AN INTERNATIONAL PERSPECTIVE

Irish Fiscal Advisory Council, Path for the Public Finances Conference 2024

“Climate Change Revisited”, Dublin, 22nd February 2024

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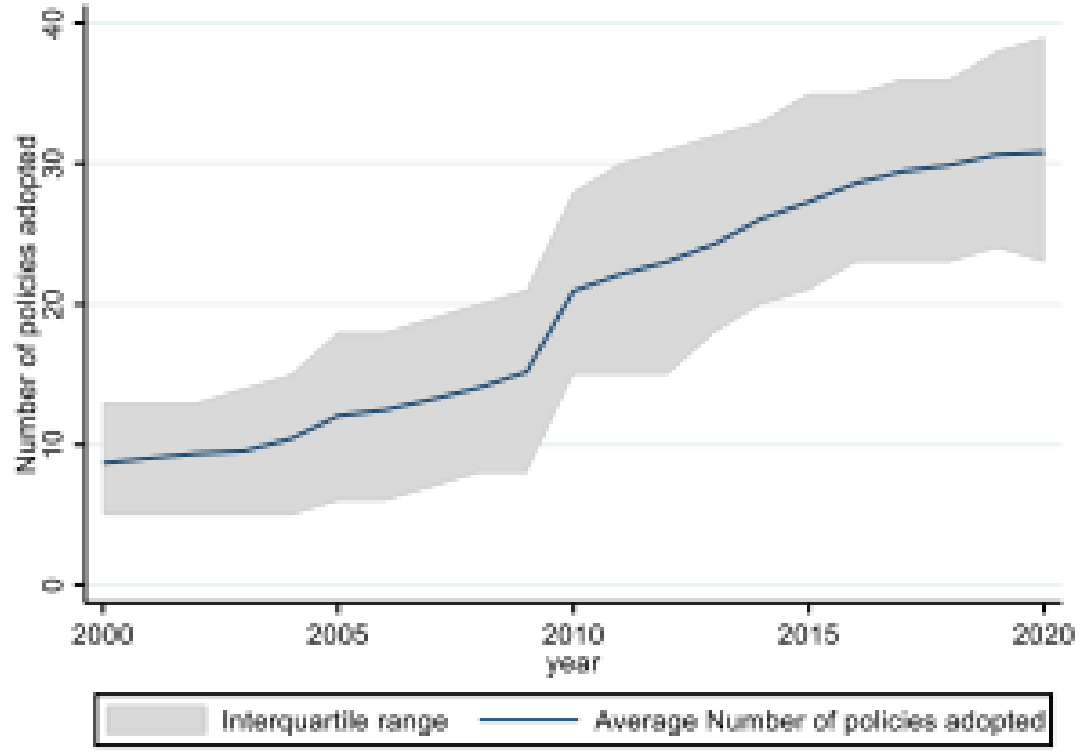
BETTER POLICIES FOR BETTER LIVES

Fiscal costs of climate change

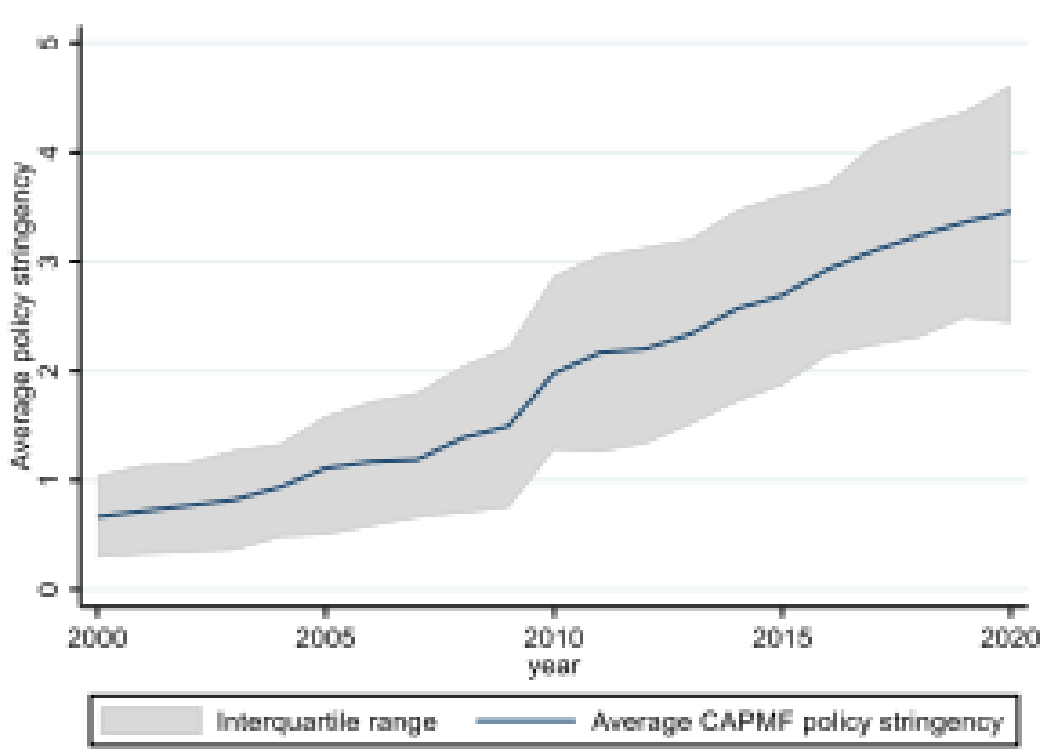
- Mitigation
  - Revenues and fossil fuel subsidy reform
  - Subsidies for renewables, energy efficiency …
  - Costs of regulation
  - Effect through impact on economic activity
- Adaptation
  - Infrastructure, housing, …
  - Implicit liabilities
- Cost of inaction

