Achieving the Paris Agreement: Can we agree to disagree on climate justice?

Assessing countries' climate pledges under the Paris Agreement. Challenges of quantifying and combining dissonant views on fairness

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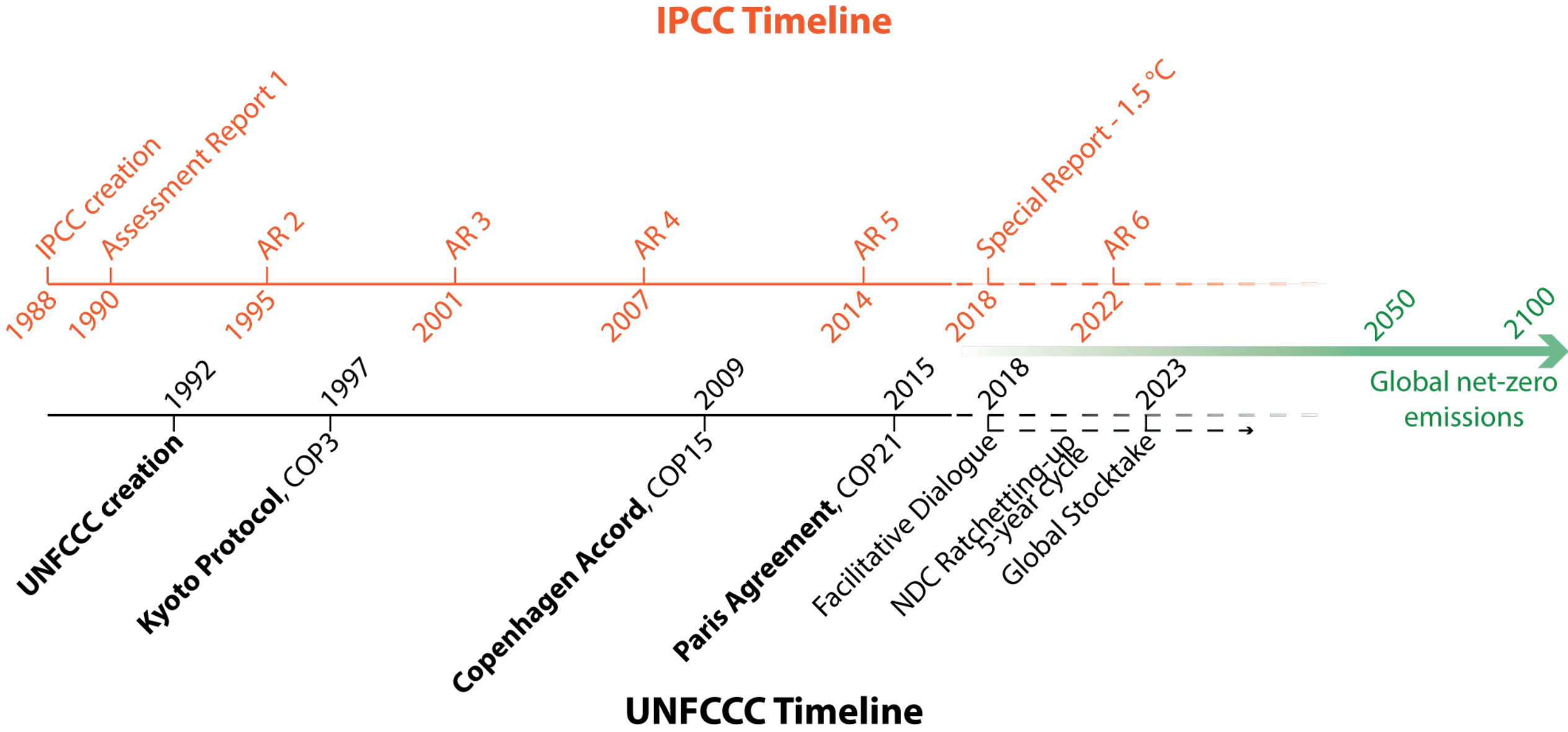
THE UNIVERSITY OF MELBOURNE

AUSTRALIAN-GERMAN COLLEGE OF CLIMATE & ENERGY TRANSITIONS

How much do science and equity matter for decision making?



What are national positions on equity?

National positions on equity

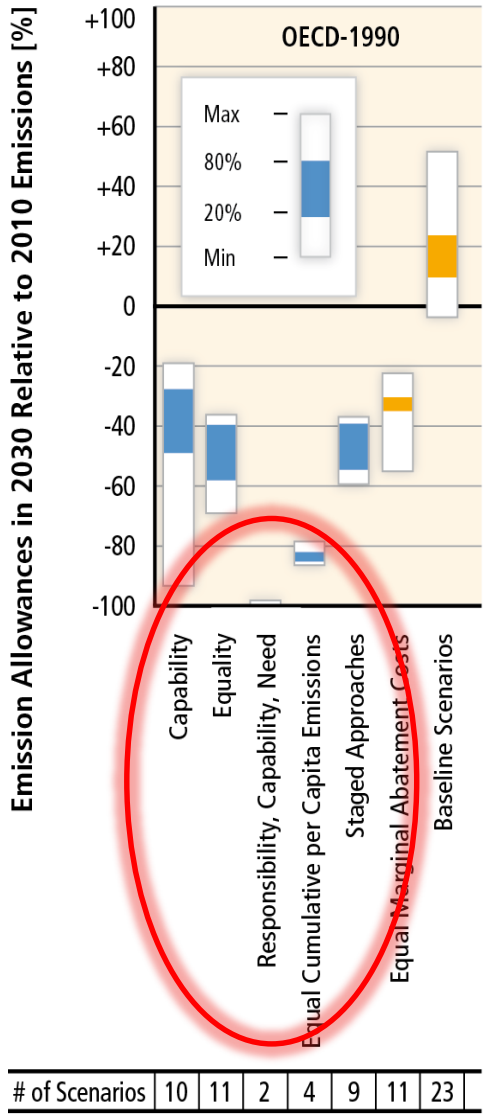
Countries	Equity Principle	Share of global emissions (%)	References
Like Minded Developing Countries	Historical responsibility	42	ADP Submissions
USA		15	
Europe (28 countries)	Historical responsibility, Capability	10	(AWG-LCA 15)+(Commission of the European Communities 2008)
Russia		5	
Least Developed Countries	Right to development	4	ADP + (AWG-LCA 15)
Japan		3	
Brazil	Historical responsibility, Capability	3	(BASIC experts 2011) + (AWG-LCA 15) + NDC
Canada		2	
Australia		1	
South Africa	Right to development, Historical responsibility, Capability	1	(BASIC experts 2011) + (AWG-LCA 15) + NDC
AILAC	Historical responsibility, Capability	1	ADP Submissions

Research question

How can we operationalize competing equity principles to mitigate global warming?

Literature context

Existing equity allocations methods

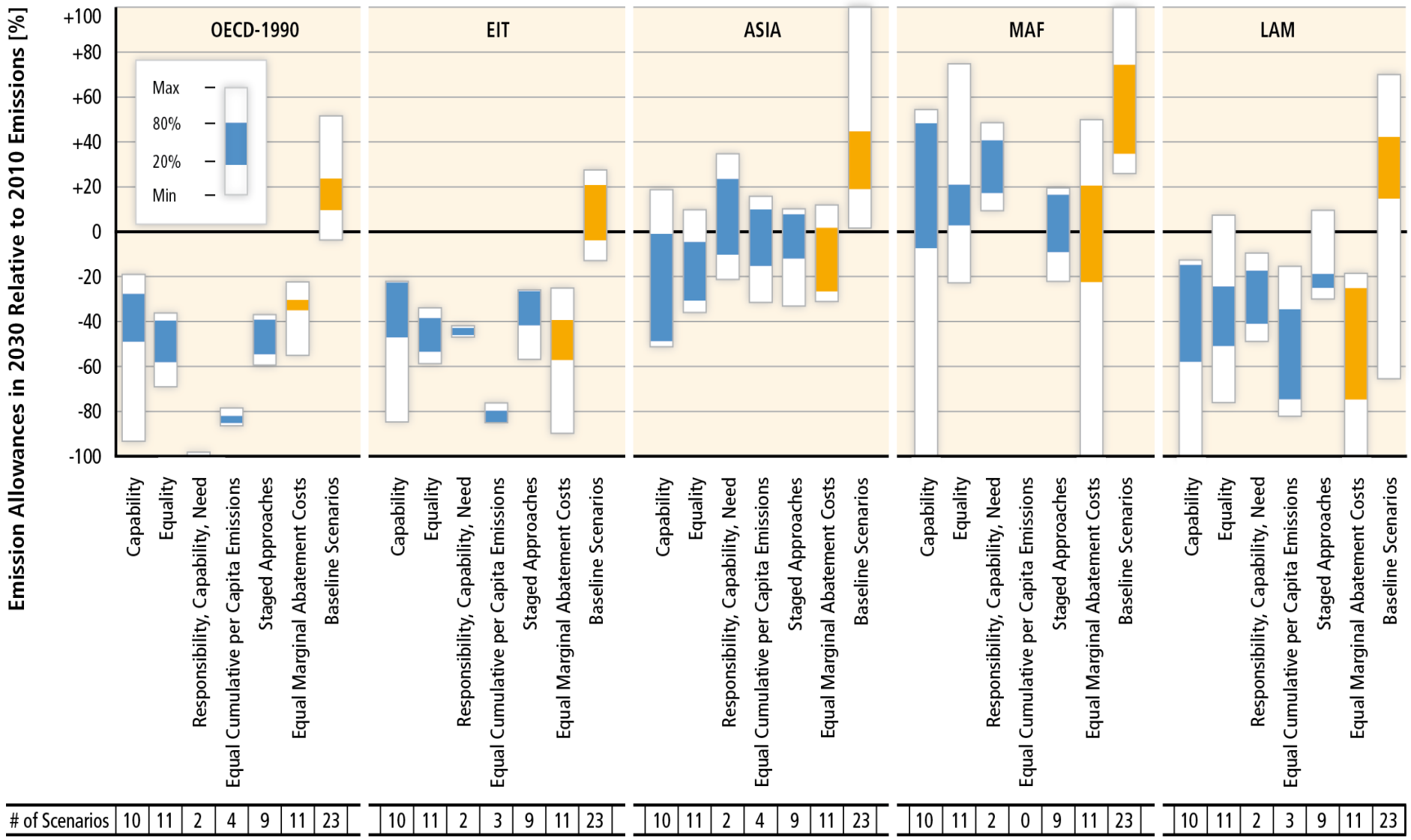


Five effort-sharing categories:

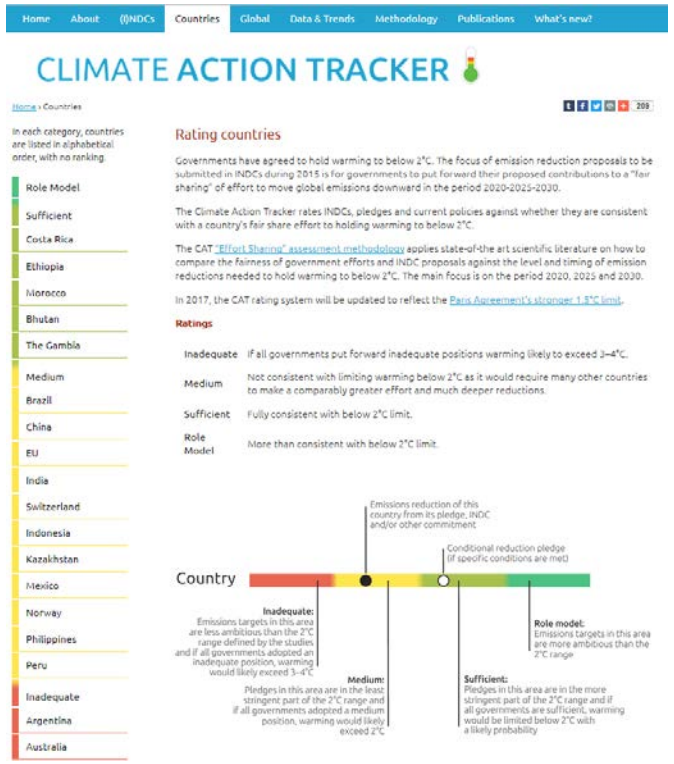
- Capability
- Equality
- Responsibility – Capability – Need
- Equal cumulative per capita
- Staged approaches

