



Peterson Institute for International Economics  
Conference on Macroeconomic Implications of Climate Actions  
5-6 June

SESSION 1:  
THE MACROECONOMICS OF CLIMATE CHANGE  
MITIGATION: STATE OF PLAY AND  
SHORTCOMING

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# Capacity constraints and headwinds on the (fast) road to decarbonisation

## Capacity constraints related to:

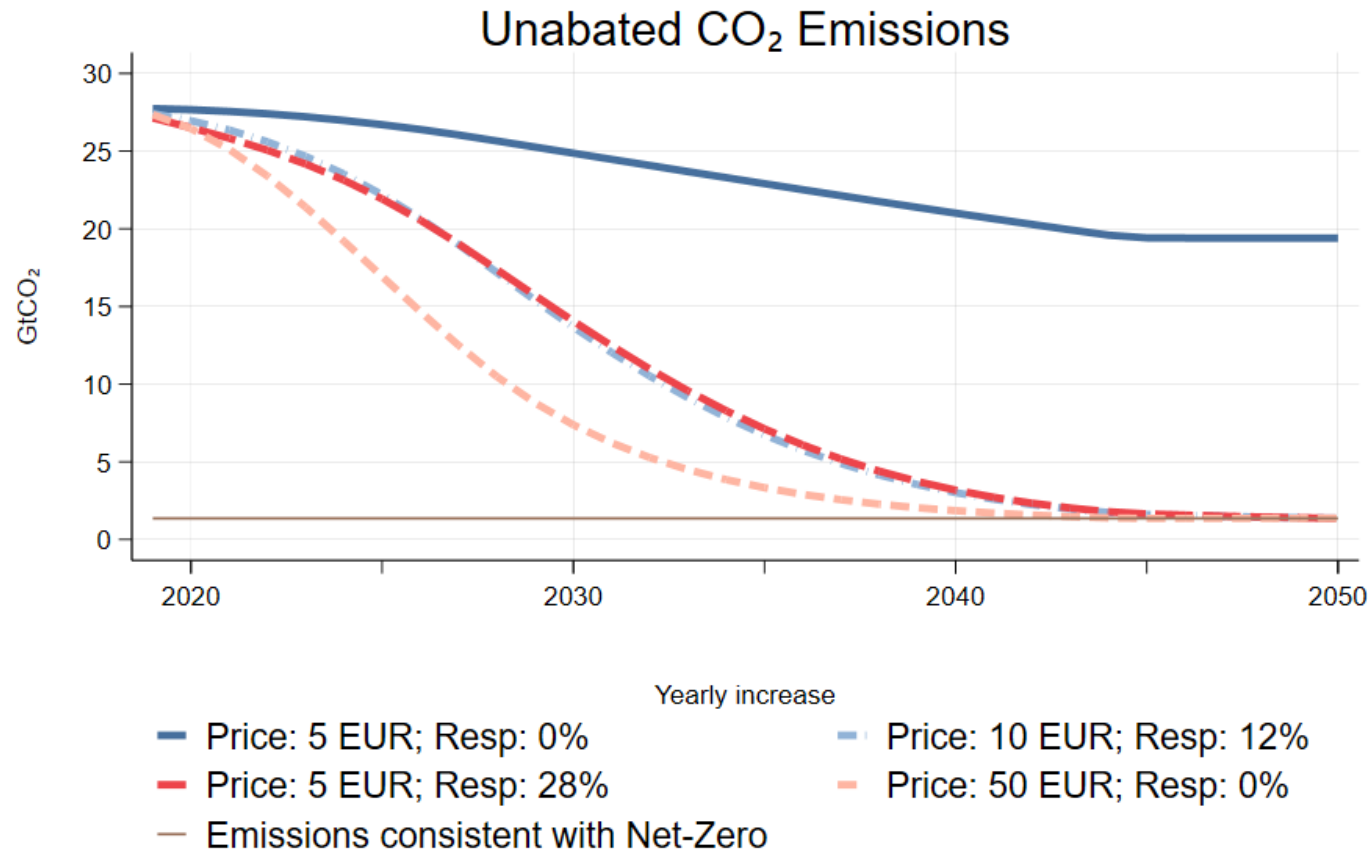
- Capital / Investment
- Productivity
- Technology
- Critical minerals / materials
- Skills
- Land use

## Headwinds arising from:

- Public finance sustainability
- Social impact / political backlash
- Energy security / affordability
- Financial market risks and conditions
- International cooperation / Fragmentation
- Uncertainty