Climate mitigation strategies are becoming more complex and more stringent

Panel A: Average number of policies adopted

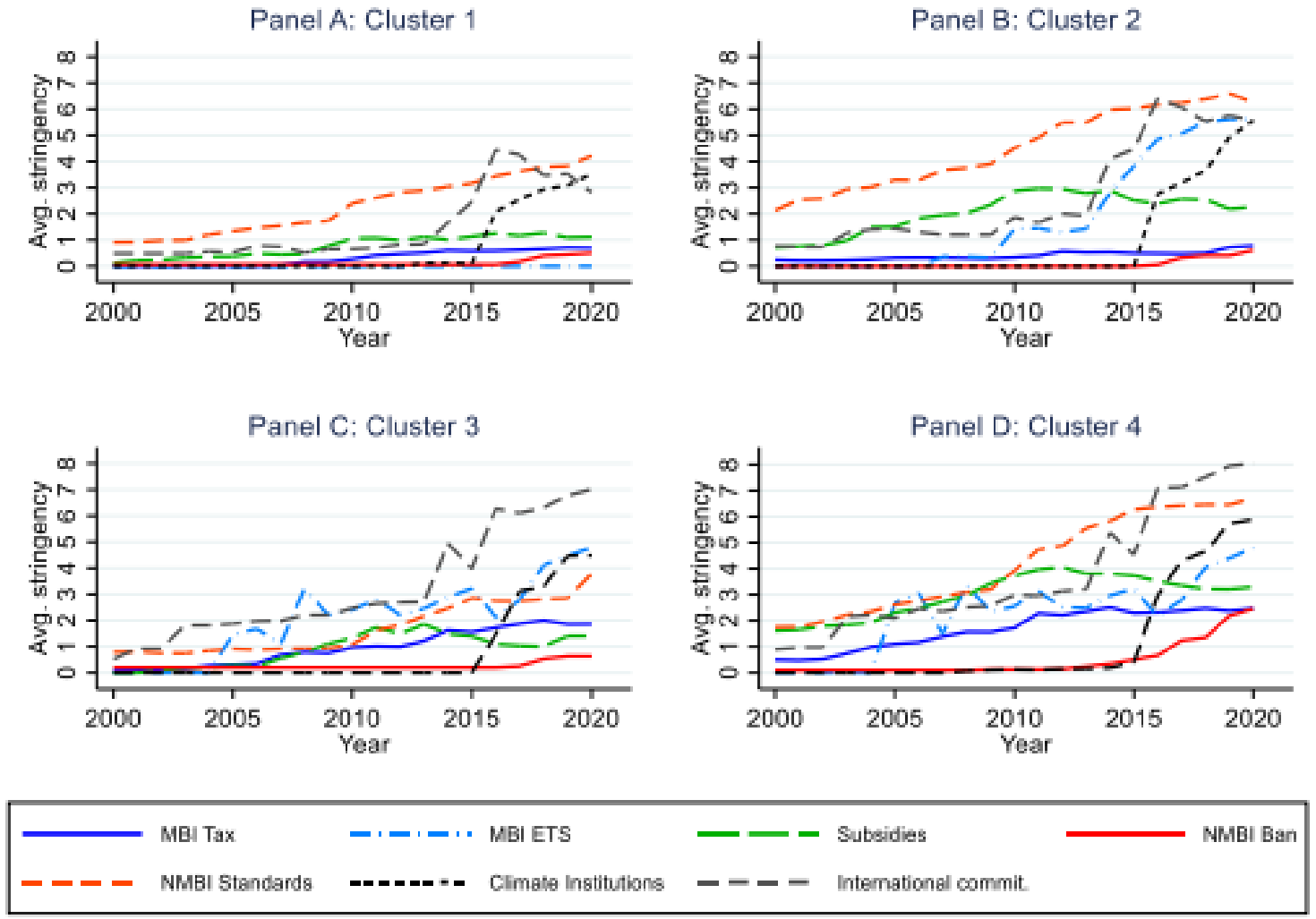


Panel B: Average policy stringency



Source: d'Archangelo, Kruse and Pisu (2023)

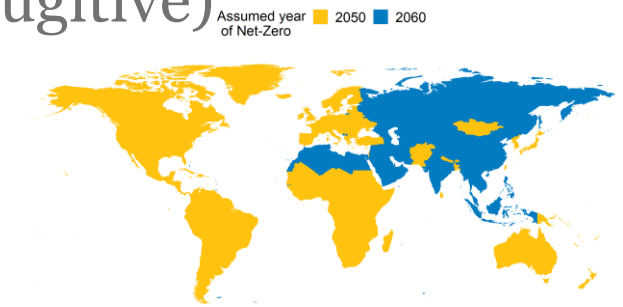
Climate mitigation strategies vary across countries



Source: d'Archangelo, Kruse and Pisu (2023)

A CGE framework using ENV-Linkages

- Computable General Equilibrium (CGE) modelling (Fouré, Dellink, Lanzi, Pavanello, 2023, Chateau, Dellink and Lanzi, 2014)
- Scope :
  - Global: 26 regions, 37 sectors
  - CO_2 emissions (fuel combustion, process, fugitive)
  - 2050 horizon
- 2 Scenarios
  - Baseline : Legislated Policies
  - NZE Ambition : Carbon neutrality
    - in 2050 for regions where countries have such a pledge
    - in 2060 otherwise



Policy instruments in the NZE Ambition scenario

Carbon pricing

Emission trading systems with full auctioning, all combustion and process CO_2, all sectors except power generation

Fossil fuel support removal

Subsidies are reduced to 0 by 2030

Regulations in Power sector

Shift away from fossil fuels towards renewables and nuclear

Regulations to decarbonise buildings and transport

Electrification and energy efficiency improvements

Policies to stimulate firms' energy efficiency improvement

Small improvements, without specific costs

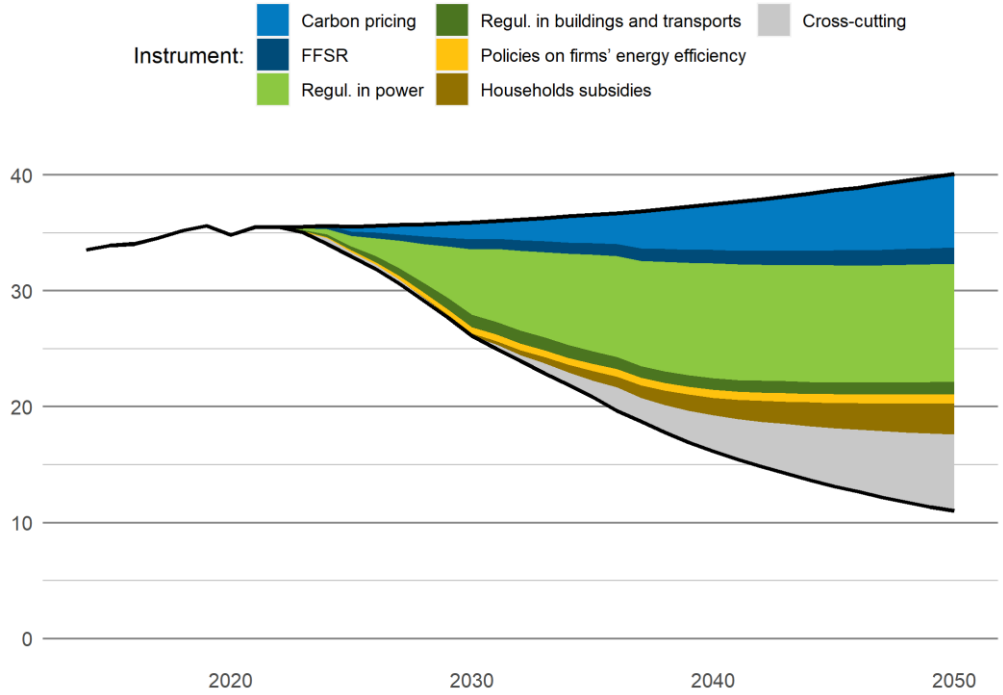
Subsidies to reduce and decarbonise household energy consumption

