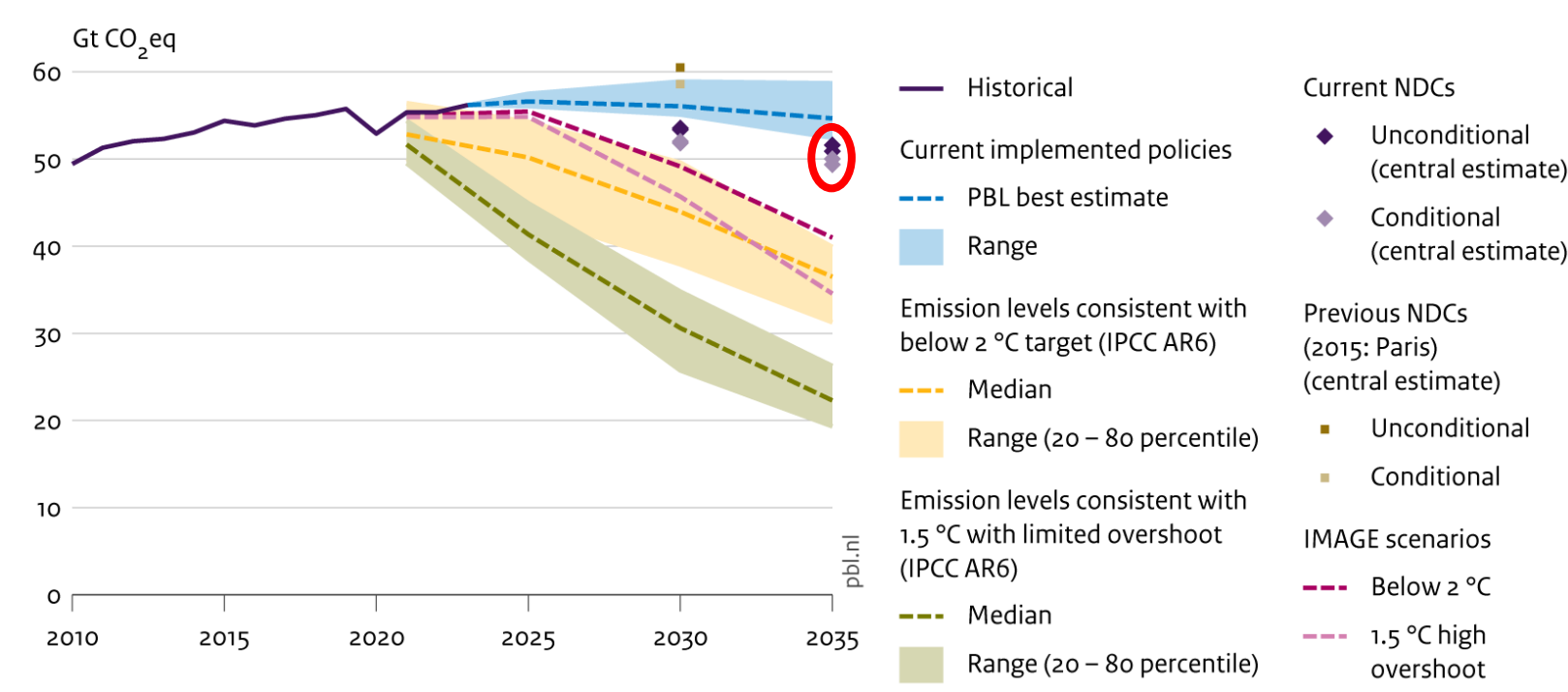
(derived from Den Elzen et al., 2026)

NDC 3.0 impact - Global



2035: 50-51 GtCO₂e

~9% below 2019 levels



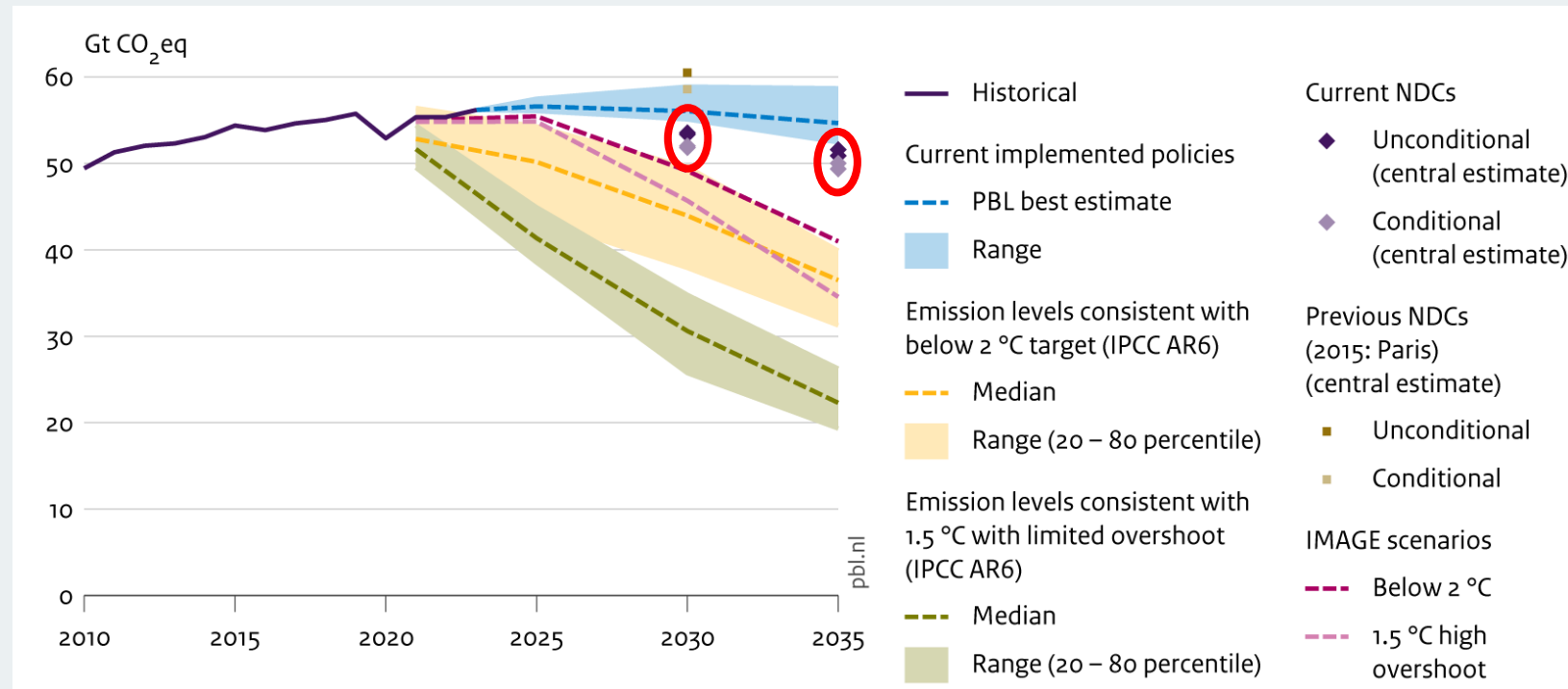
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NDC 3.0 impact - Global