# The case for combining increases in carbon prices with non-price measures to raise the emission responsiveness



Achieving net zero by 2050 requires a rise in Effective Carbon Rates of:

- 50 EUR per year if no increase in responsiveness (pink line)
- 10 EUR per year with an annual rise of 12% in responsiveness (light blue line)
- 5 EUR per year with an annual rise on 28% in responsiveness (red line)

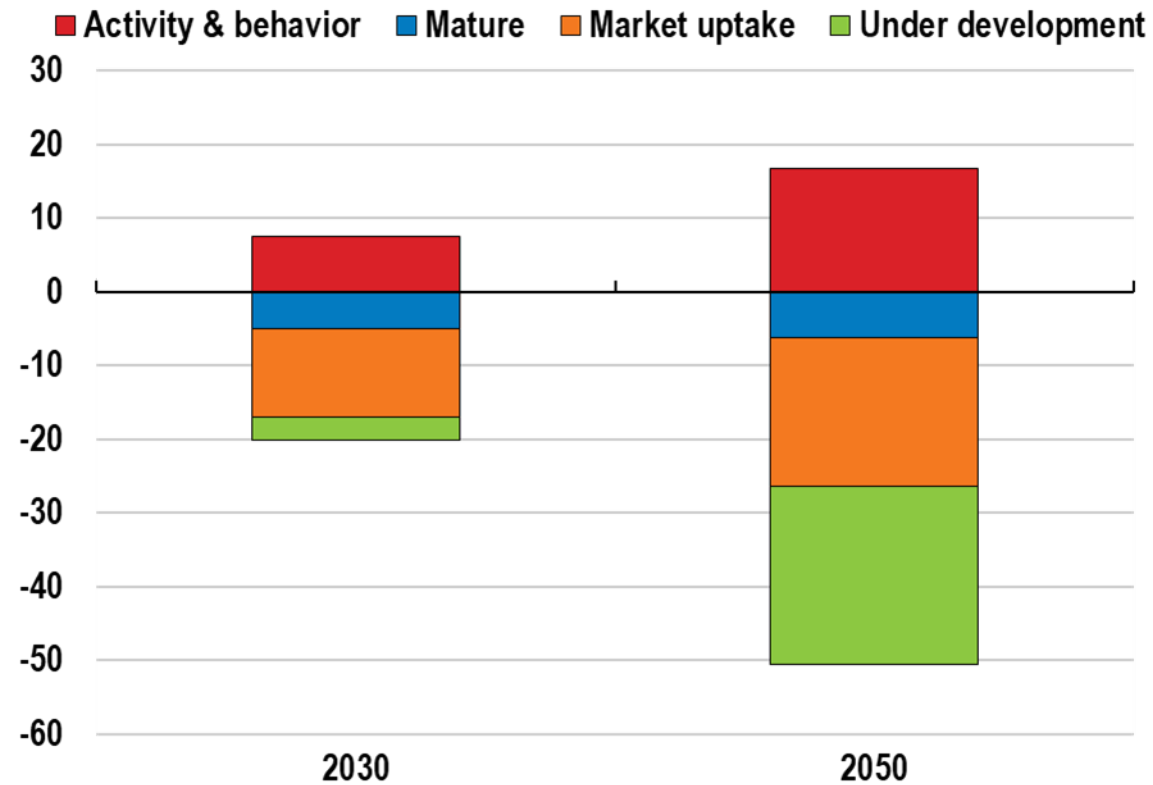
Source: D'Arcangelo et al., (2022)





# The speed of technology development as a constraint to the energy transition

Reaching net zero emissions by 2050 relies heavily on technologies under development  
*Gt CO<sub>2</sub>*