Electrification and energy efficiency improvements of households

Not all policy instruments contribute equally to emission mitigation

- Varied policy mix
- Largest contributors:
  - Regulation in power generation
  - Carbon pricing
  - CCUS and other cross cutting

Contribution of the different policy instruments to *NZE Ambition* CO_2 emission mitigation (Mt CO_2)

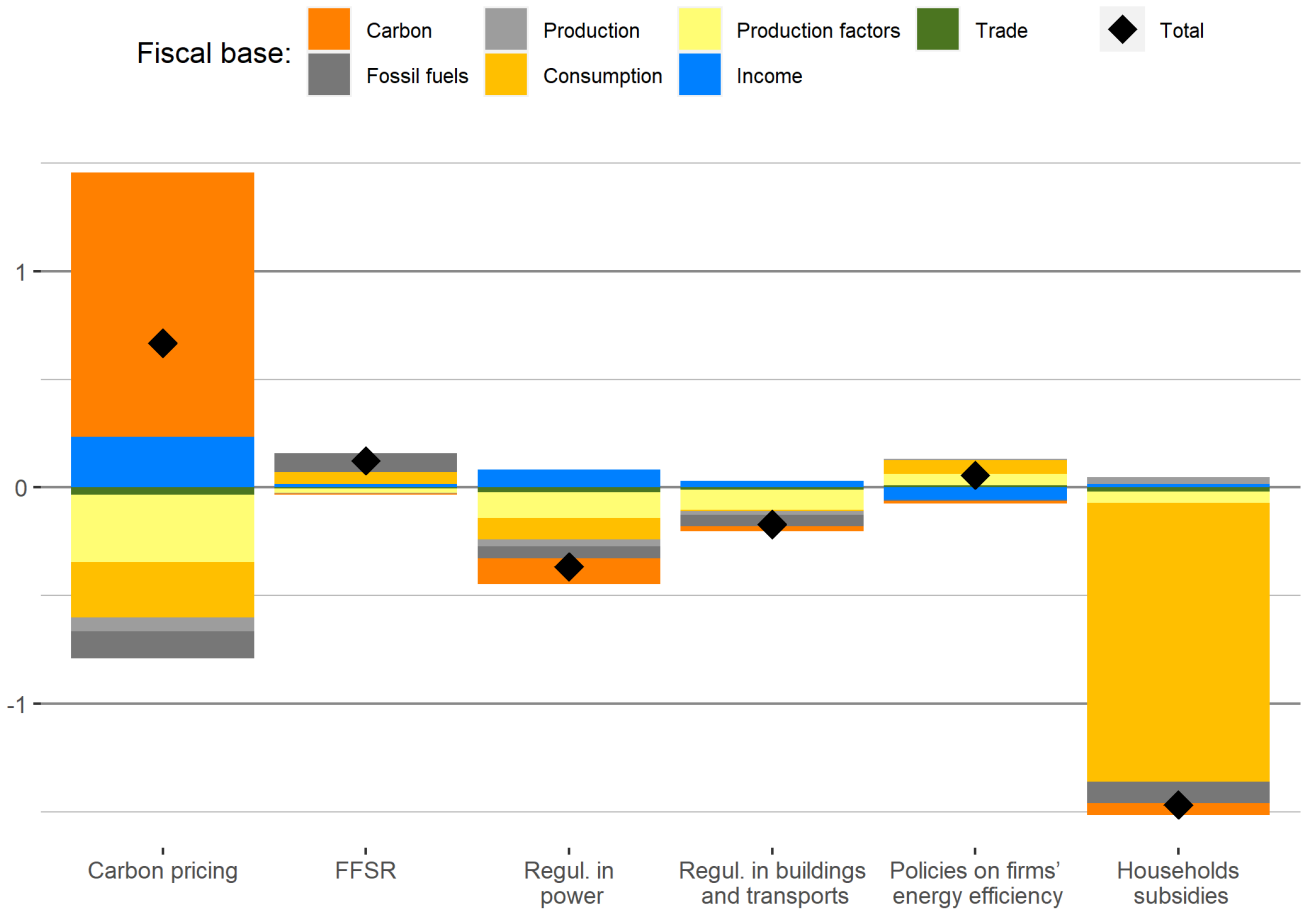


Source: OECD ENV-Linkages model.

Direct effect of market-based instruments entail the largest changes

- Largest effects:
  - revenues from carbon pricing
  - Expenditure on subsides
- All policies have significant indirect effects (on other tax bases)