2035: 50-51 GtCO₂e

~9% below 2019 levels

+2.5 GtCO₂e additional reduction from 2030



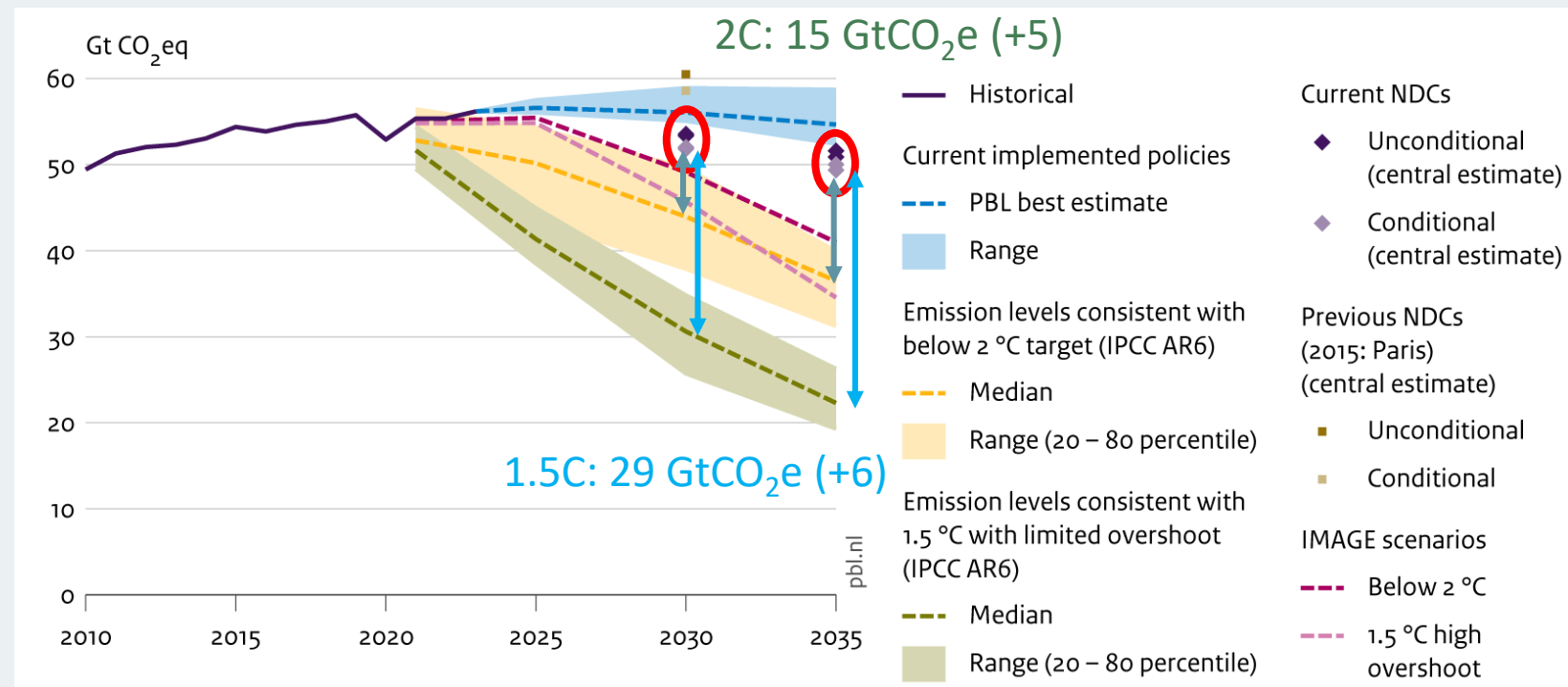
(derived from Den Elzen et al., 2026)

NDC 3.0 impact - Global

+2.5 GtCO₂e additional reduction from 2030

Gap to current policy projections remains the same

Gap to PA goals widens



(derived from Den Elzen et al., 2026)

NDC 3.0 impact - National

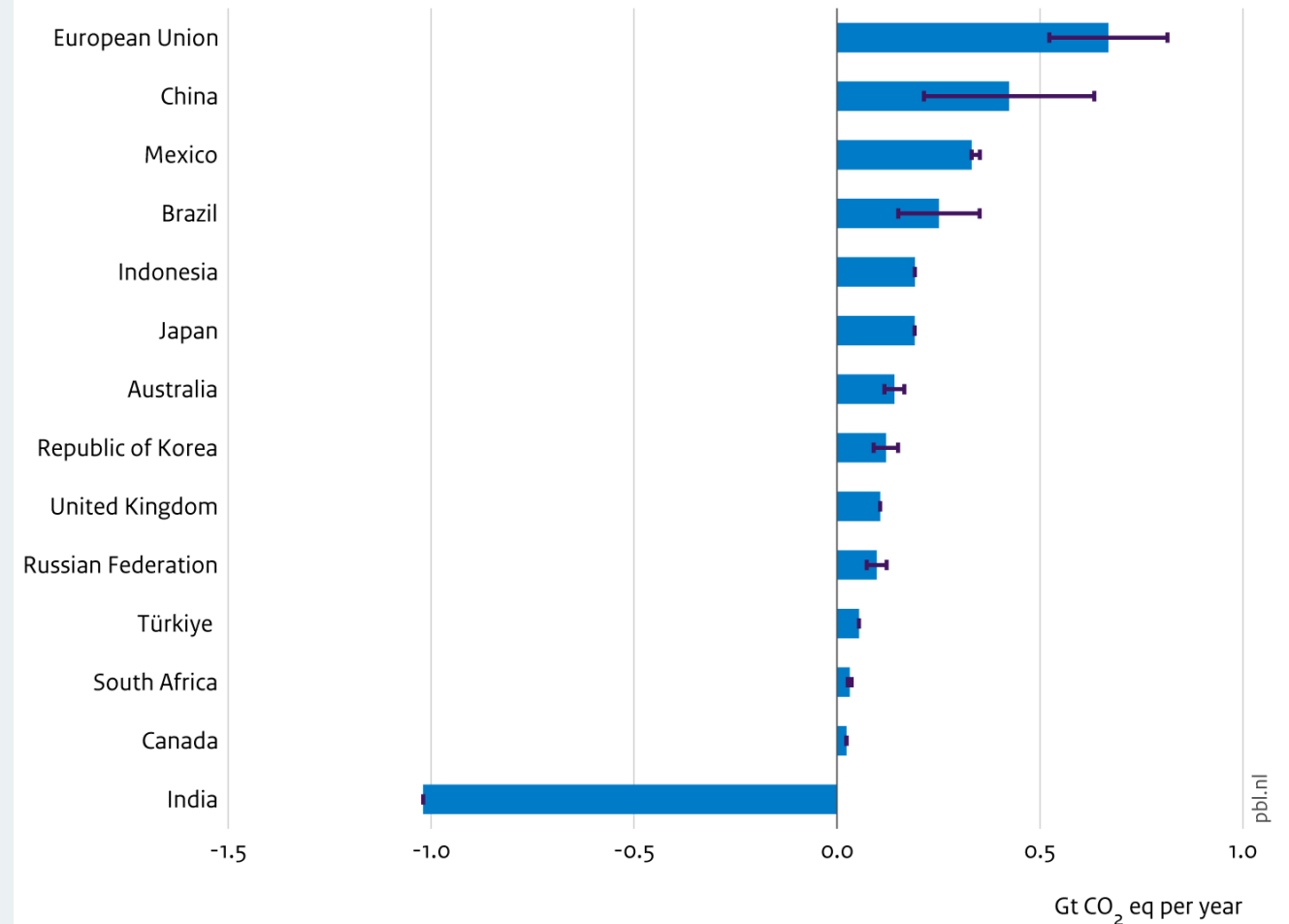
Most G20 increased ambition – ever so slightly