Fig 6.28, CH6 , IPCC-AR5 WGIII, 2014

Existing equity allocations methods



Combining equity approaches



➢ Range positioning

Climate Action Tracker

➢ Weighting coefficients

Raupach et al. 2014

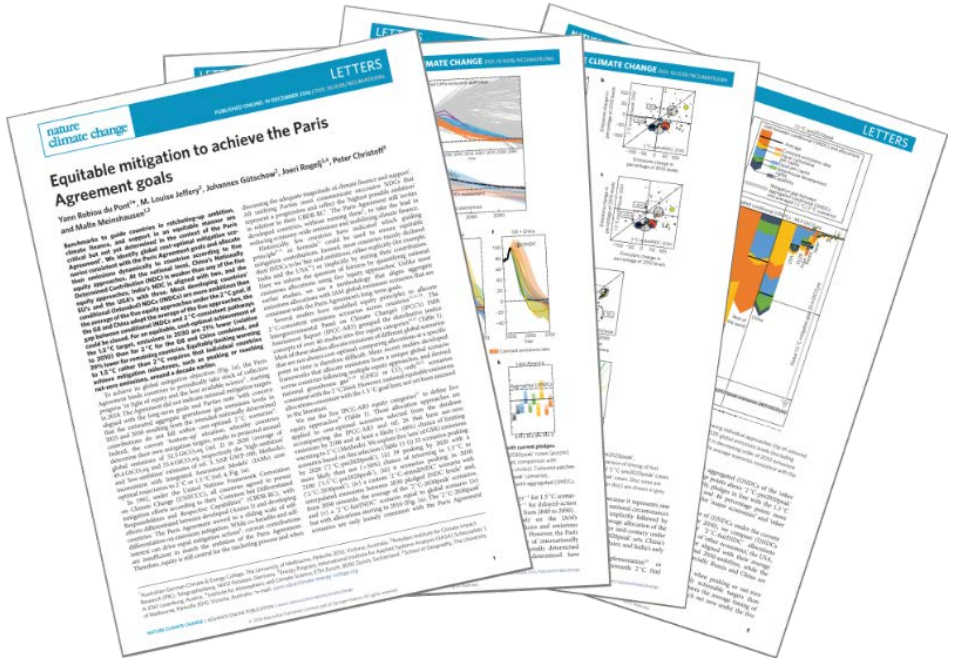
➢ Implication of the EU - 40% target

Hof et al. 2012

➢ Diversity aware leader

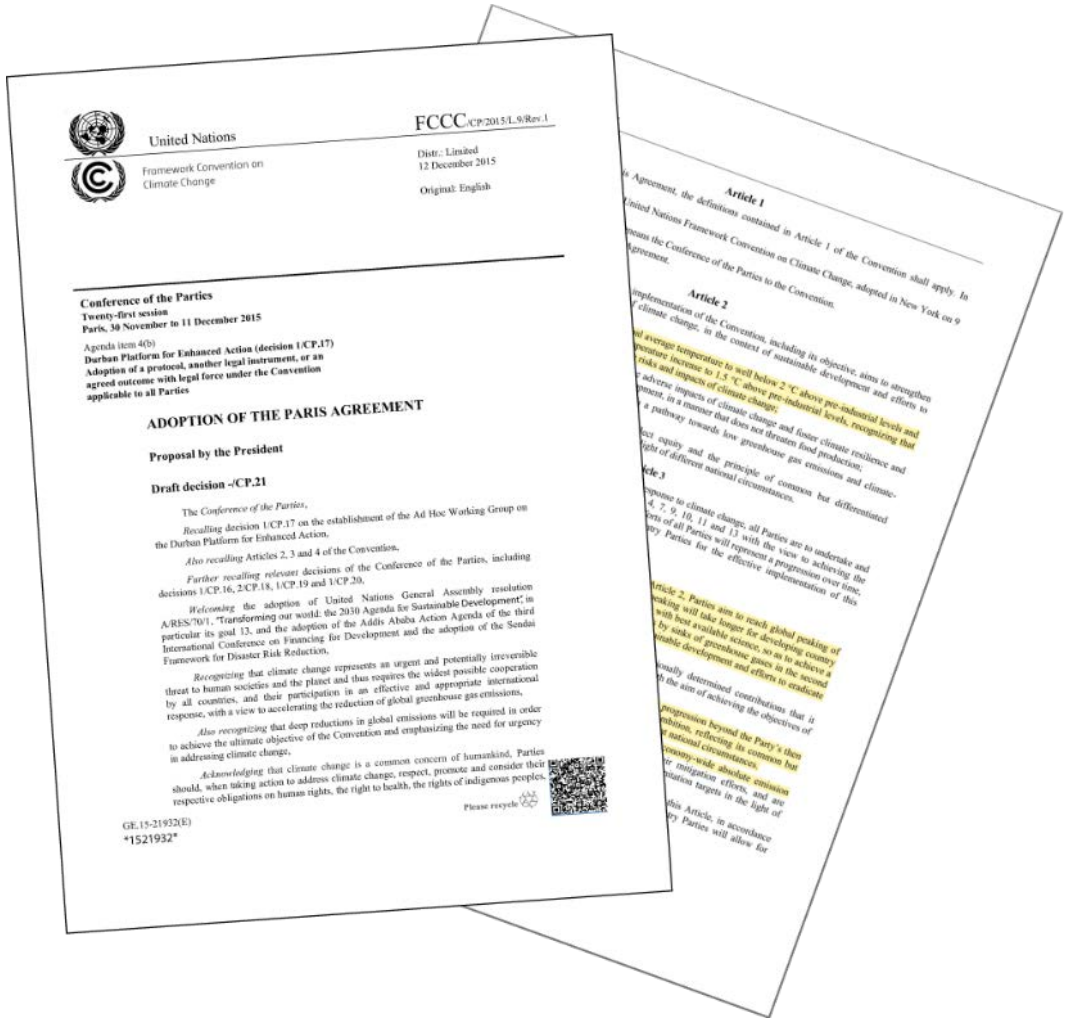
Meinshausen et al. 2015

Equitable mitigation to achieve the Paris Agreement goals



Robiou du Pont, Y., Jeffery, M. L., Gütschow, J., Rogelj, J., Christoff, P., & Meinshausen, M. Equitable mitigation to achieve the Paris Agreement goals. *Nature Climate Change*, 7, (2017).

Ambitious global Paris Agreement goals



United Nations

Framework Convention on Climate Change

FCCC/CP/2015/L.9/Rev.1

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Twenty-first session
Paris, 30 November to 11 December 2015

Agenda item 4(b)
Durban Platform for Enhanced Action (decision 1/CP.17)
Adoption of a protocol, another legal instrument, or an agreed outcome with legal force under the Convention applicable to all Parties

ADOPTION OF THE PARIS AGREEMENT

Proposal by the President

Draft decision -/CP.21

Article 1

Article 2

Article 3

Paris Agreement, 2015

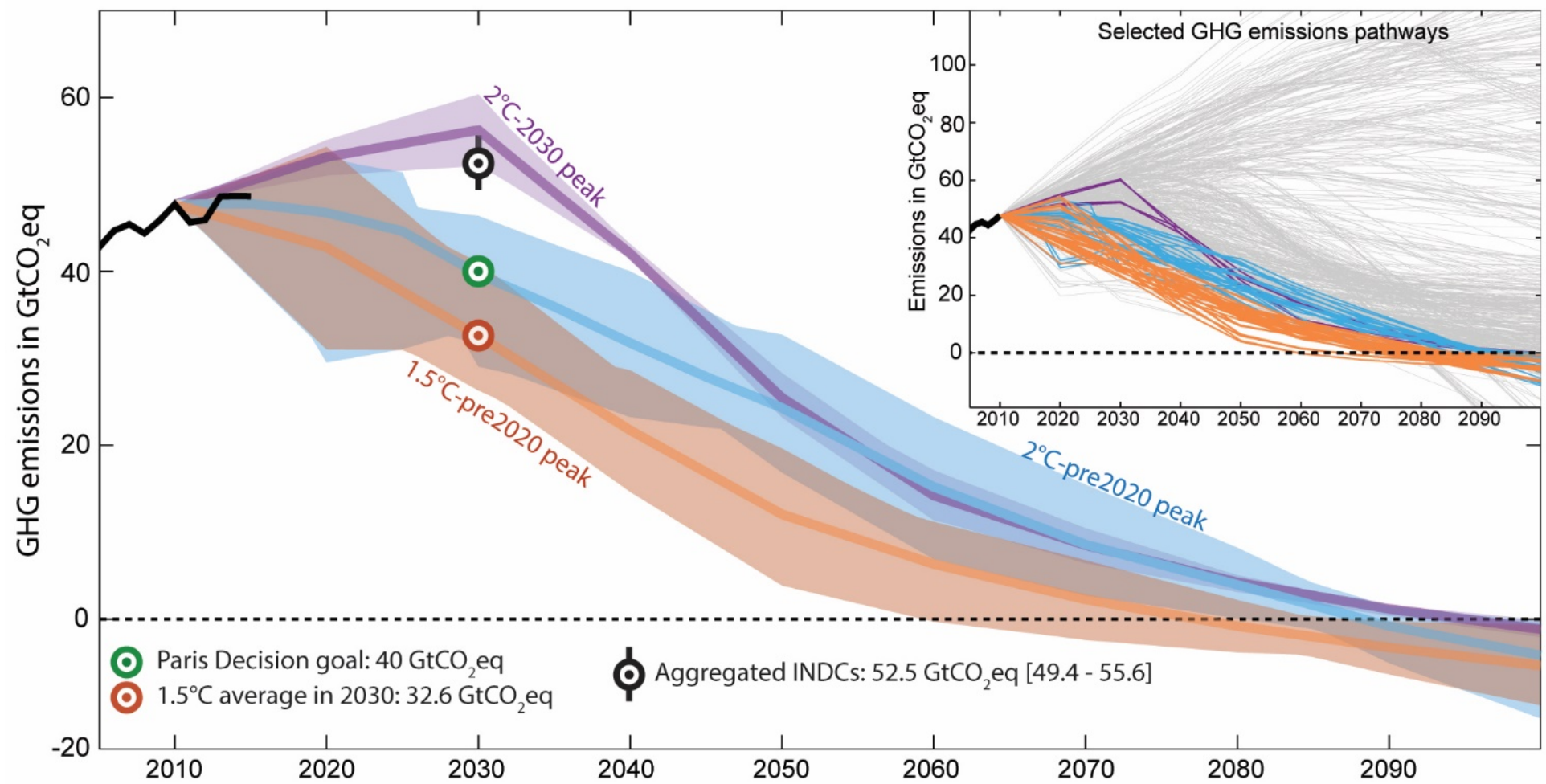
New global goals:

- Well below 2 °C
- Pursue 1.5 °C
- Net-zero emissions in the second half of the century

Paris cost-optimal emissions scenarios

Aggregate INDCs from:

UN Synthesis Report 7/2015 – www.climate-energy-college.net/indc-factsheets

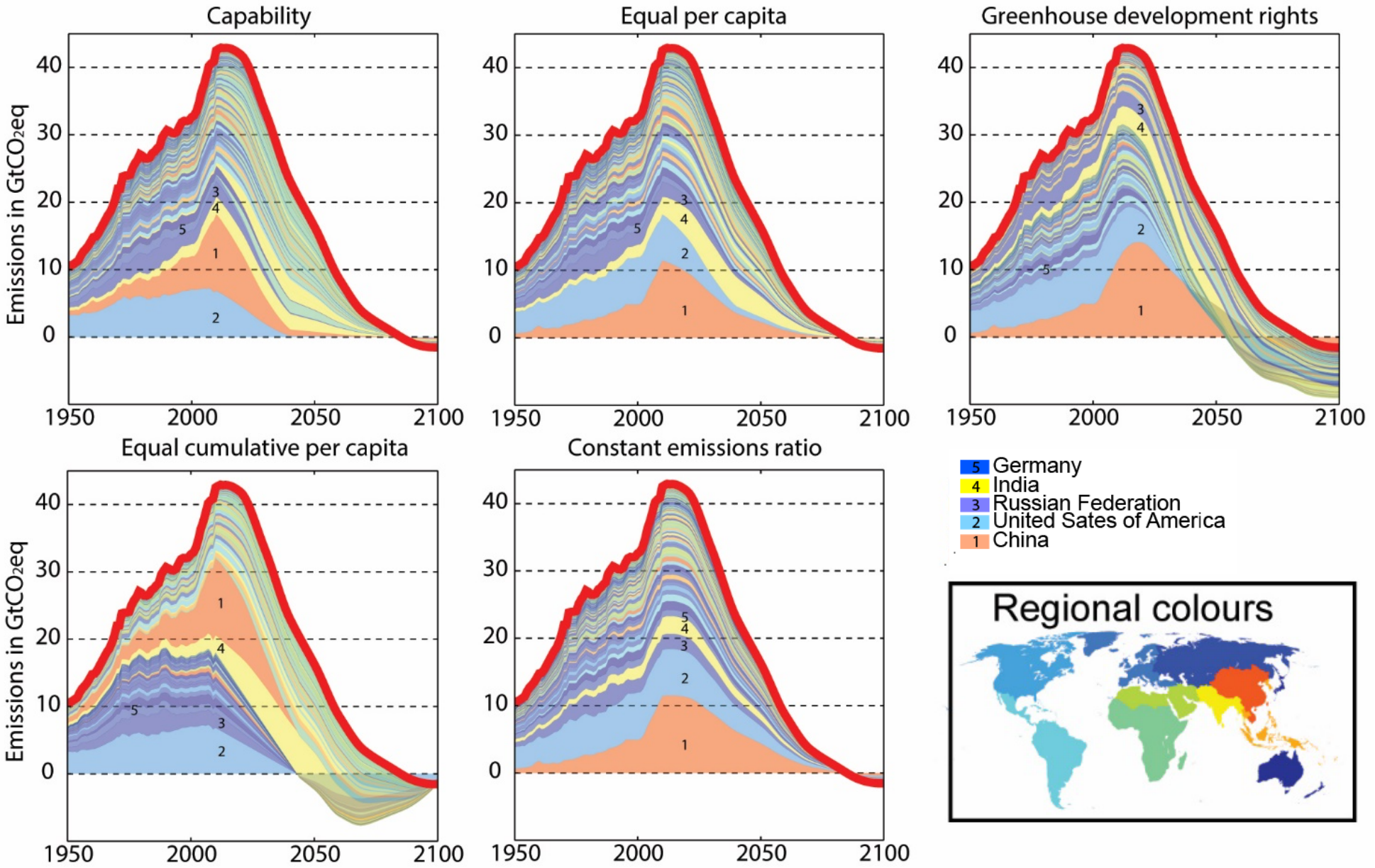


Rationale of the modelling framework

Modelling of allocation approaches representative of the IPCC's equity categories

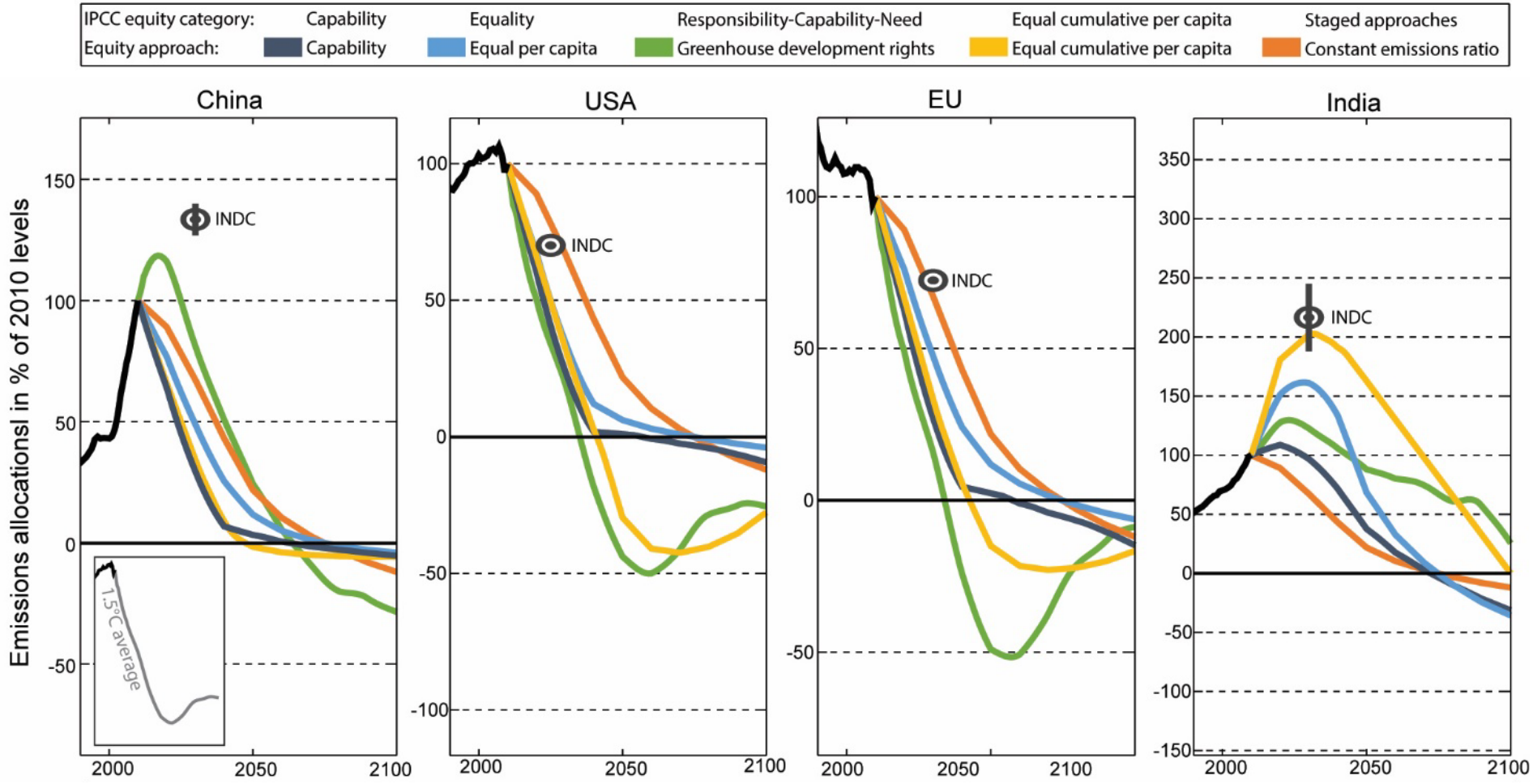
Allocation name	IPCC category	Allocation characteristics
Capability	Capability	Higher mitigation for countries with high GDP per capita.
Equal per capita	Equality	Convergence towards equal annual emissions per person.
Greenhouse Development Rights	Responsibility-capability-need	Higher mitigation for countries with high GDP per capita and high historical per capita emissions.
Equal cumulative per capita	Equal cumulative per capita	Populations with higher historical emissions have lower allocations.
Constant emissions ratio	Staged approaches	Maintains current emissions ratios.

Quantifying equity



National allocation of cost-optimal scenarios

Average national emissions allocations in line with 1.5°C.

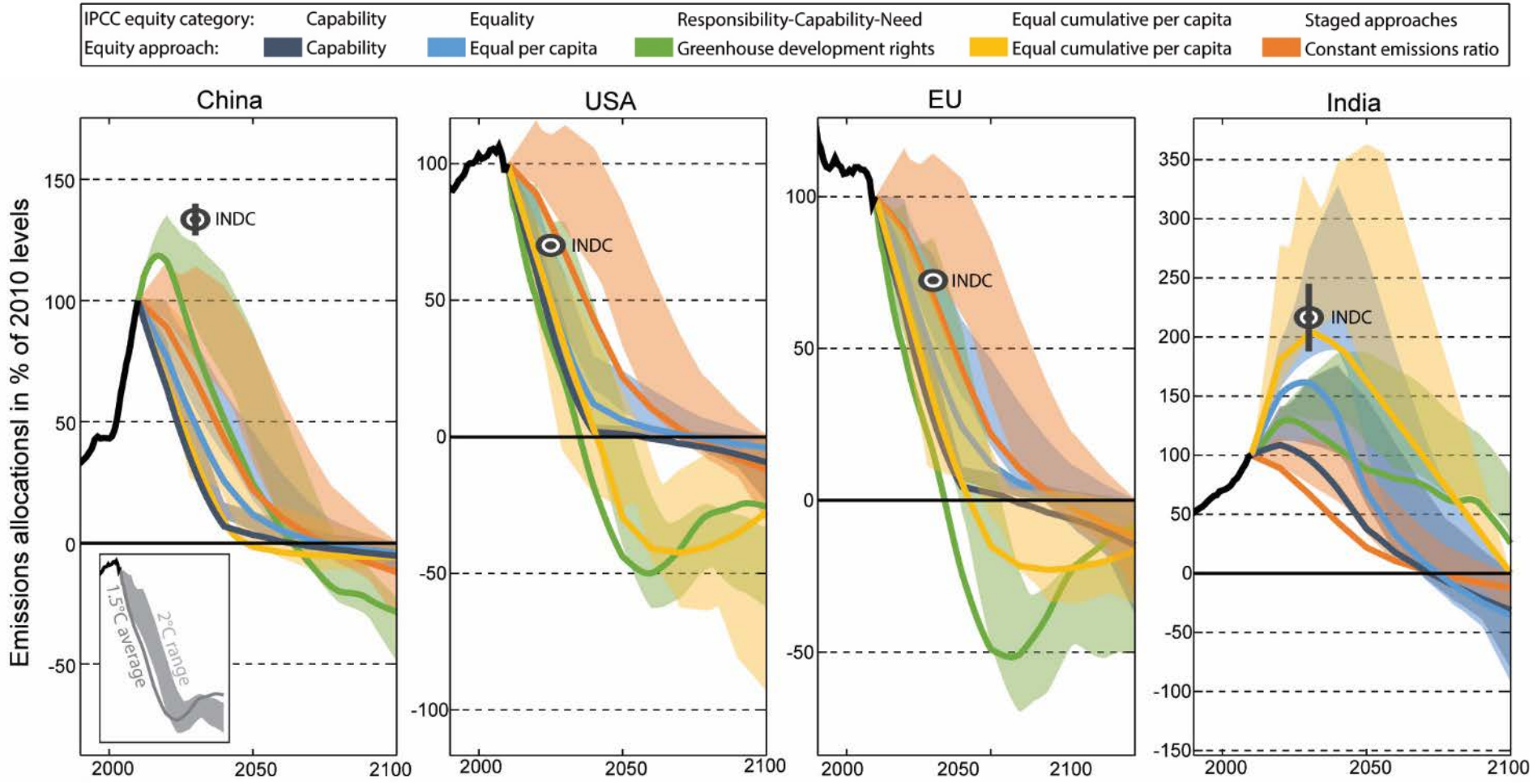


National allocation of cost-optimal scenarios

Average national emissions allocations in line with 1.5°C.