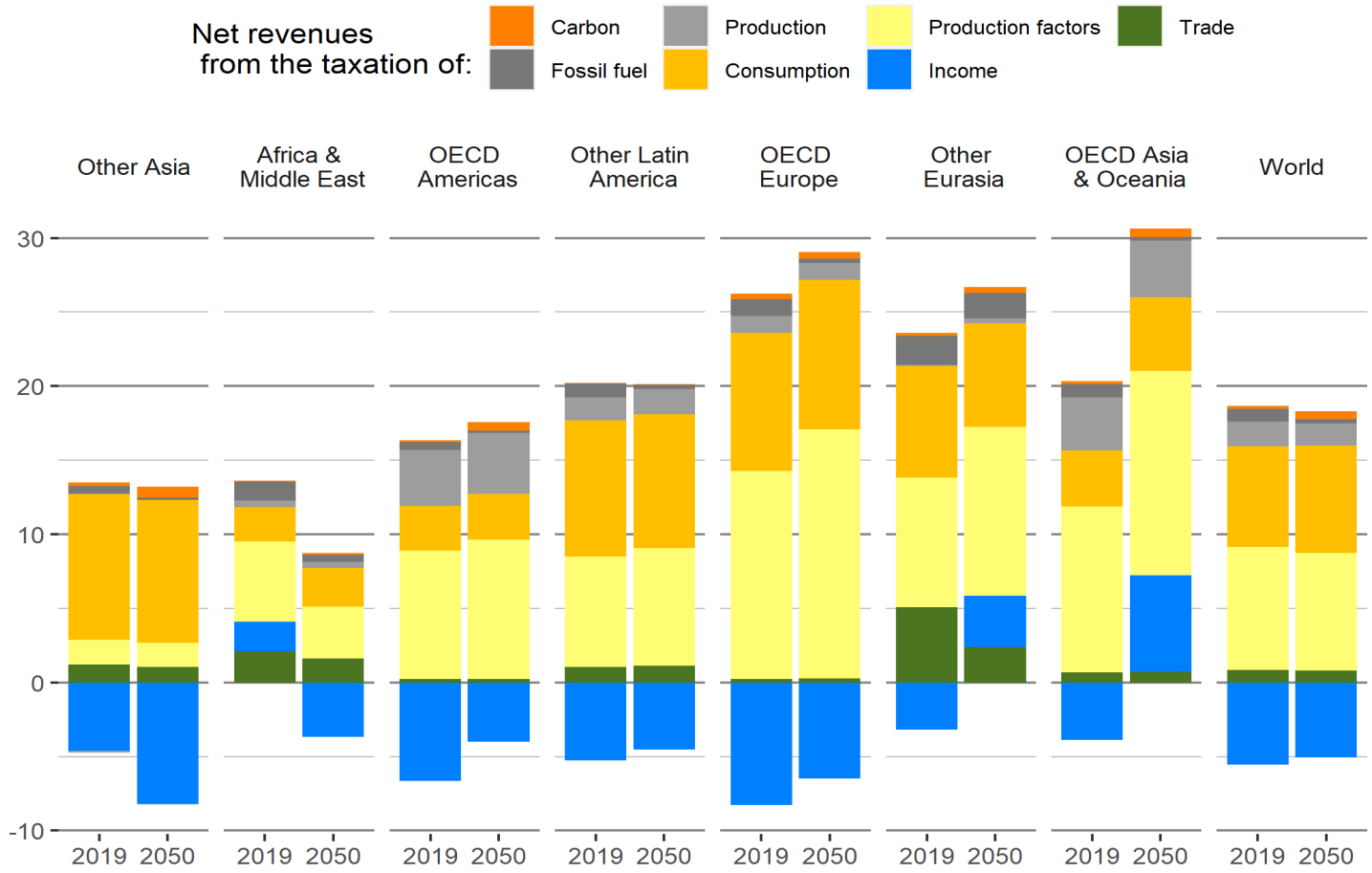
Effect of individual policy instruments on net public revenues in 2050, by fiscal base (% of GDP)



Source: OECD ENV-Linkages model.

Net public revenues in the Baseline scenario

Net public revenues in the *Baseline* scenario in 2019 and 2050, by fiscal base (% of GDP)

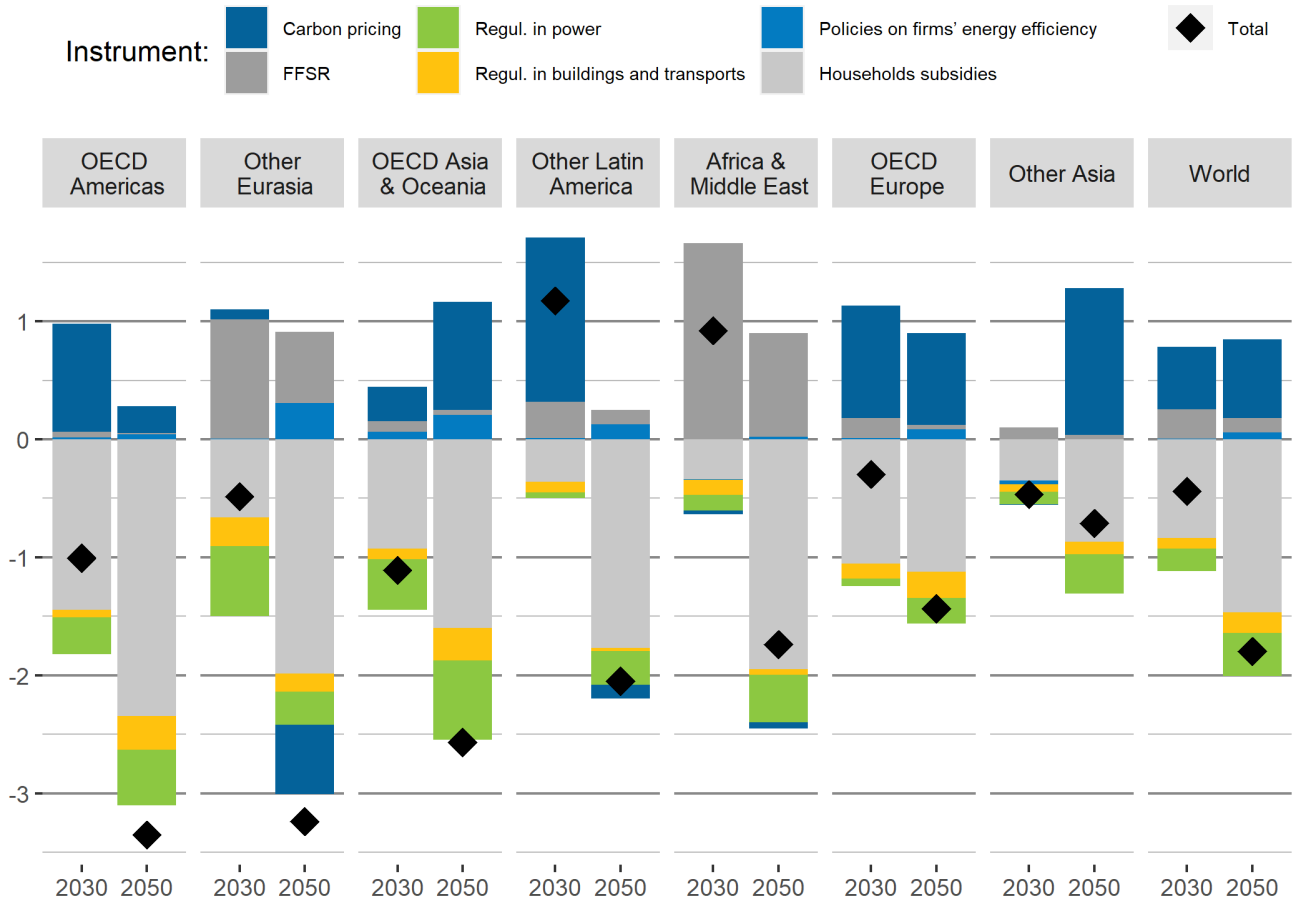


Source: OECD ENV-Linkages model.