But again: Gap to PA goals widens

e.g. India allows for emissions increase

Emission reduction of new NDCs compared to 2030 levels, in 2035

a. G20 with new NDCs



NDC 3.0 impact - National

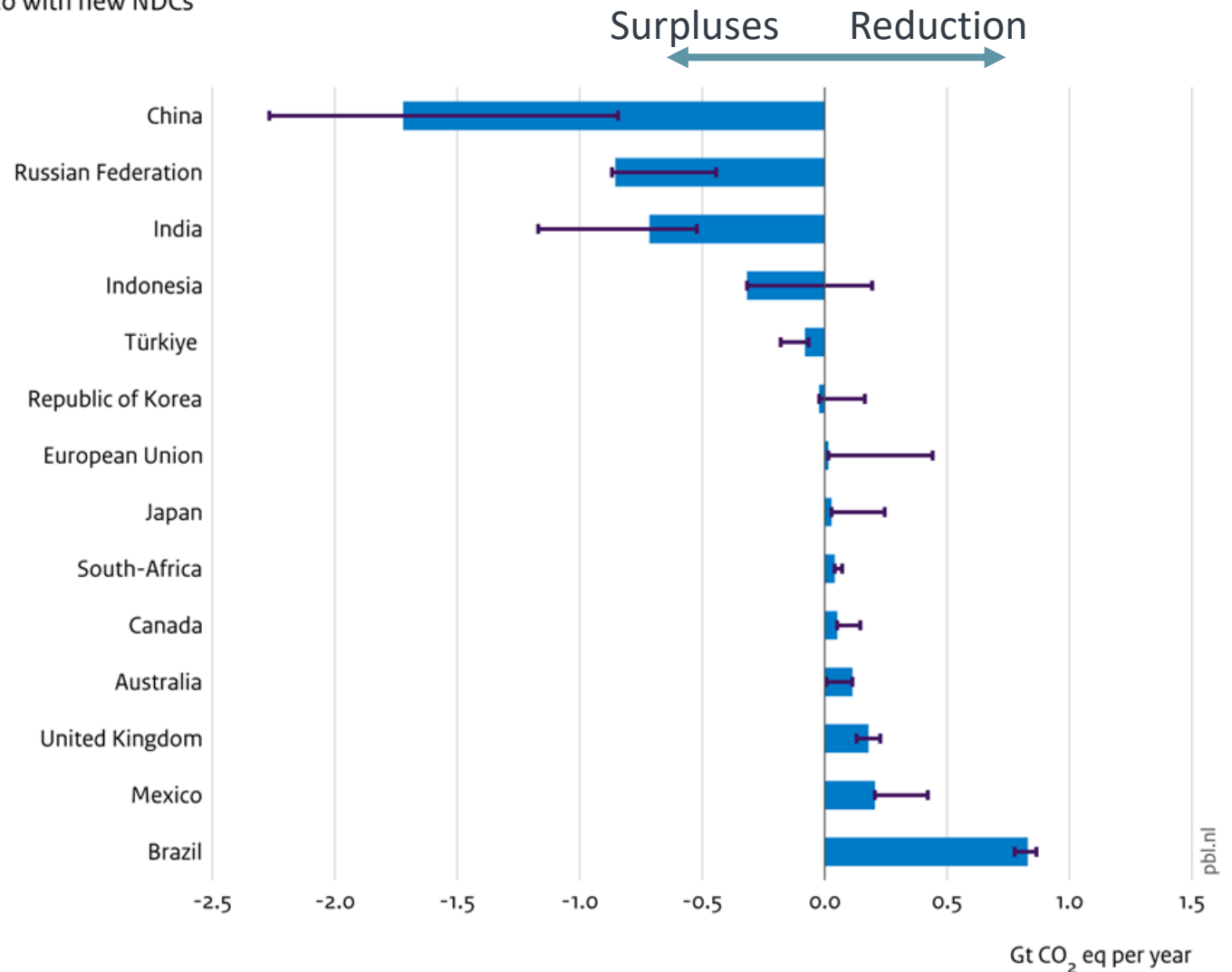
“Increased” ambition vs 2030 not the whole story