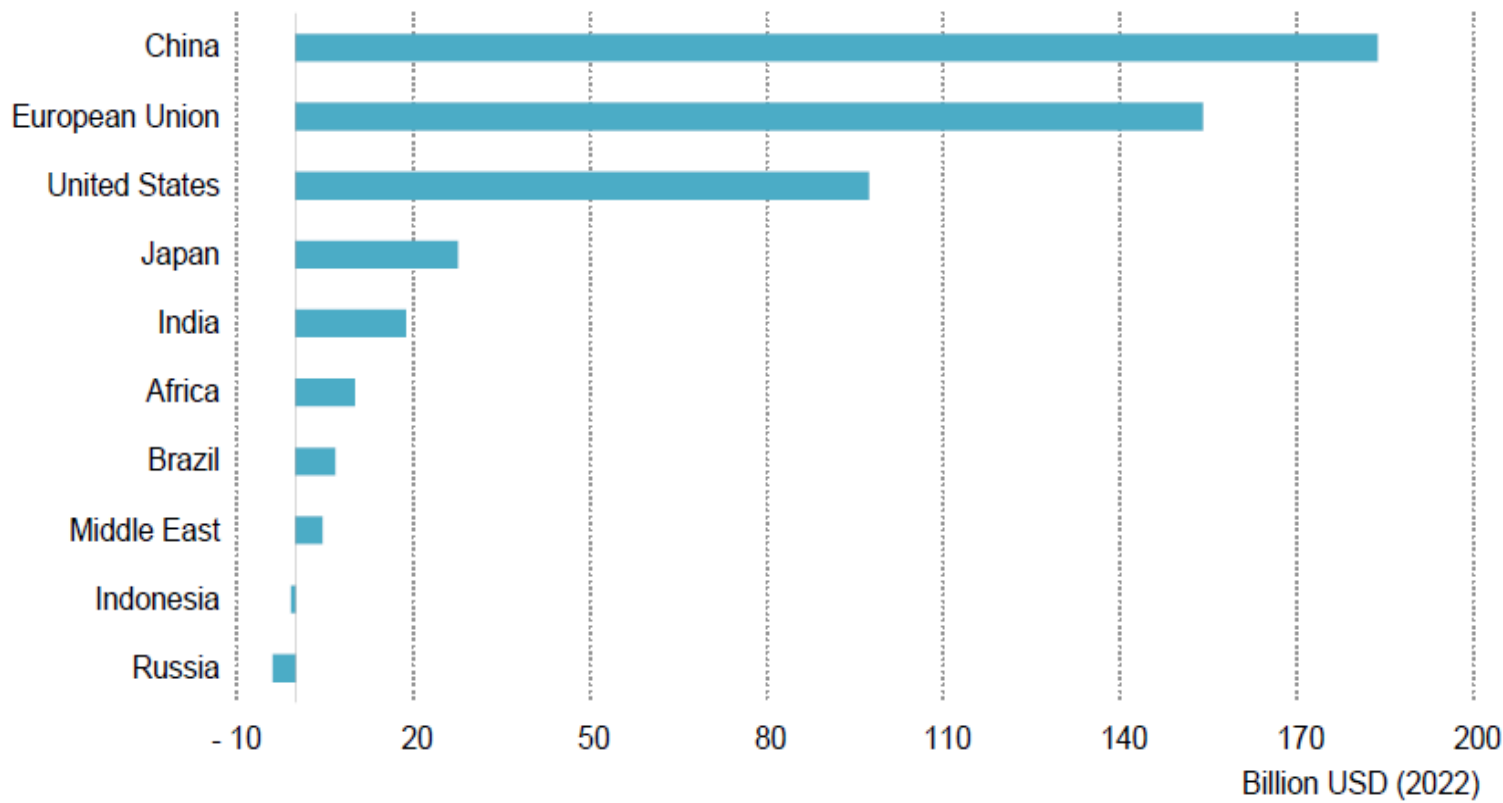
Note: Global CO<sub>2</sub> emissions changes by technology maturity category in the NZE by 2050. “Mature” refers to available clean energy technologies that have reached market stability, while “market uptake” stands for technologies either where the solution is commercially available but need evolutionary improvement to stay competitive or need further market integration efforts at scale. “Under development” include technologies at prototype or demonstration phase.

Source: IEA (2021), “Net Zero by 2050” and OECD calculations.

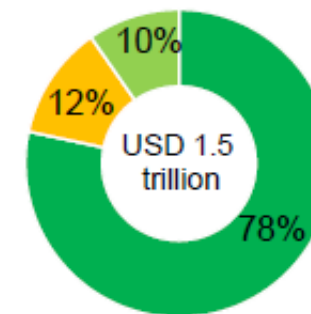


# The substantial increase in clean energy spending in recent years is concentrated in a few countries / regions

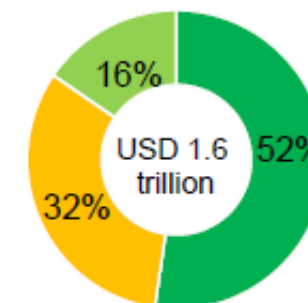
### Increase in annual clean energy investment, 2019-2023e