Decreases in net public revenues vary over time and region

- Overall, loss in 2050 between -0.7% and -3.4%
- Household subsidies the biggest contributor to fiscal costs

Changes in net public revenues in the *NZE Ambition scenario* compared to the *Baseline* in 2050 (% of *Baseline* GDP)

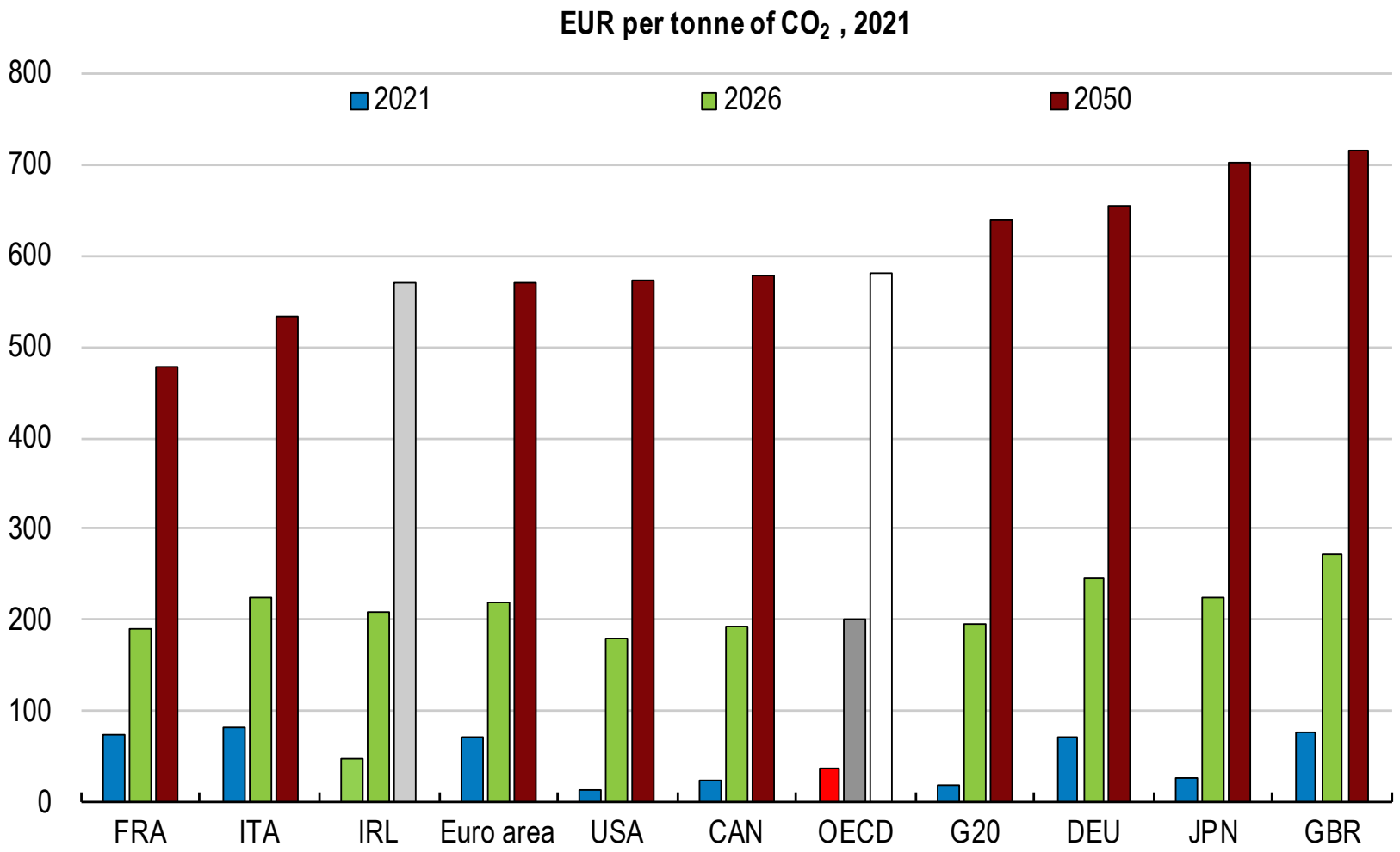


Source: OECD ENV-Linkages model.

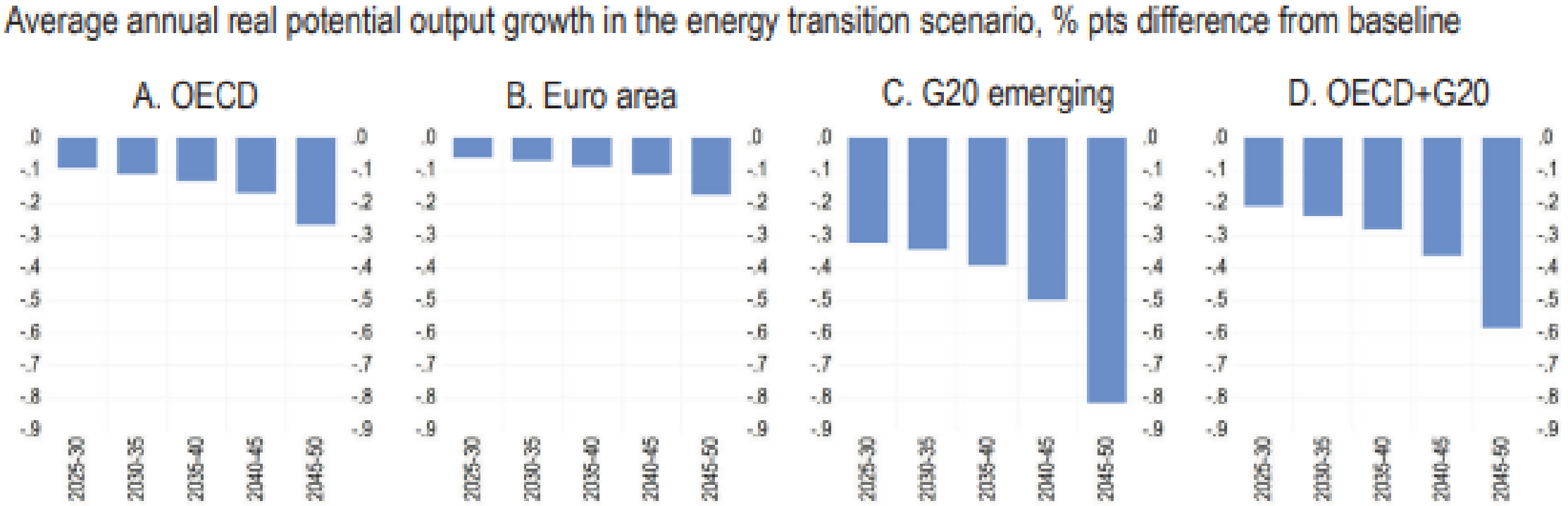
The impact of the energy transmission

- OECD's global long-term model (Guillemette and Chateau, 2023)
- Long-run projections for OECD and non-OECD G20 countries.
- Baseline scenario and alternative stylised scenario of transition to low-carbon energy consistent with net-zero targets
- Based on ENV-Linkages CO_2 abatement cost curves