Some targets already met under current policies projections

Could increase ambition

Emission reduction of new NDCs compared to Current policies, in 2035

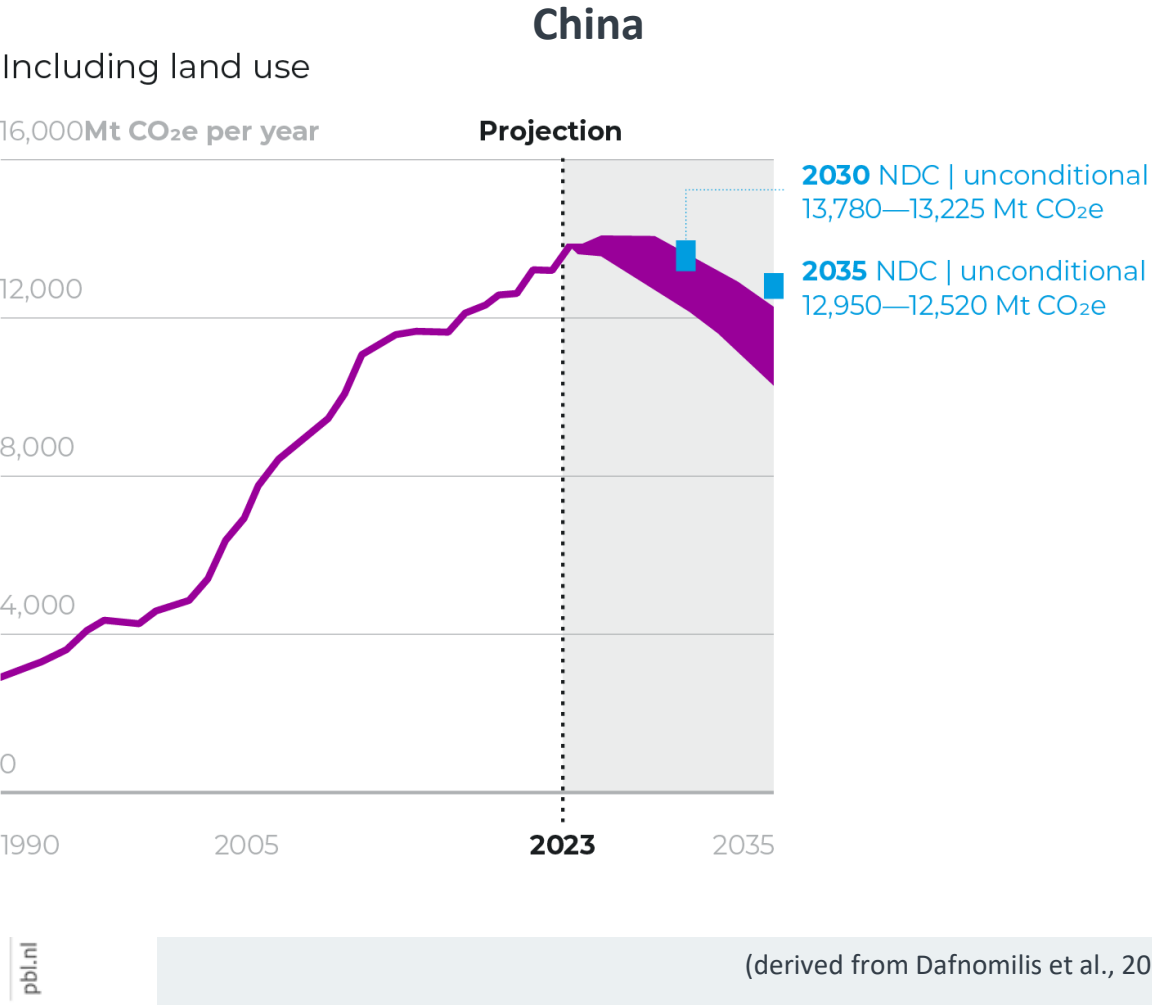
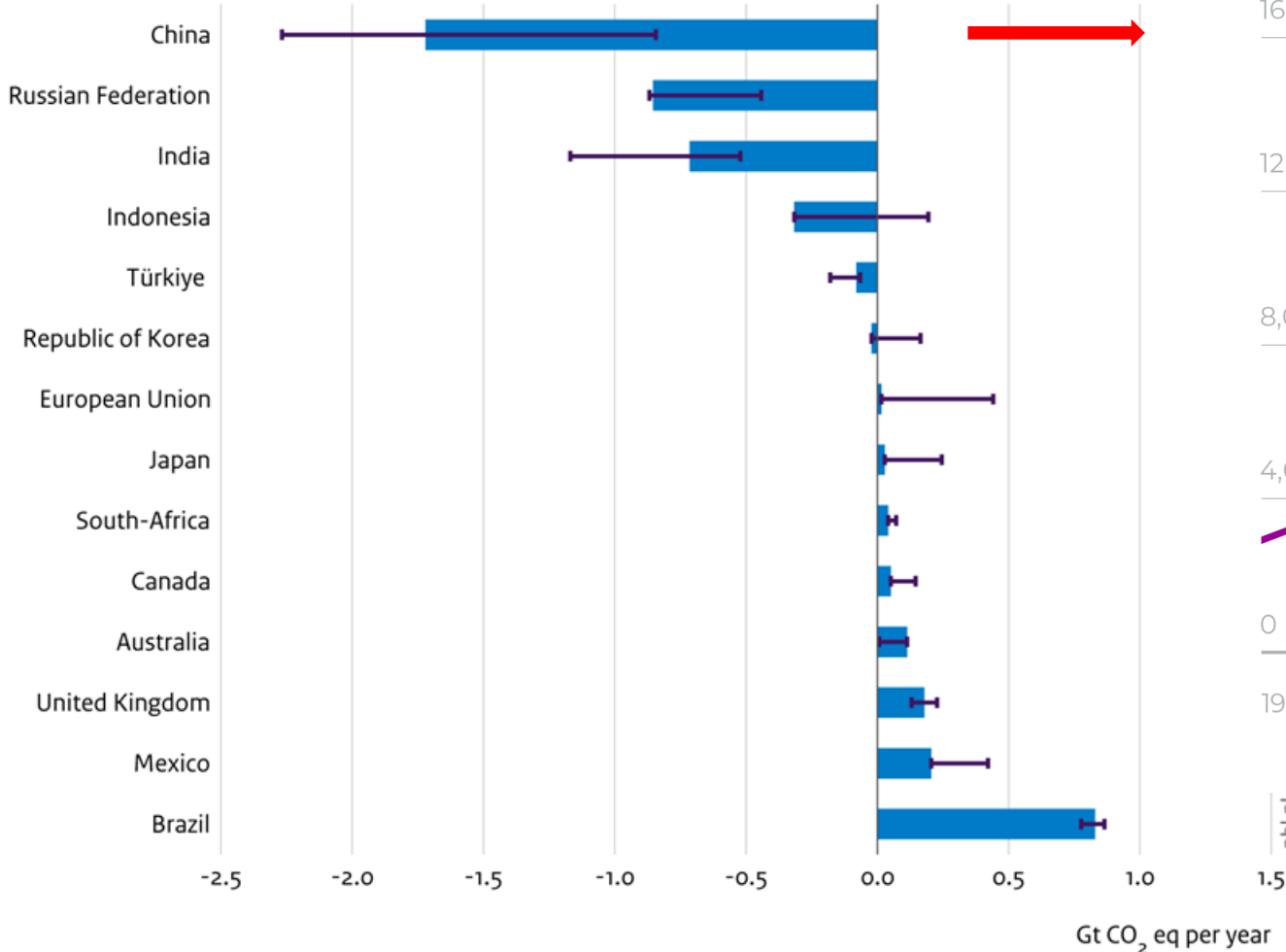
a. G20 with new NDCs