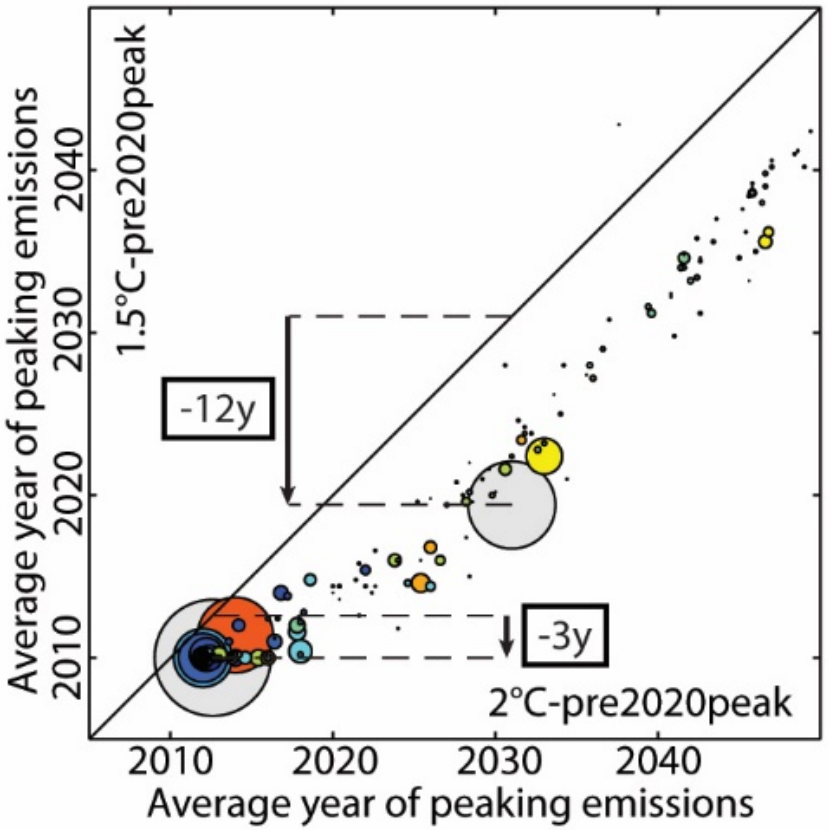
Range of national emissions allocations in line with 2°C.

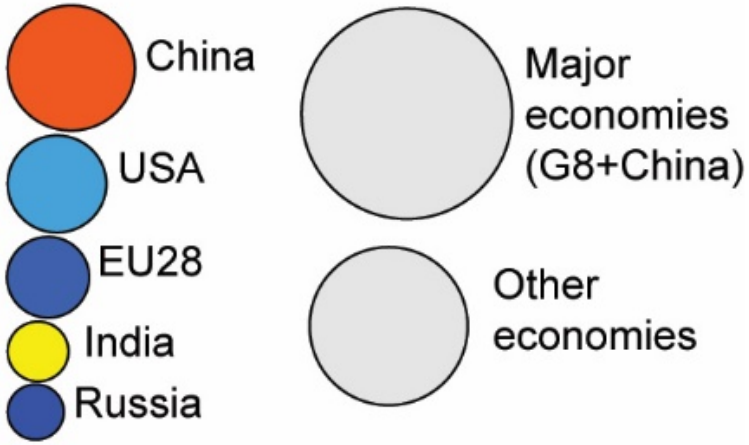
- Unambitious INDCs



Net-zero and peaking emissions: 2°C vs 1.5°C

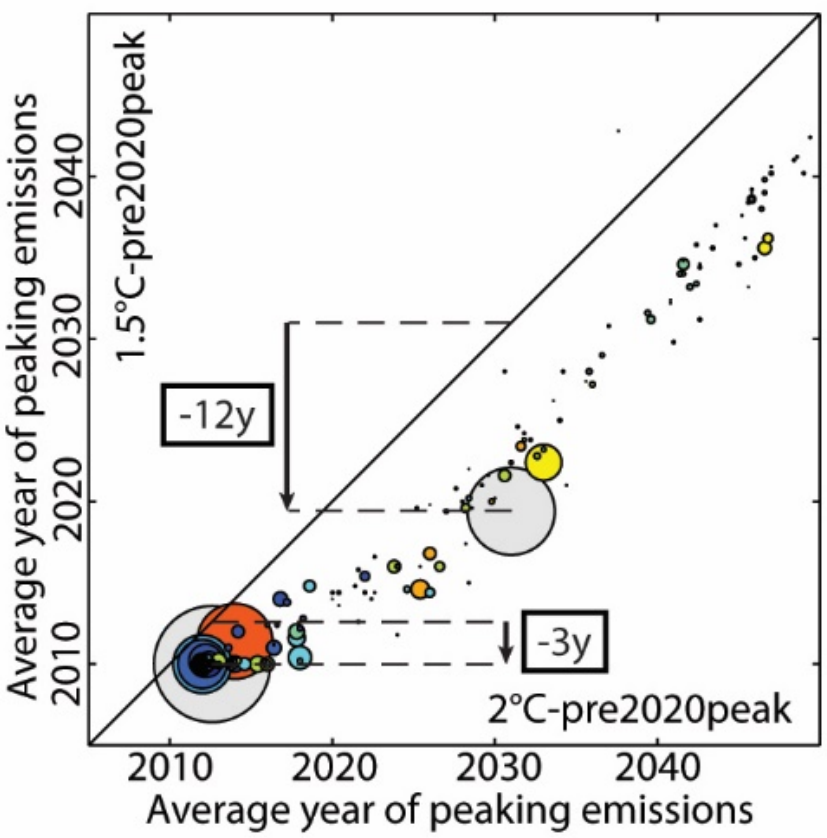
- Peaking emissions about 10 years earlier for developing countries

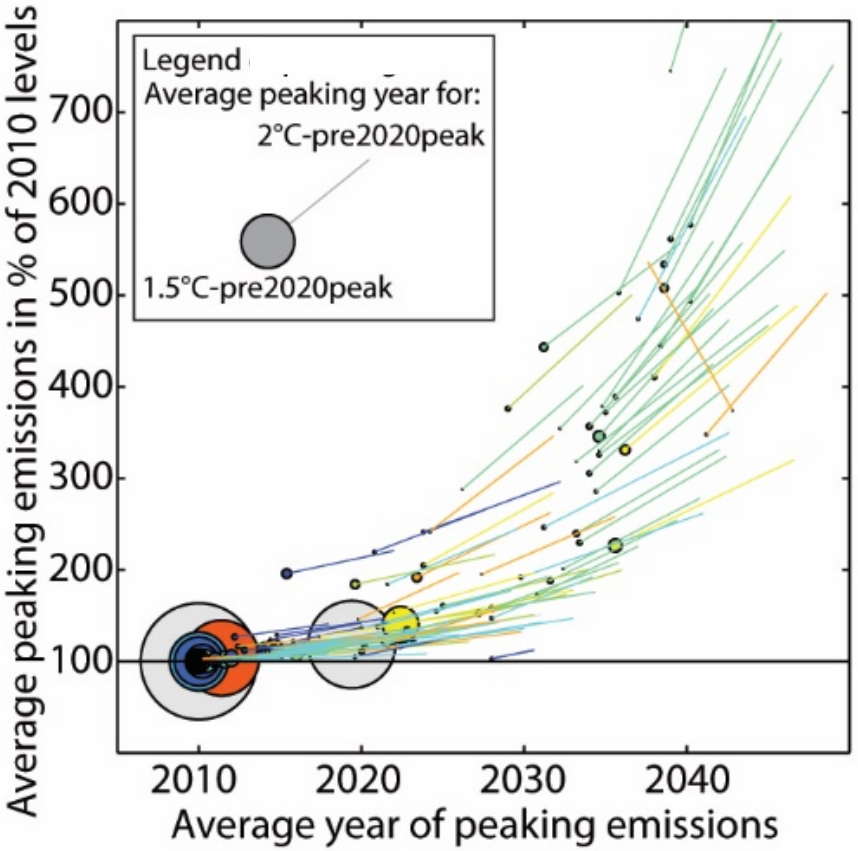


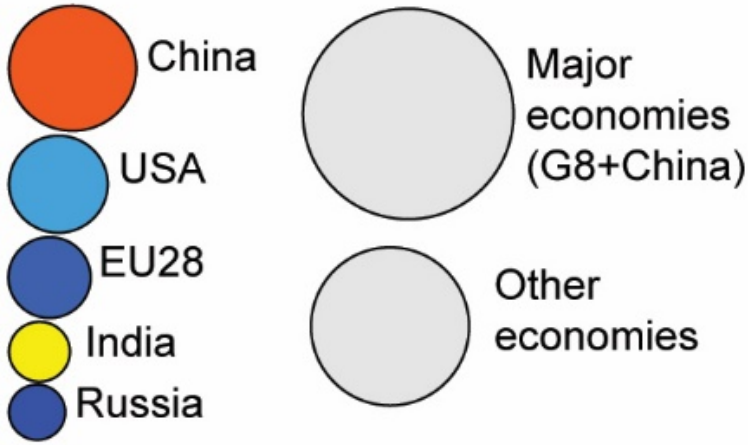


Net-zero and peaking emissions: 2°C vs 1.5°C

- Peaking emissions about 10 years earlier for developing countries
- Peaking emissions 20% to 40% lower