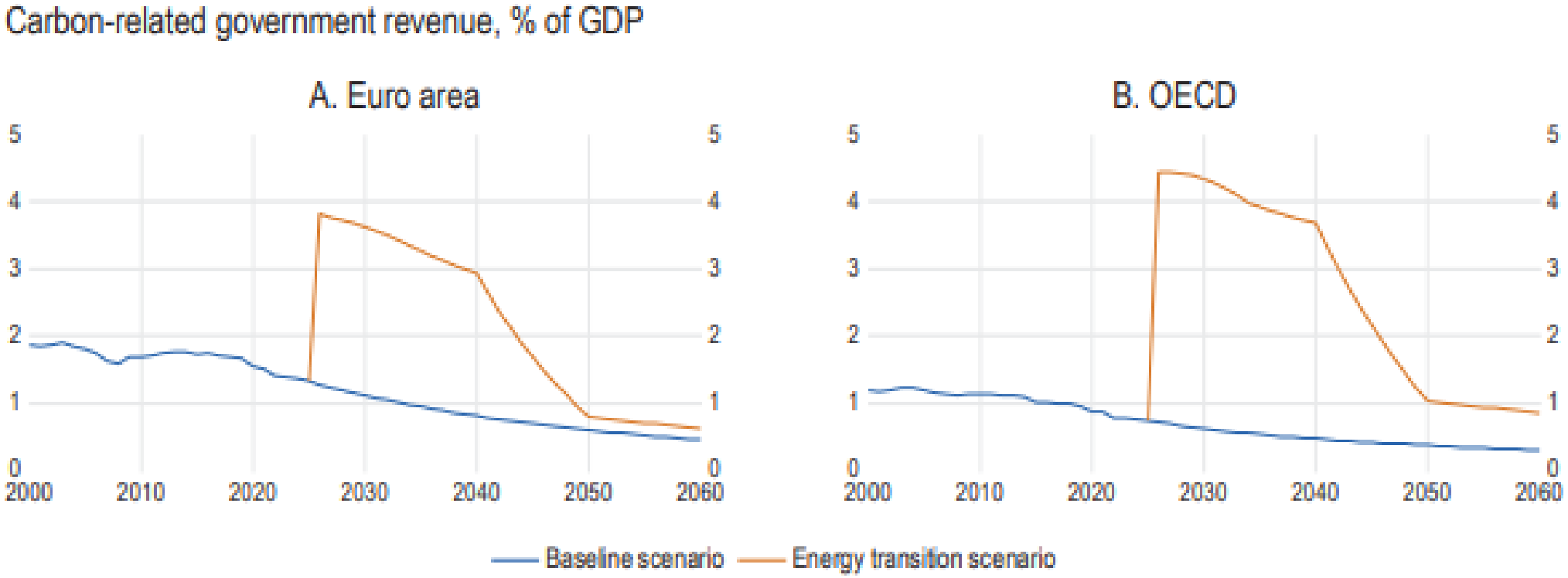
Effective carbon rates increase sharply in an energy transition scenario



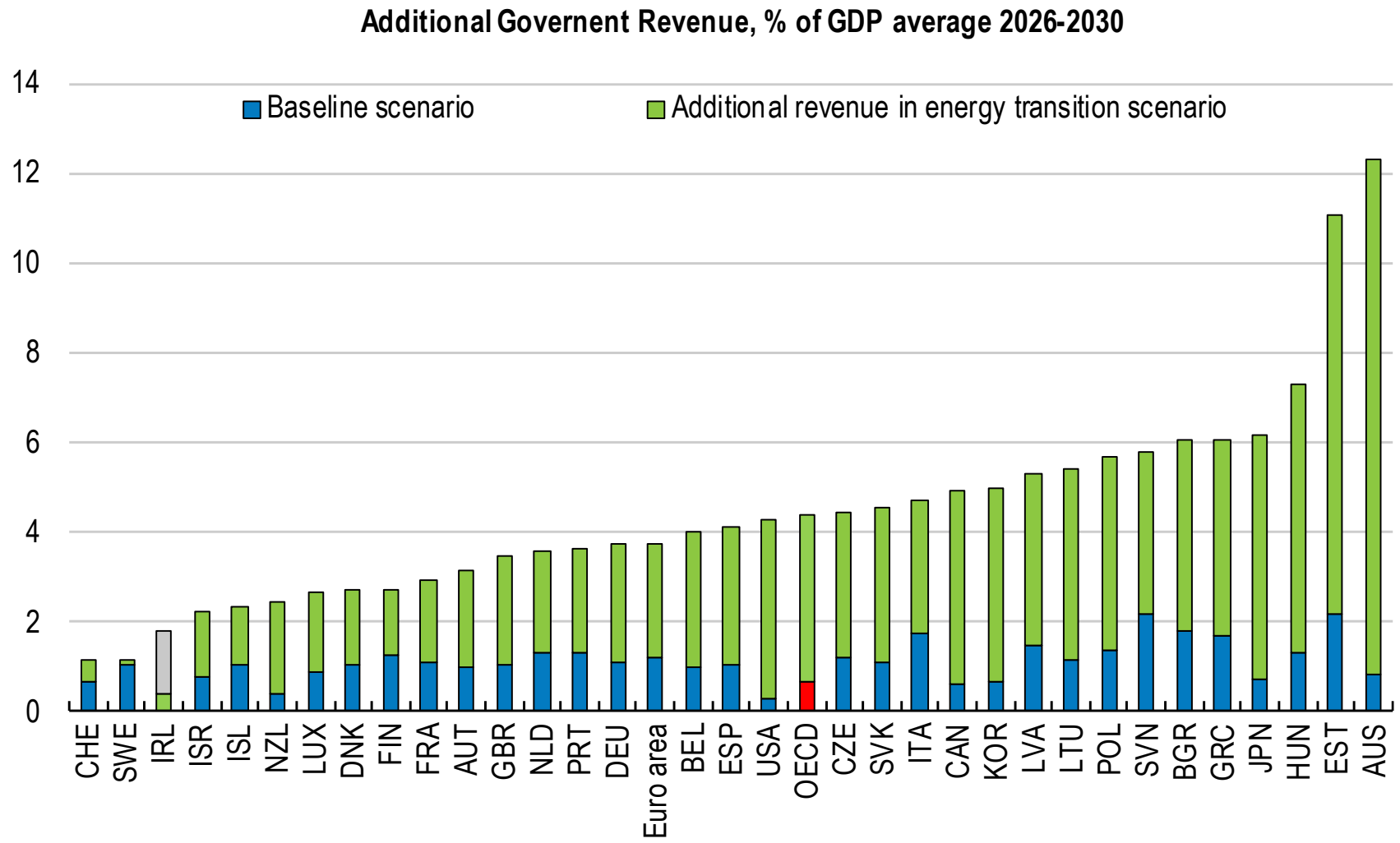
Rising carbon prices reduce output growth