NDC 3.0 impact - National

Emission reduction of new NDCs compared to Current policies, in 2035

a. G20 with new NDCs

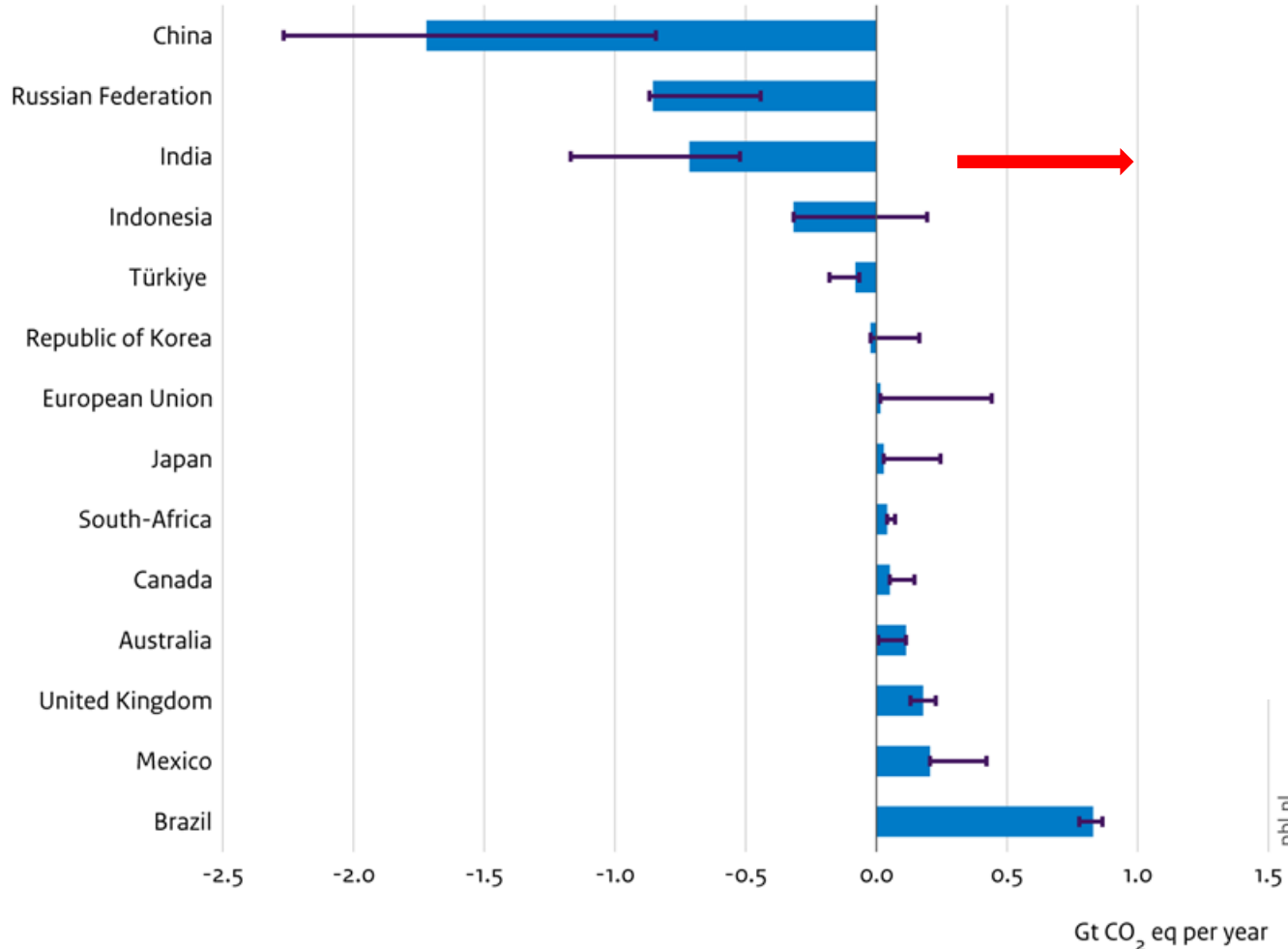


(derived from Dafnomilis et al., 2025)