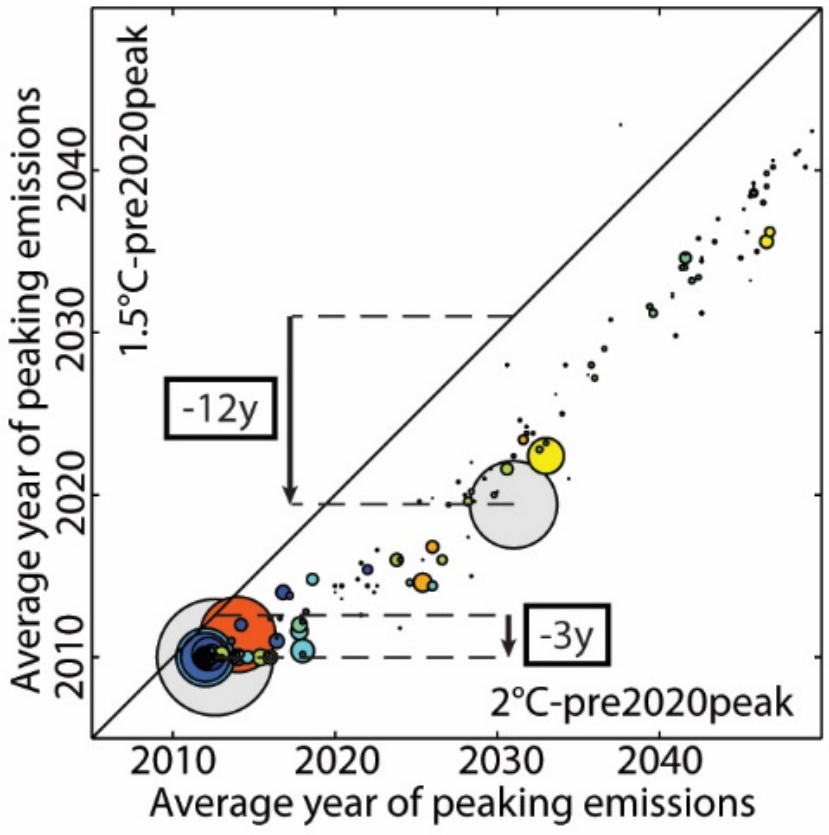


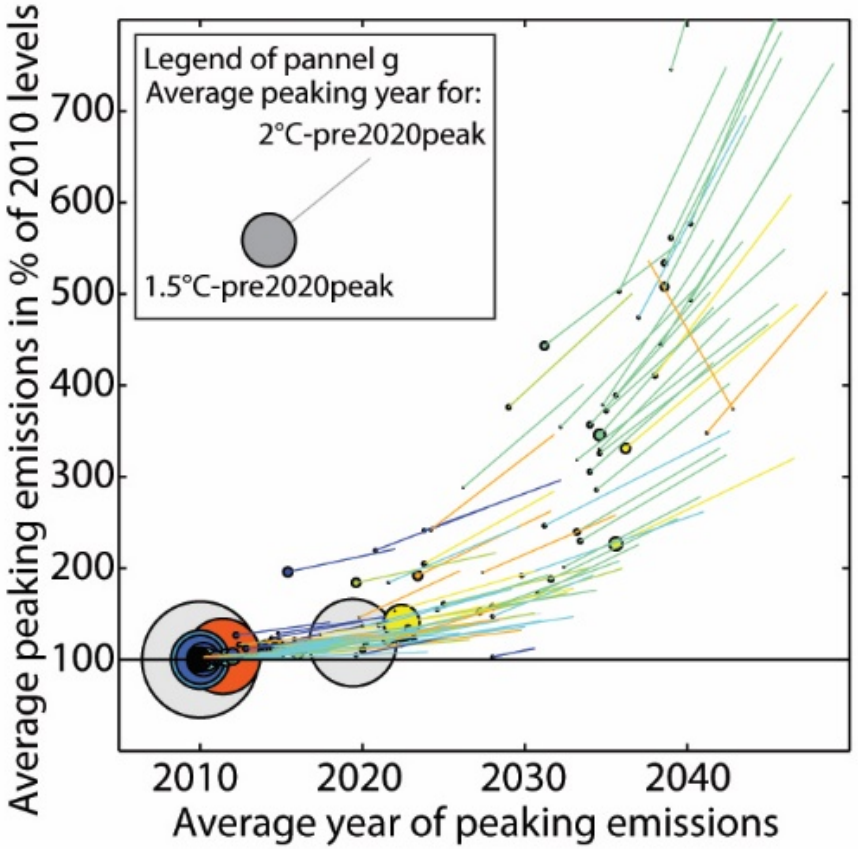


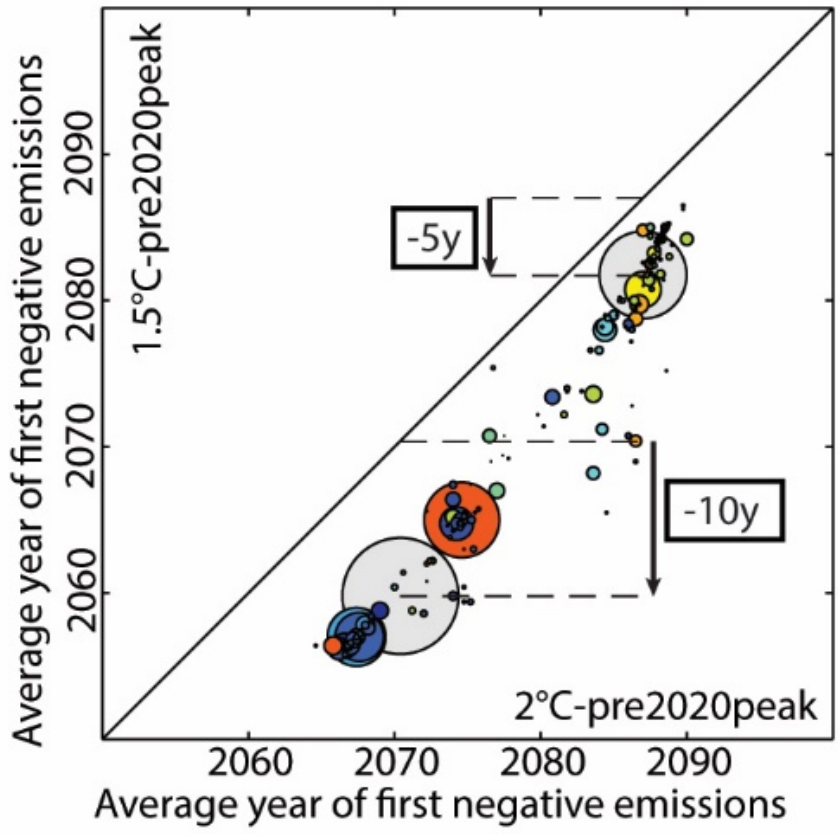


Net-zero and peaking emissions: 2°C vs 1.5°C

- Peaking emissions about 10 years earlier for developing countries
- Peaking emissions 20% to 40% lower
- Net-zero emissions brought forward more for developed countries