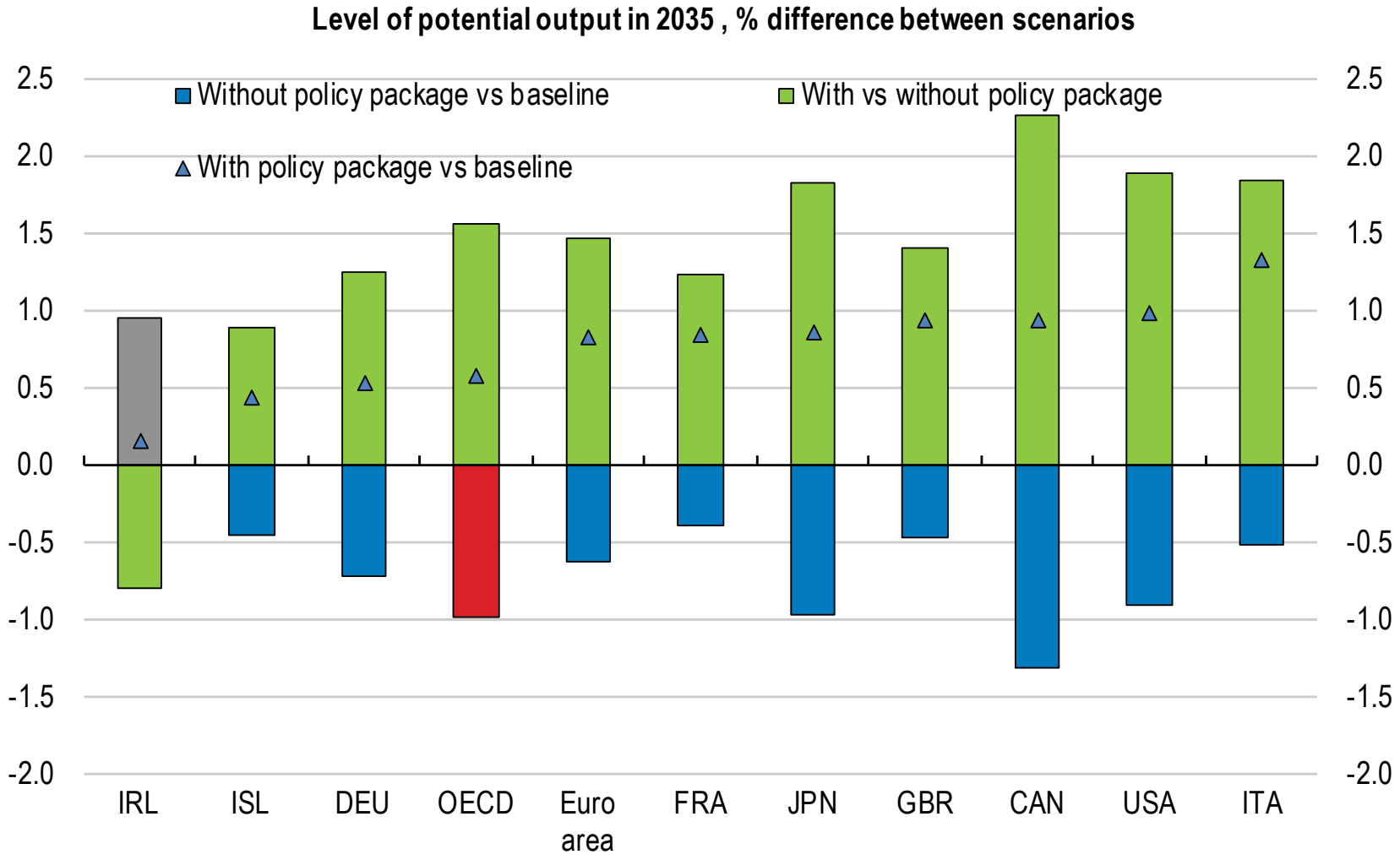
Windfall gains from carbon pricing are potentially large but temporary