NDC 3.0 impact - National

Emission reduction of new NDCs compared to Current policies, in 2035

a. G20 with new NDCs

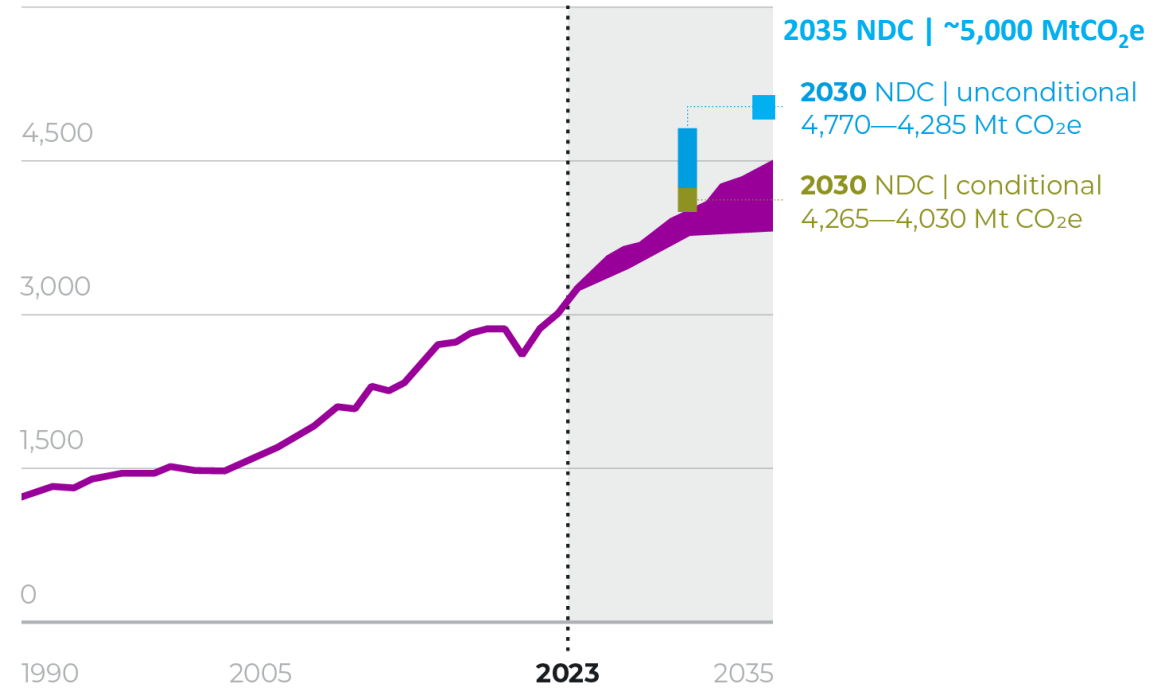


Including land use

India

6,000Mt CO₂e per year

Projection

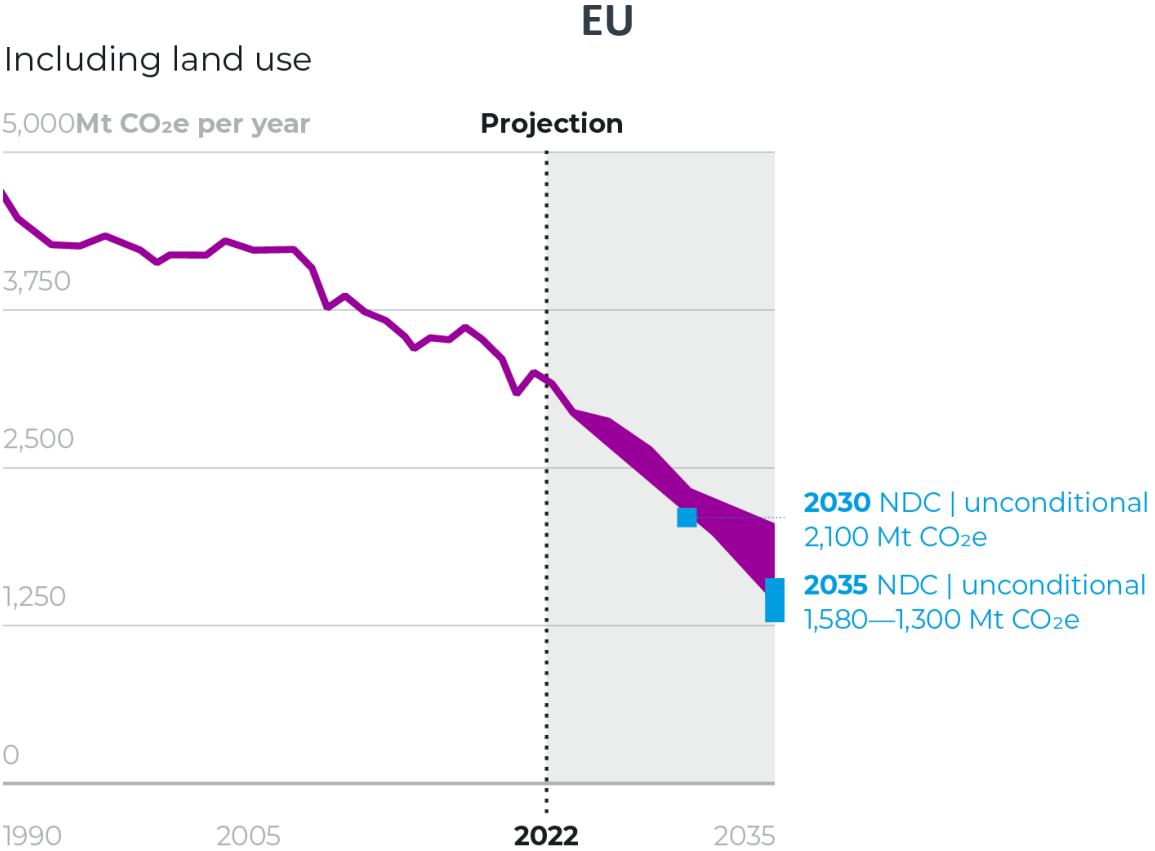
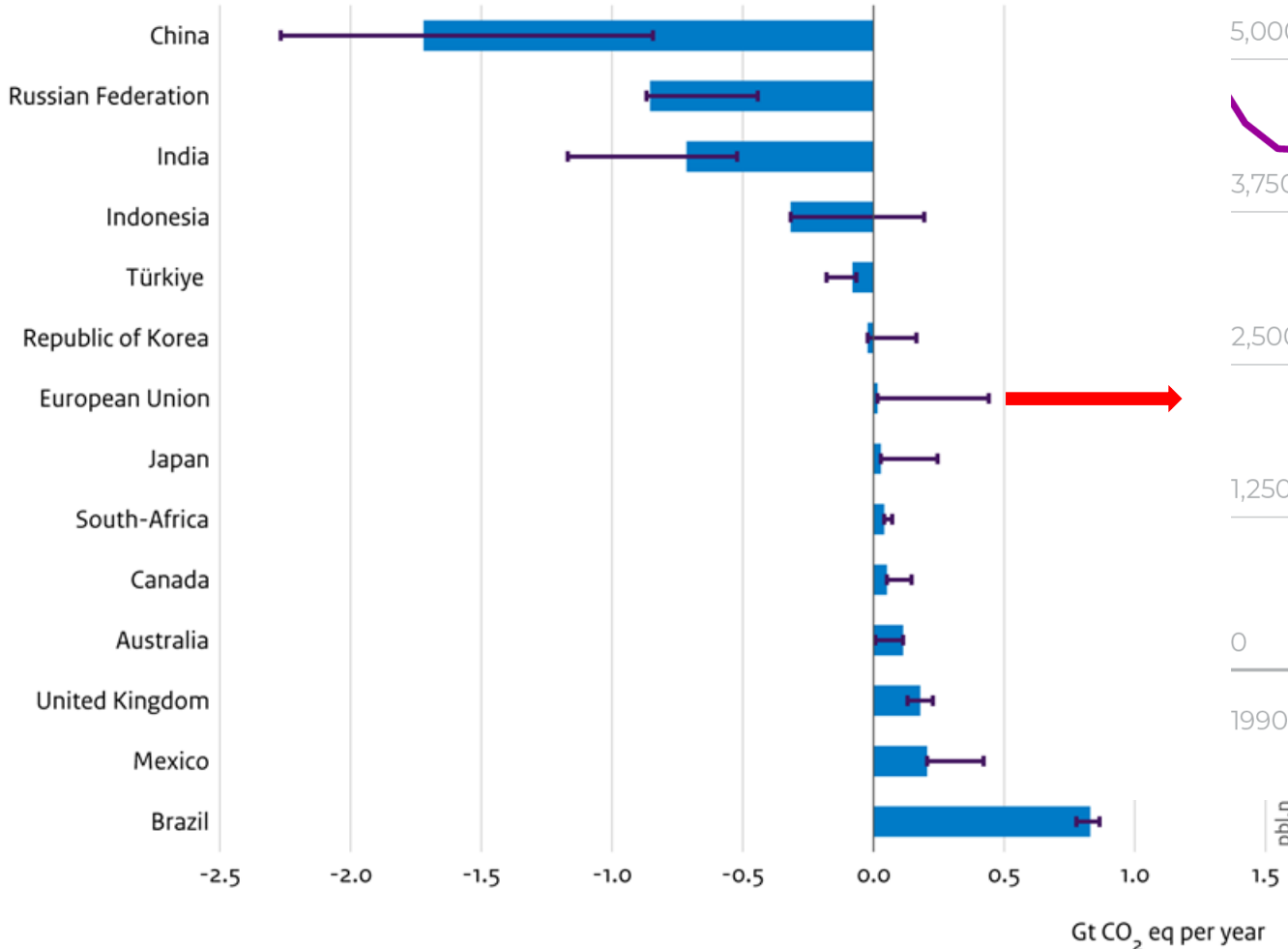