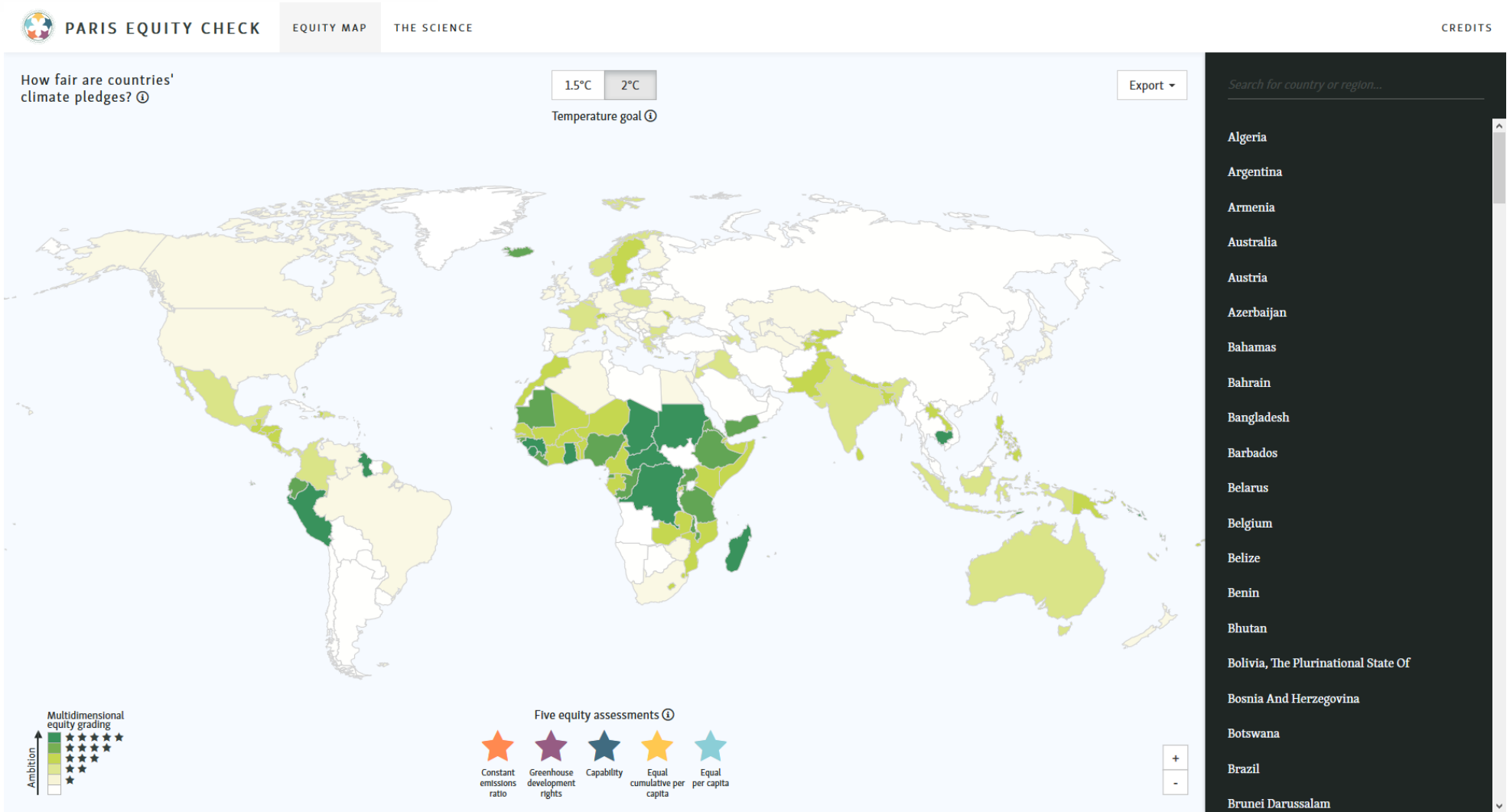






Interactive website

PARIS-EQUITY-CHECK.org



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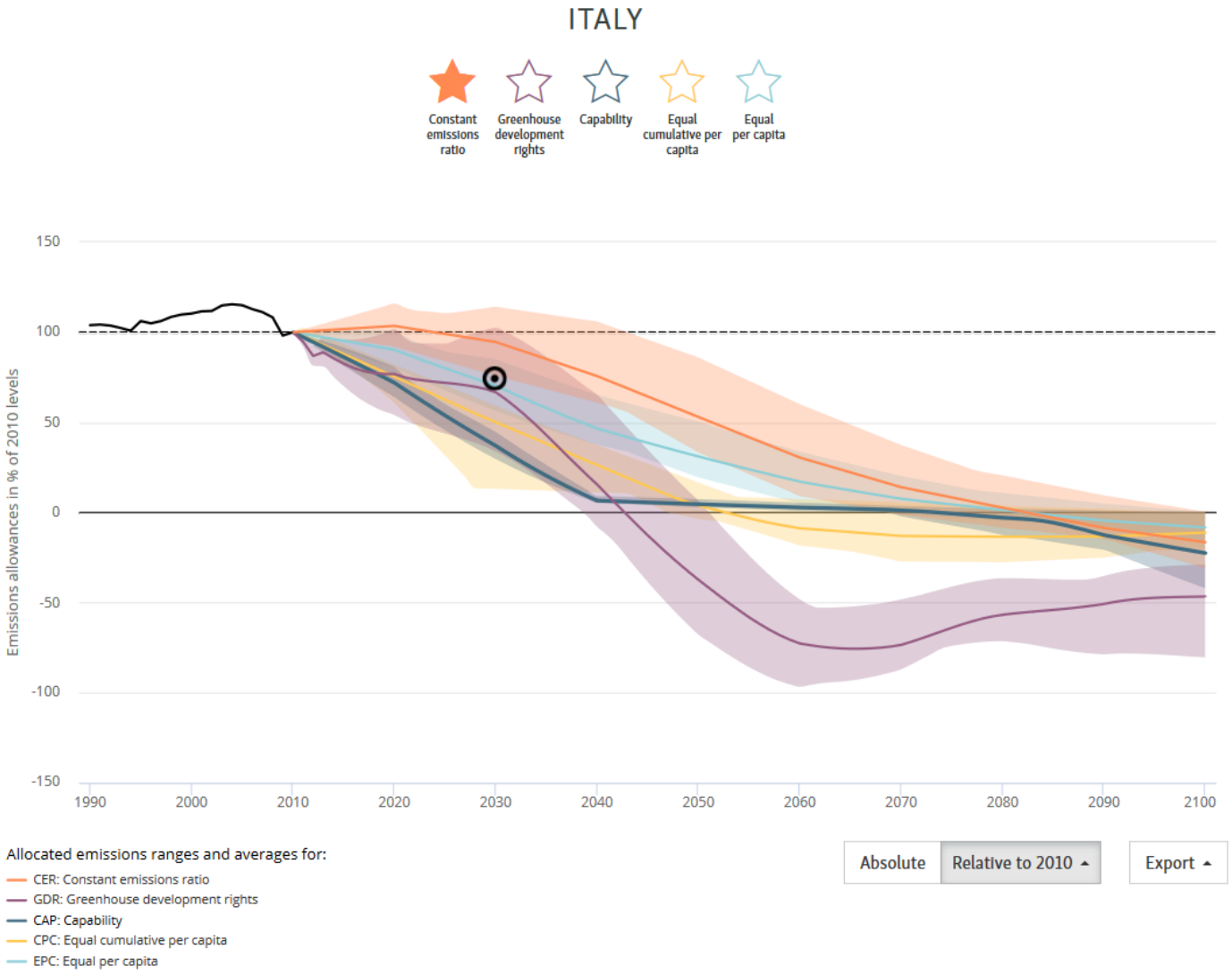
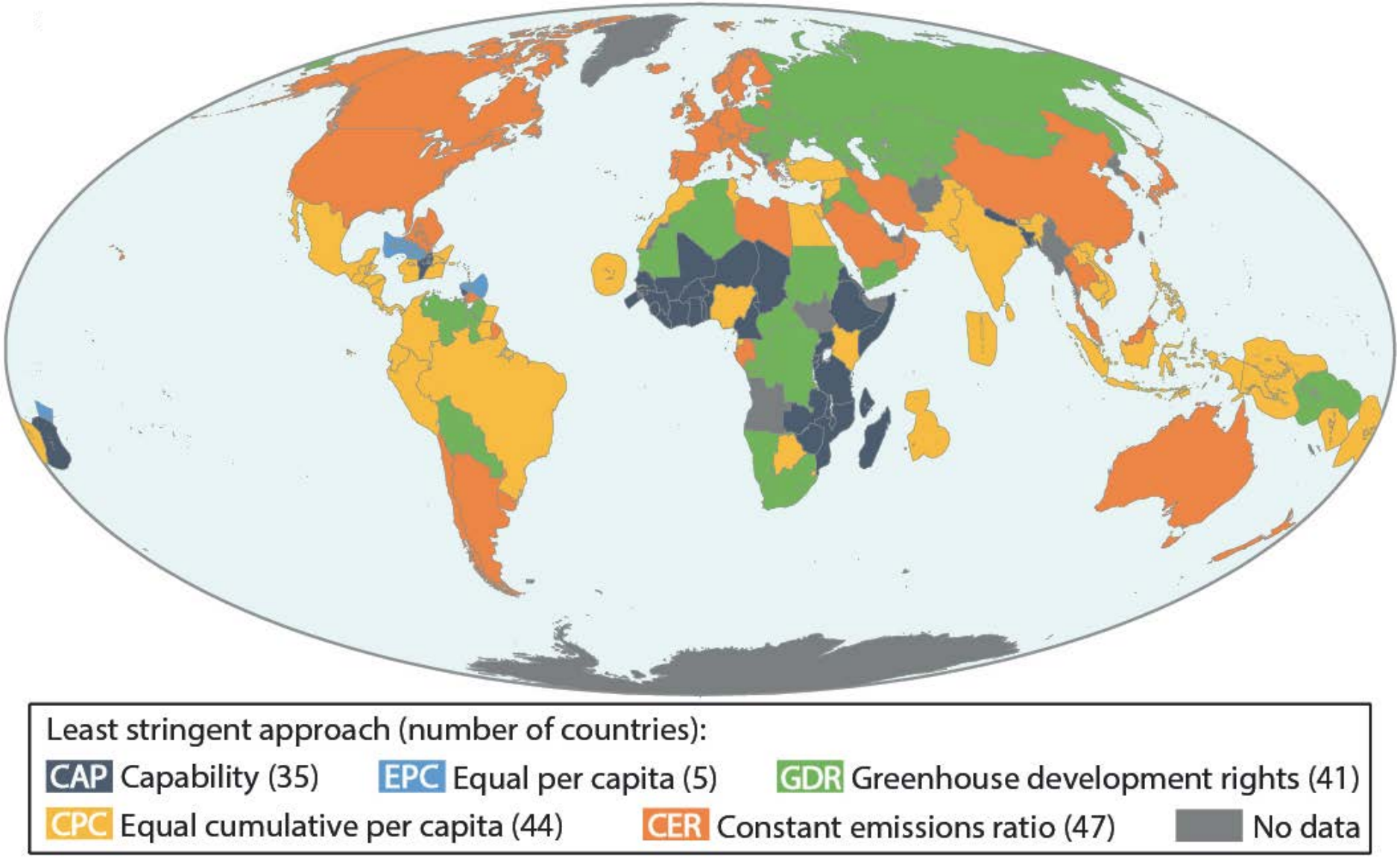
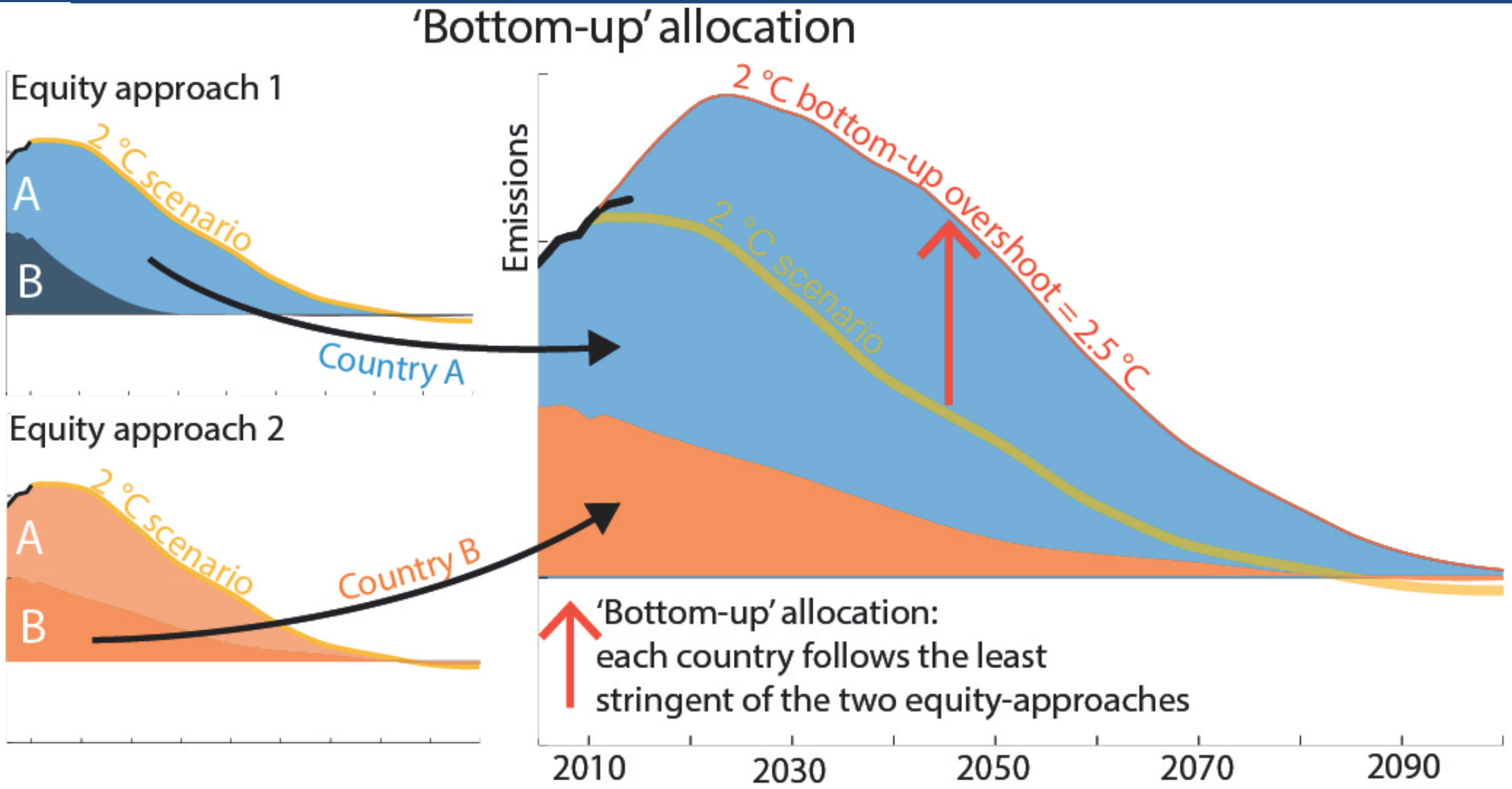


Temperature assessment of the bottom-up Paris emissions pledges

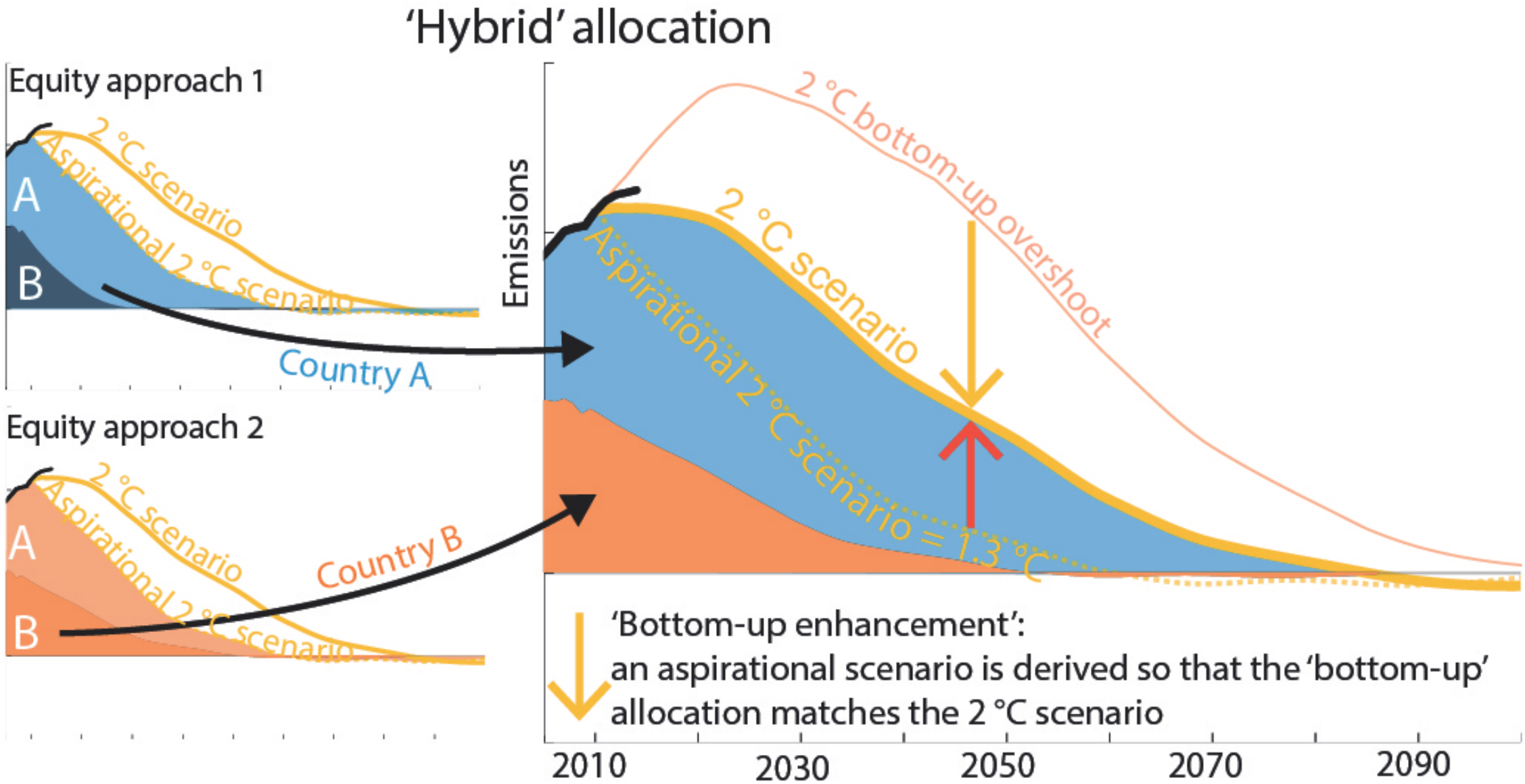
Which approach benefits each country?



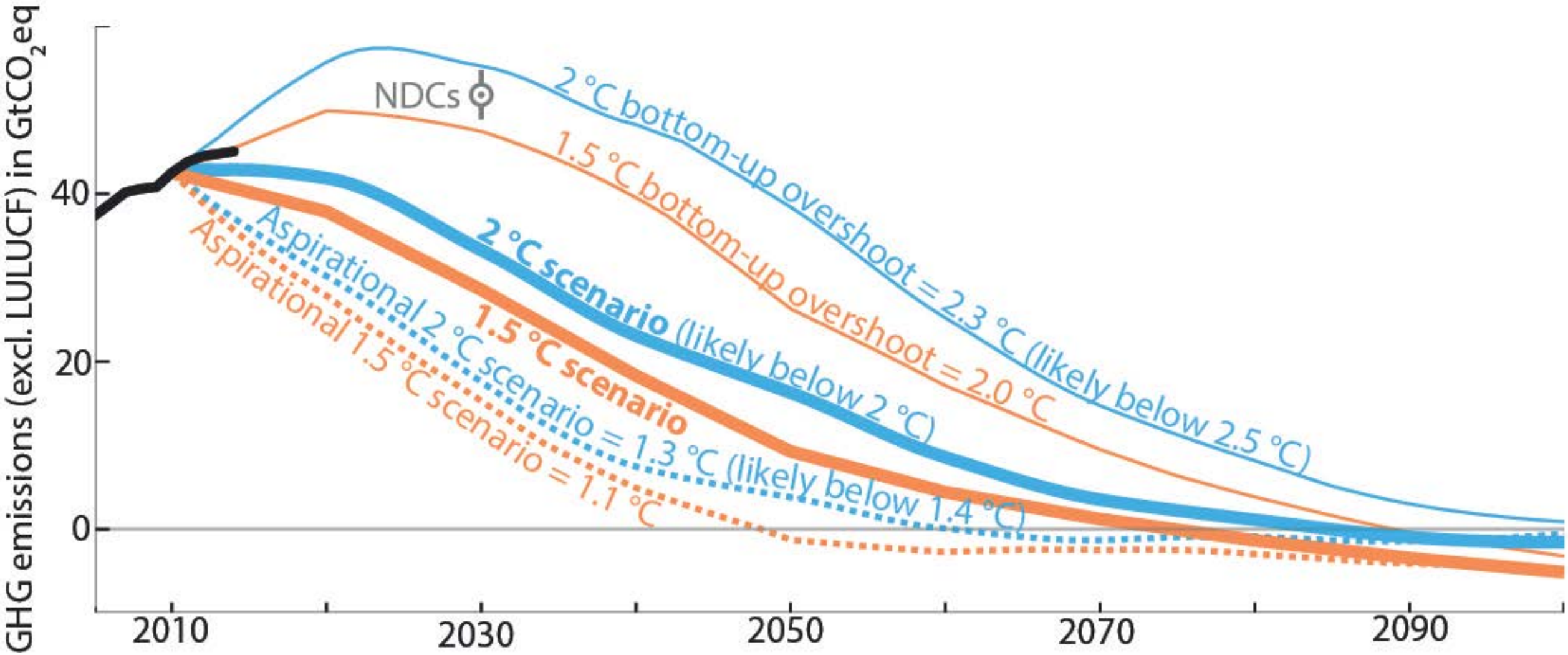
Modelling the current 'bottom-up' situation