### Sustainable debt issuances , 2022



### Clean energy spending, 2022

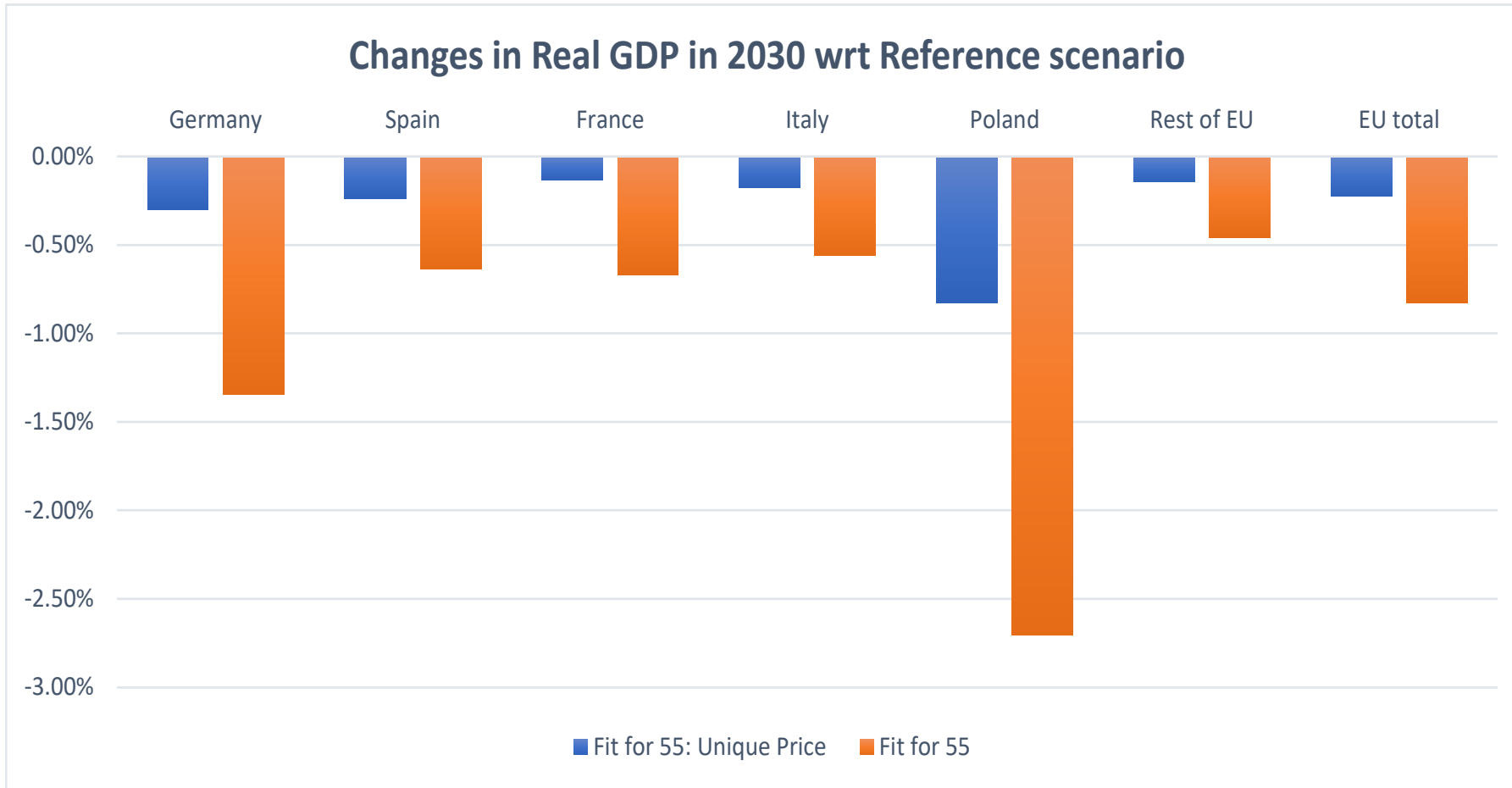


■ Advanced economies ■ China ■ Other EMDEs





# The benefits from having a common price across sectors and countries



A comparison of the GDP cost of the policy mix under Fit for 55 vs a common price applicable to all GHGs

Fit for 55:

- 1) Broader EU-ETS
- 2) New ETS-2 (transport + heating) diff. price
- 3) ESR sectors: domestic measures
- 4) No coverage of methane

Chateau et al. (forthcoming).





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