(derived from Dafnomilis et al., 2025)

NDC 3.0 impact - National

Emission reduction of new NDCs compared to Current policies, in 2035

a. G20 with new NDCs

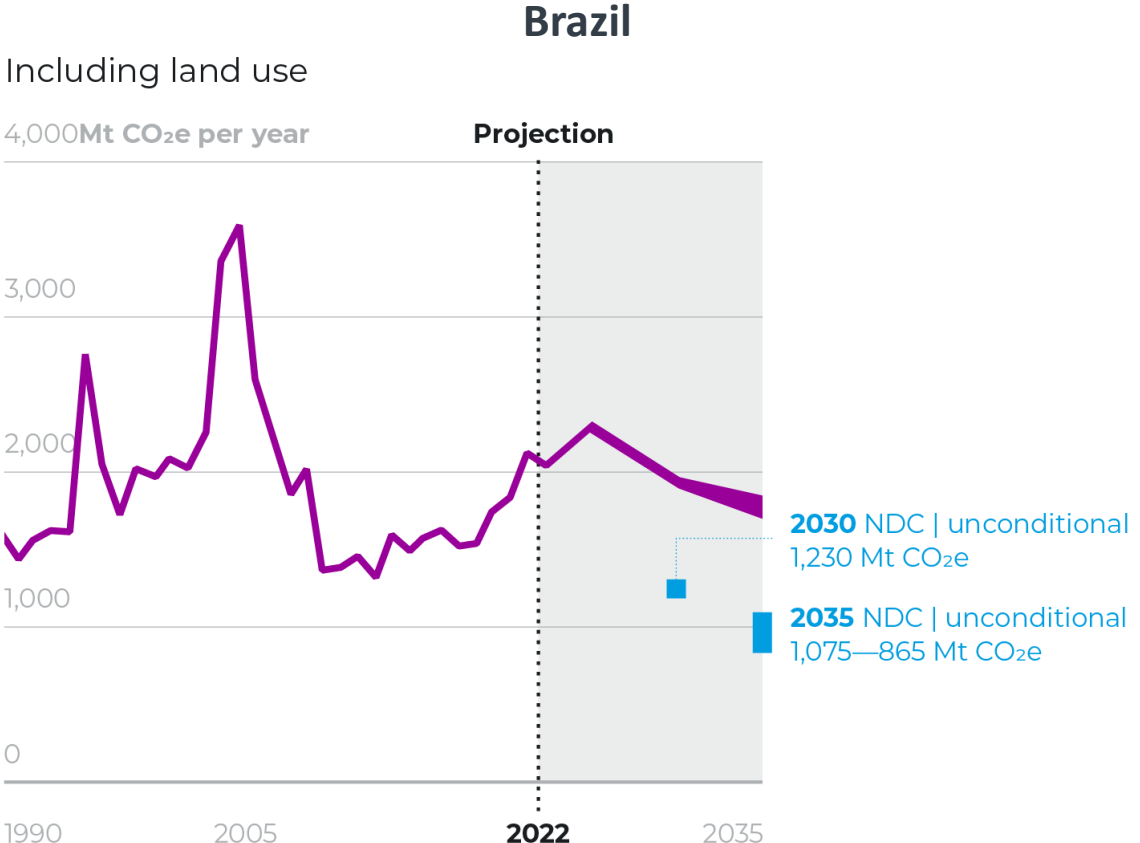
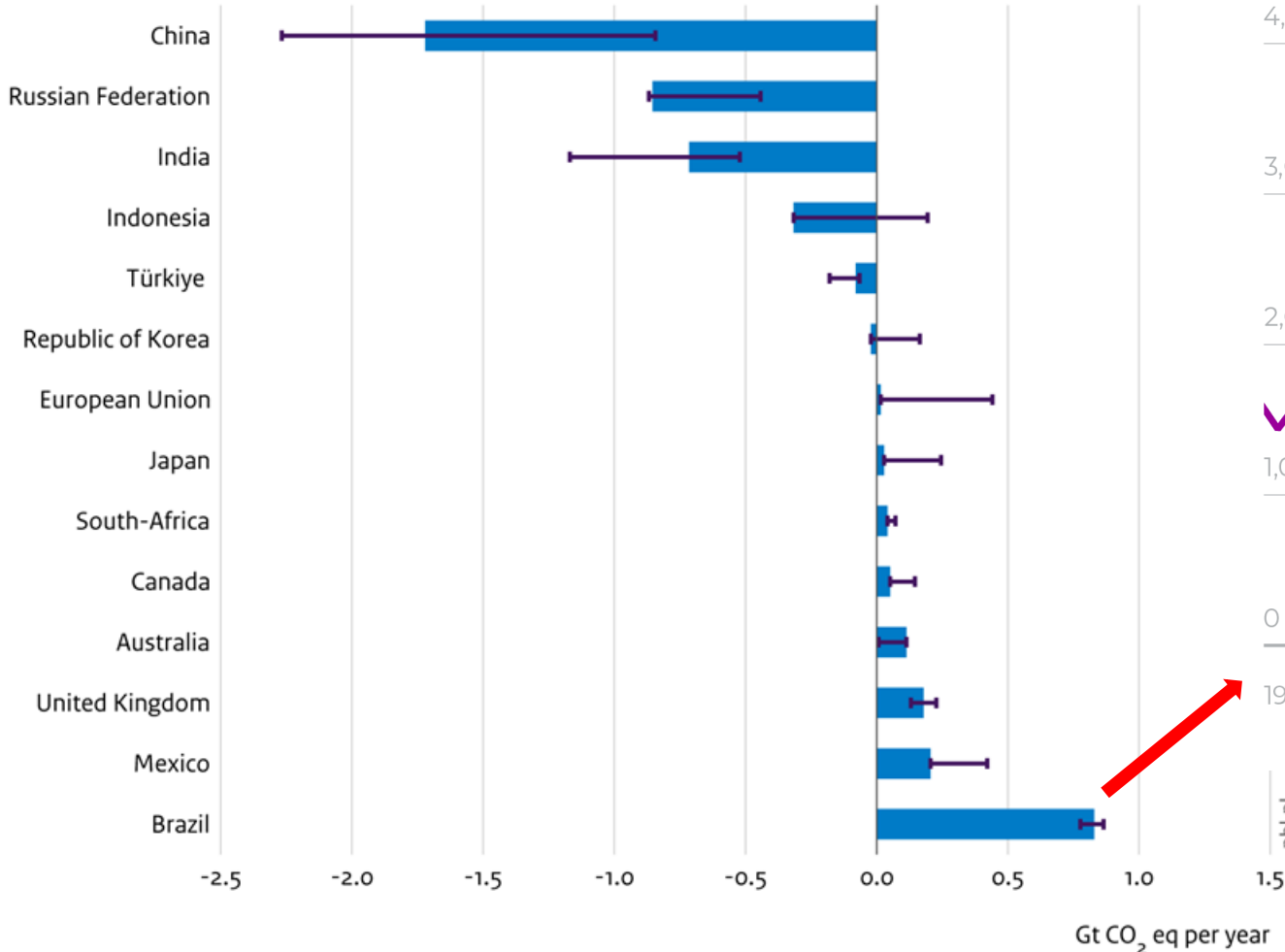