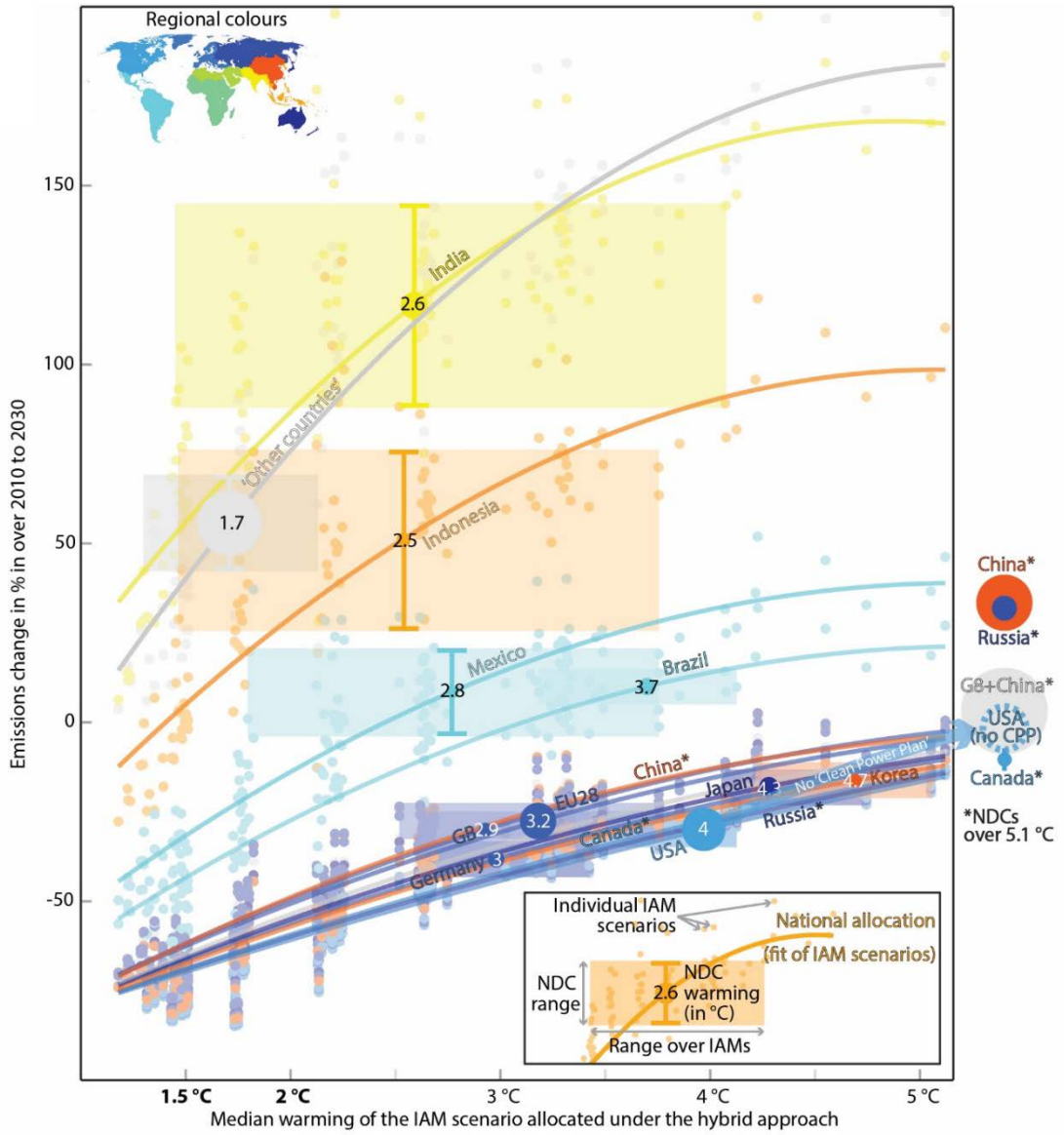
Hybriding 'bottom-up' distribution with 'top-down' goals



Comparison with current pledges

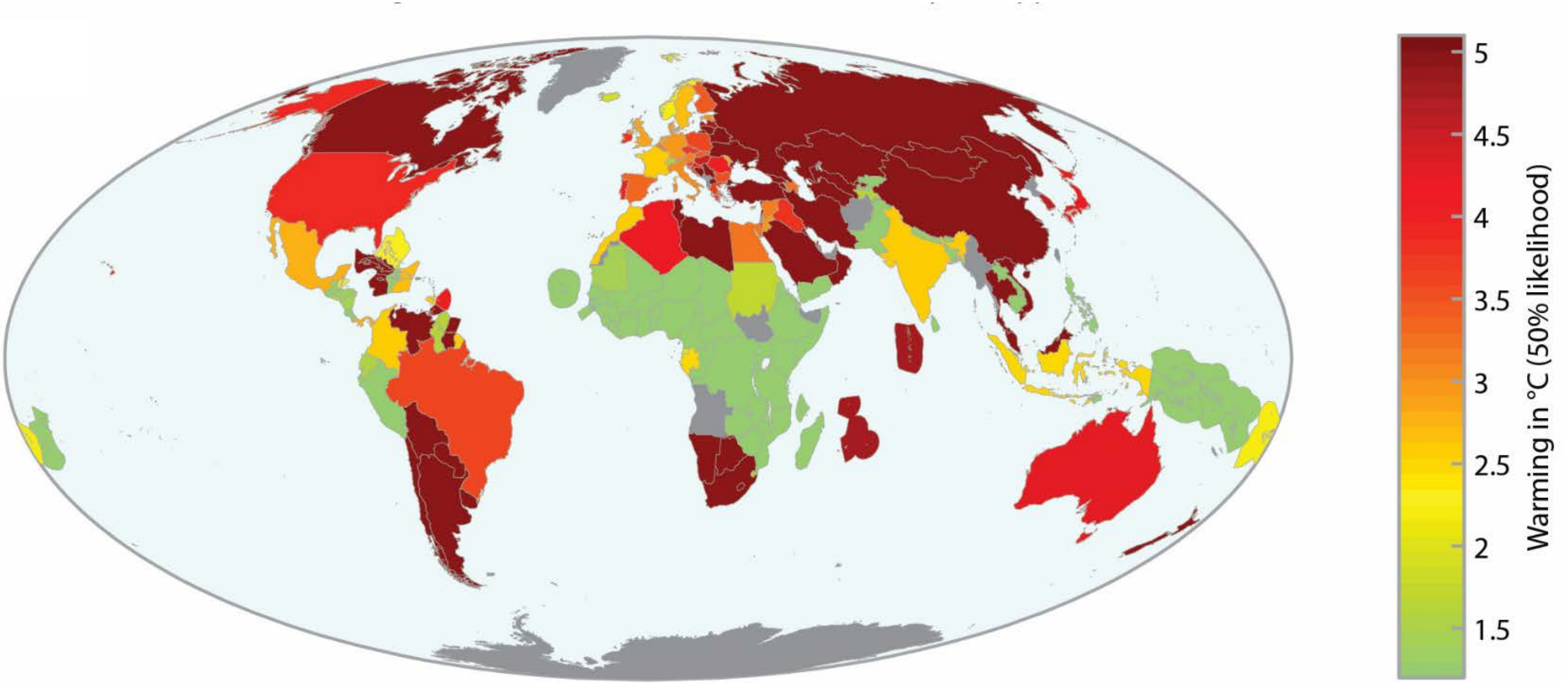


Linking national and global ambition



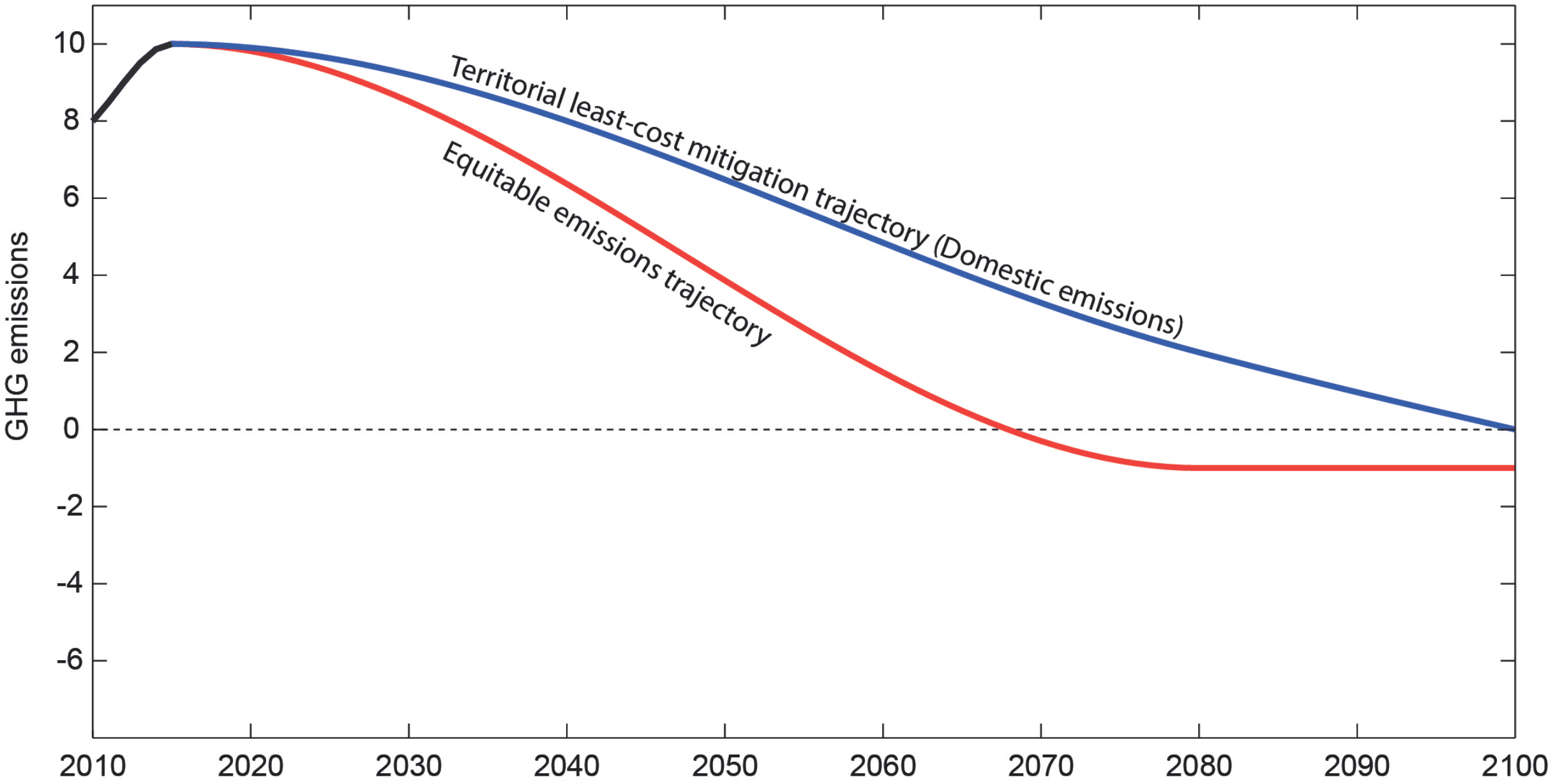
Under review with *Nature Communications* – please do not cite or distribute.