(derived from Dafnomilis et al., 2025)

NDC 3.0 impact - National

Emission reduction of new NDCs compared to Current policies, in 2035

a. G20 with new NDCs



(derived from Dafnomilis et al., 2025)

Geopolitical landscape

Energy crisis response assessment might shape policy and transition

- 3rd major shock to global energy system since 2020, highlighting the inherent vulnerabilities of fossil-fuel based energy systems
- This current crisis is different: clean energy technologies are more mature and cost-competitive than they were just a few years ago

Geopolitical landscape

Energy crisis response assessment might shape policy and transition

Near-term energy conservation & consumer support

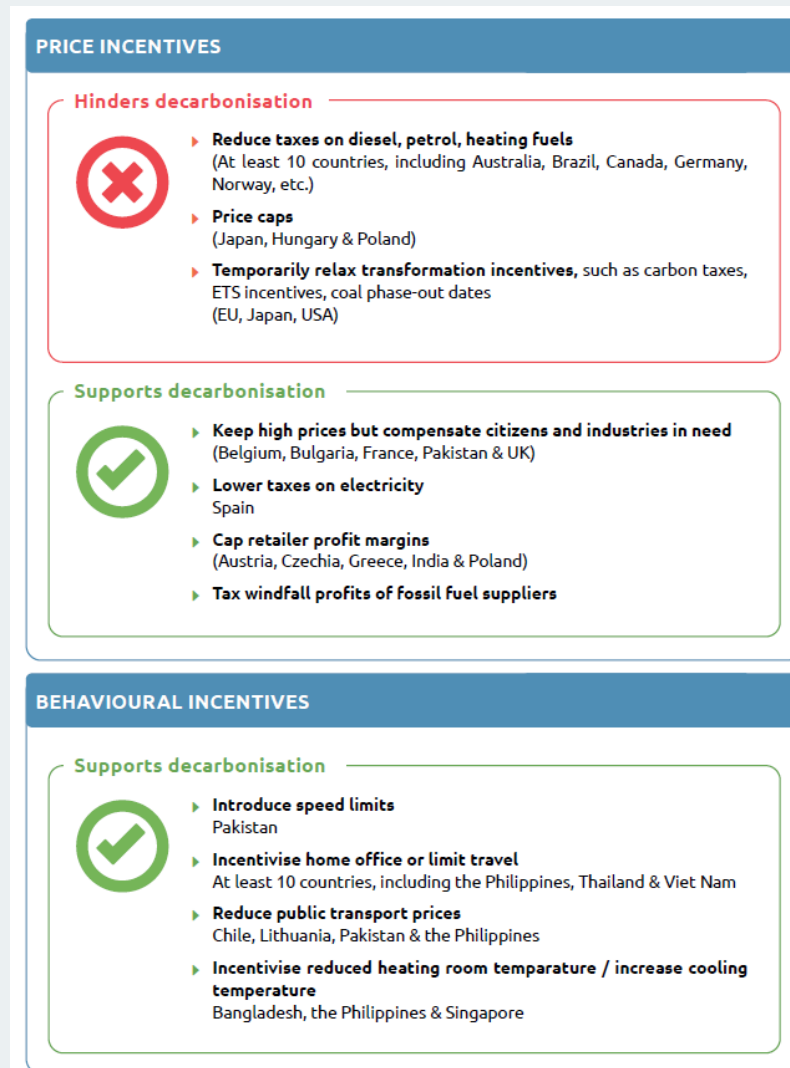
- Encouraging remote work / Promoting public transportation

But mostly

- Fossil fuel subsidies or tax cuts
- Cap on fuel prices

Some measures could have lasting impact: delaying coal-plant closure (Italy, South Korea) or allowing higher rates of operation (Japan, Thailand)

Shift has been modest and likely to be offset
(IEA 2026 Energy Crisis Policy Response Tracker)



Geopolitical landscape

Energy crisis response assessment might shape policy and transition



Structural policy measures focused on energy security & affordability

- Energy efficiency grants for retrofits in buildings
- Electric vehicle support schemes
- Tax cuts for renewable energy installations

Can have more durable structural consequences if implemented as planned

(IEA 2026 Energy Crisis Policy Response Tracker)

Takeaway messages

- Most major emitters (except USA) have an active NDC 3.0

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- “Increase” in ambition vs 2030 – in absolute terms, the bar is low

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- But **no increase vs current policies** projections and
- **Gap to PA goals even wider** now

Takeaway messages

- Most major emitters (except USA) have an active NDC 3.0
- “Increase” in ambition vs 2030 – in absolute terms, the bar is low
- But **no increase vs current policies** projections and
- **Gap to PA goals even wider** now

- Major **geopolitical events** might have an impact on decisions and projections
 - Response to crisis will determine whether the transition is delayed or structural change is accelerated

Thank you for your attention

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