Temperature assessment of countries' ambition

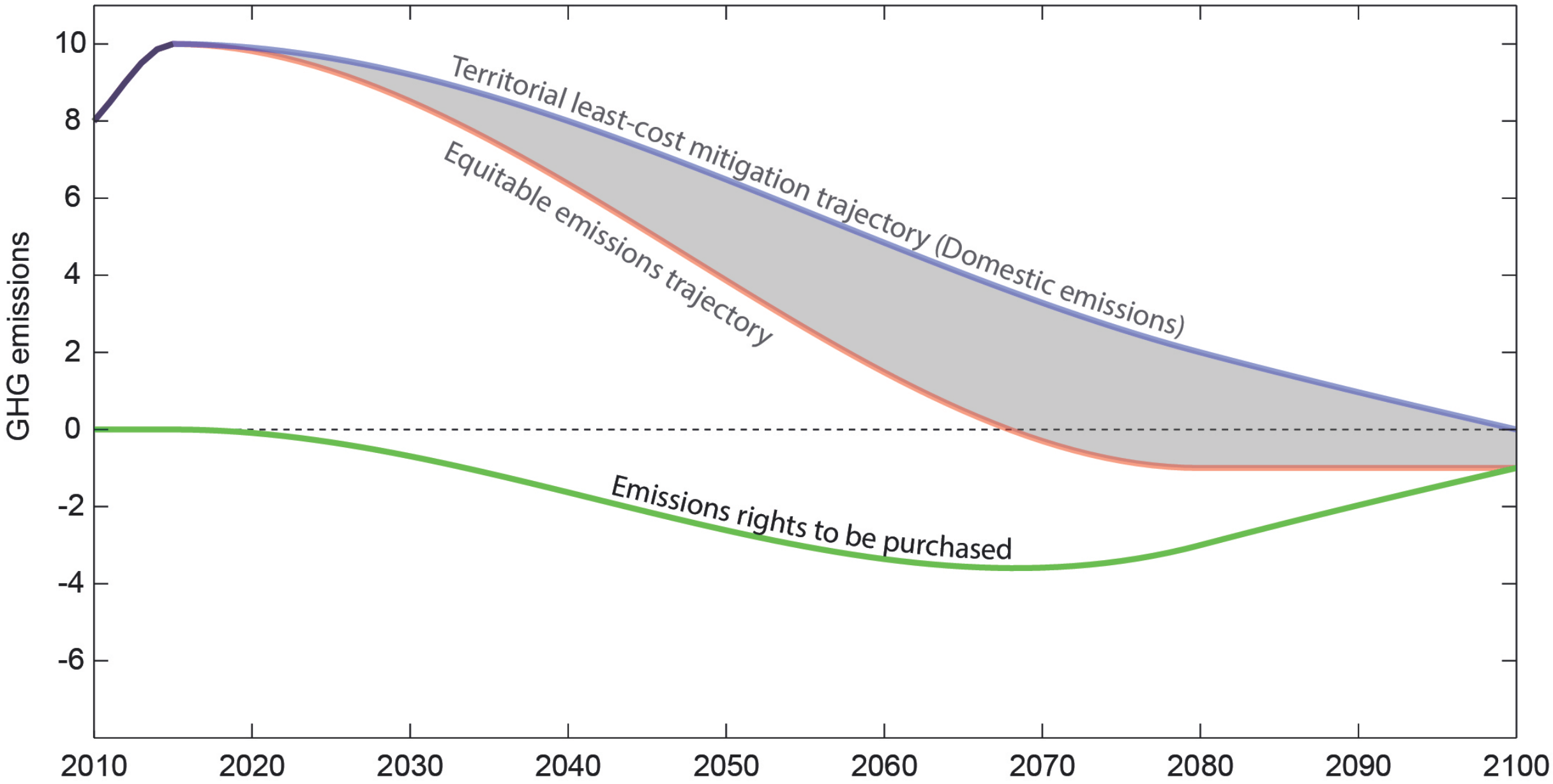


Future works

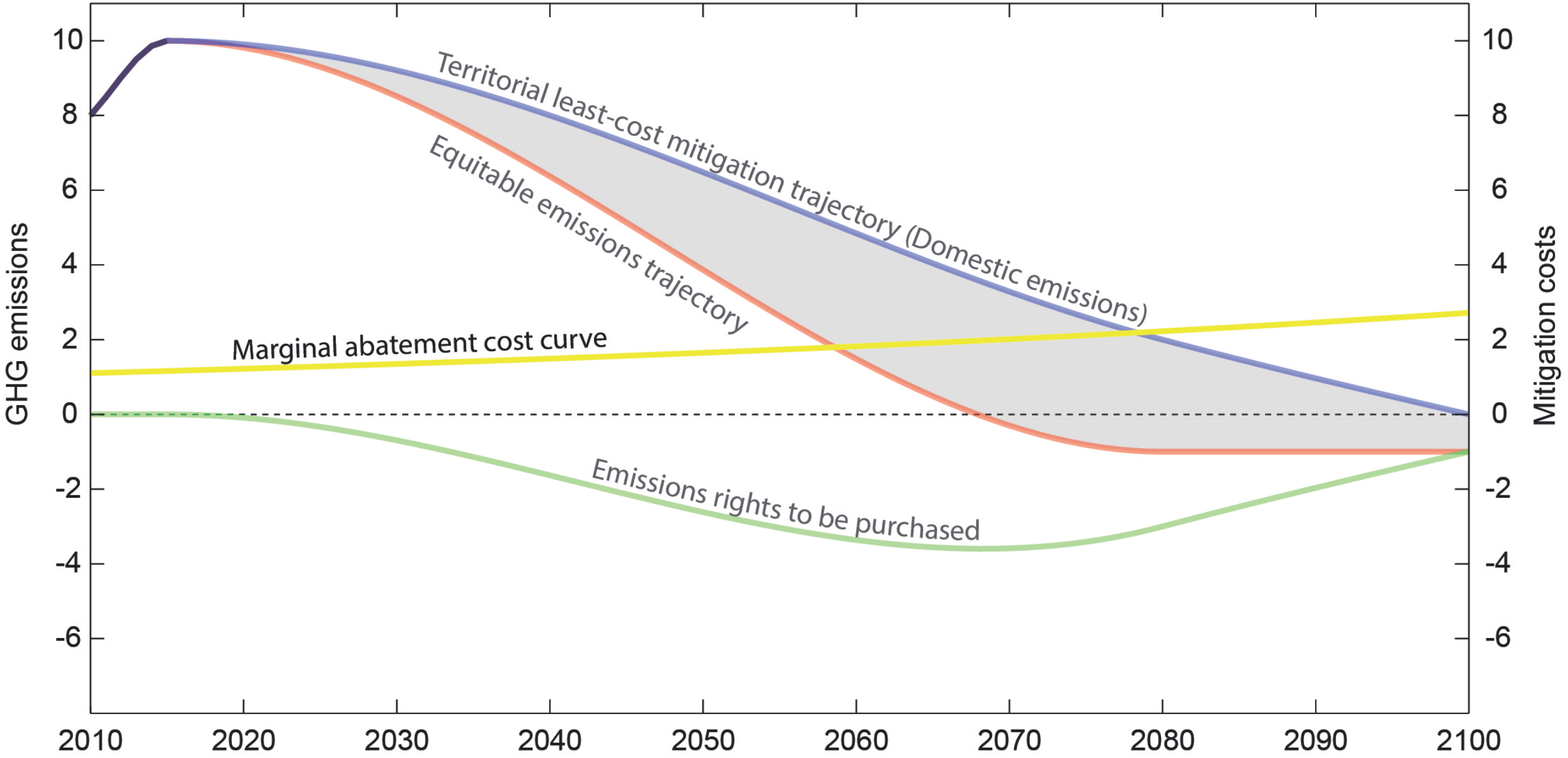
Equitable mitigation support



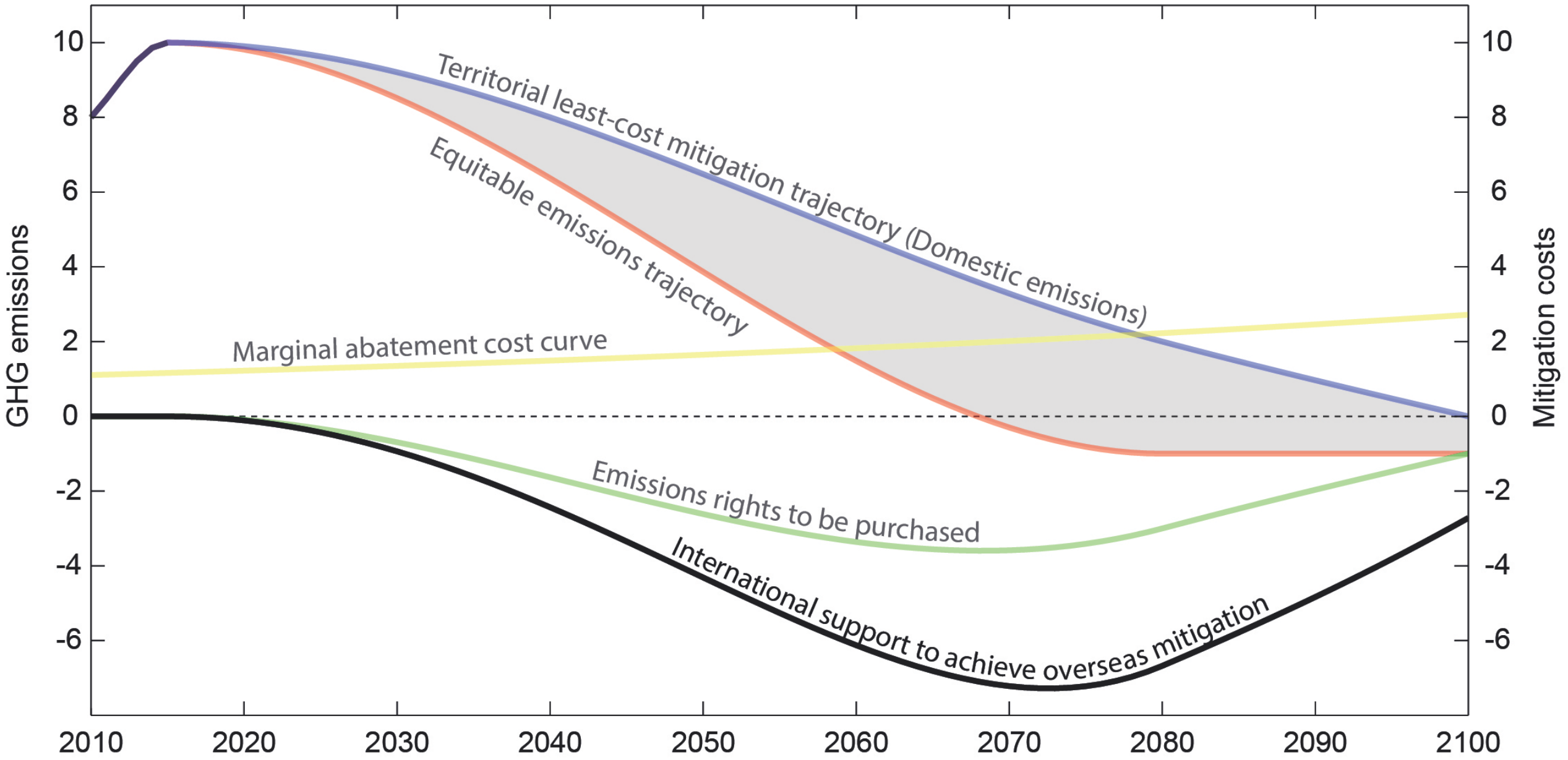
Equitable mitigation support



Equitable mitigation support



Equitable mitigation support



Thank you.