Carbon-based pricing boosts to revenues vary considerably across countries



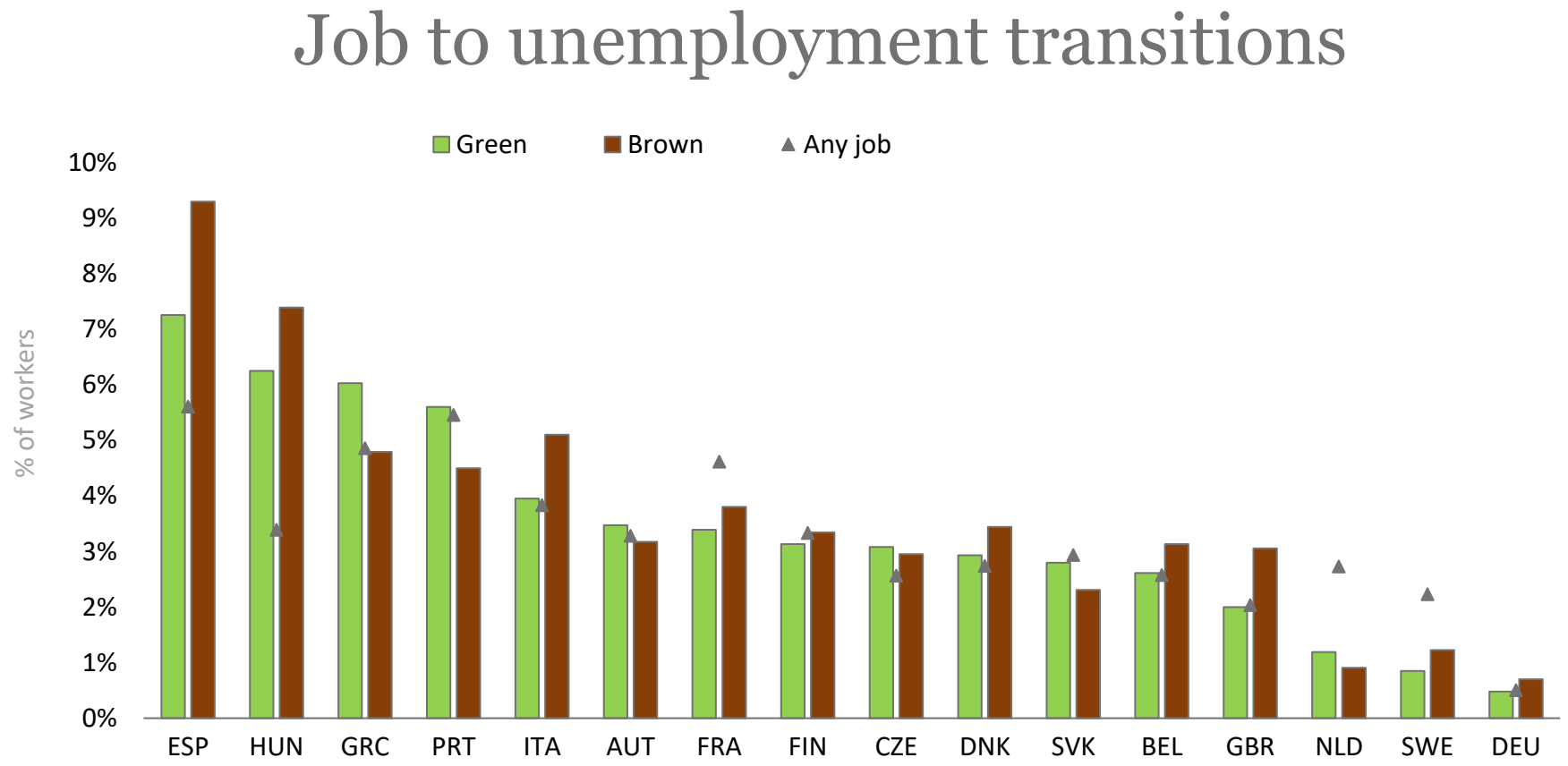
Carbon-related revenue to support employment and innovation helps offset transition costs



Key take-aways from CGE and long-term modelling

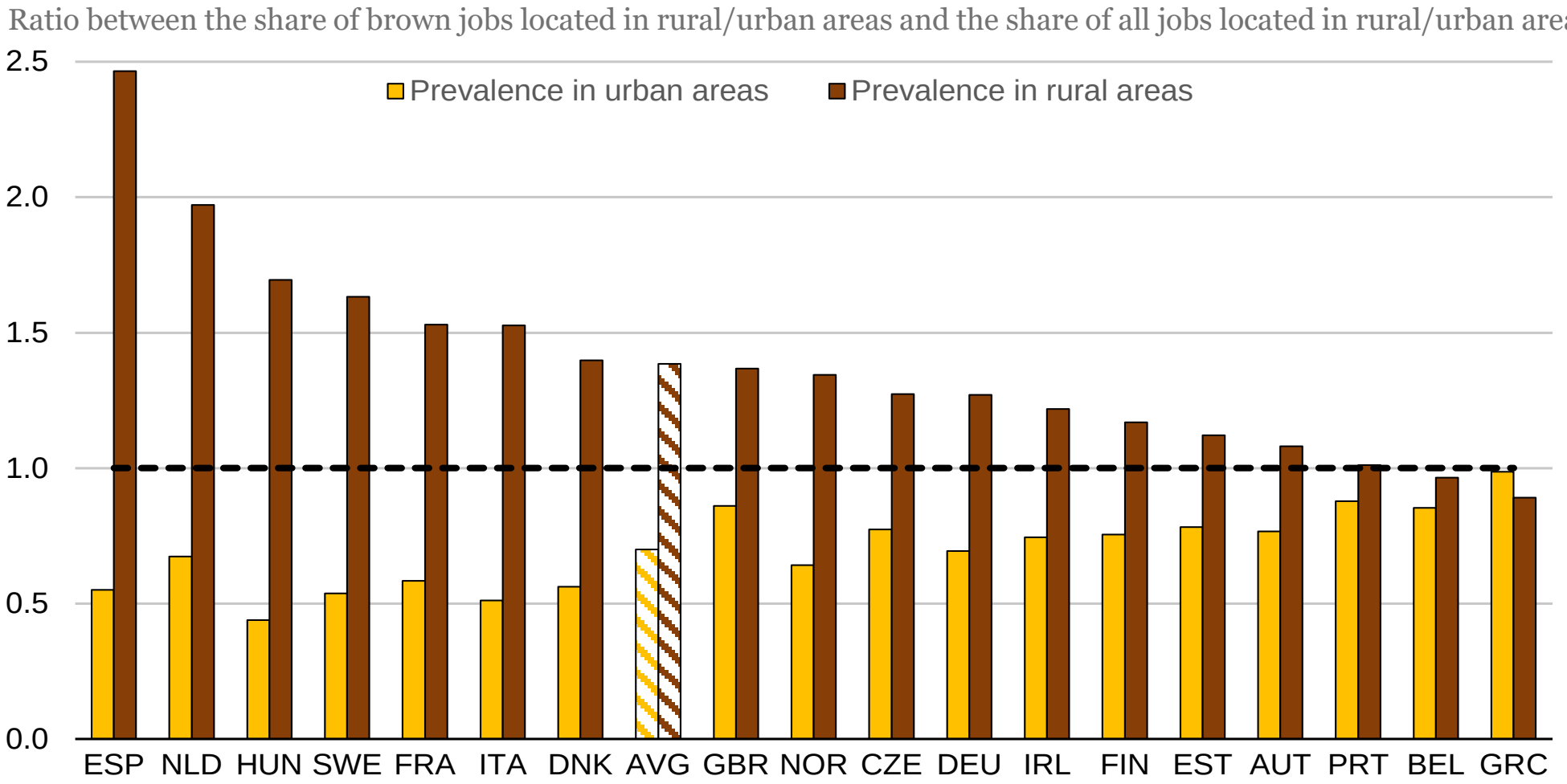
- Transition pathways to limit climate change to +1.5°C are available
- The transition is feasible with respect to its fiscal consequences, and maintains economic growth
- Fiscal effects reflect a trade-off between
  - Instruments that increase public revenues (carbon pricing) or reduce public expenditure (FFSR)
  - Often more costly instruments (subsidies)
  - Indirect effects on tax base erosion of all instruments

Displacement effects in the green transition

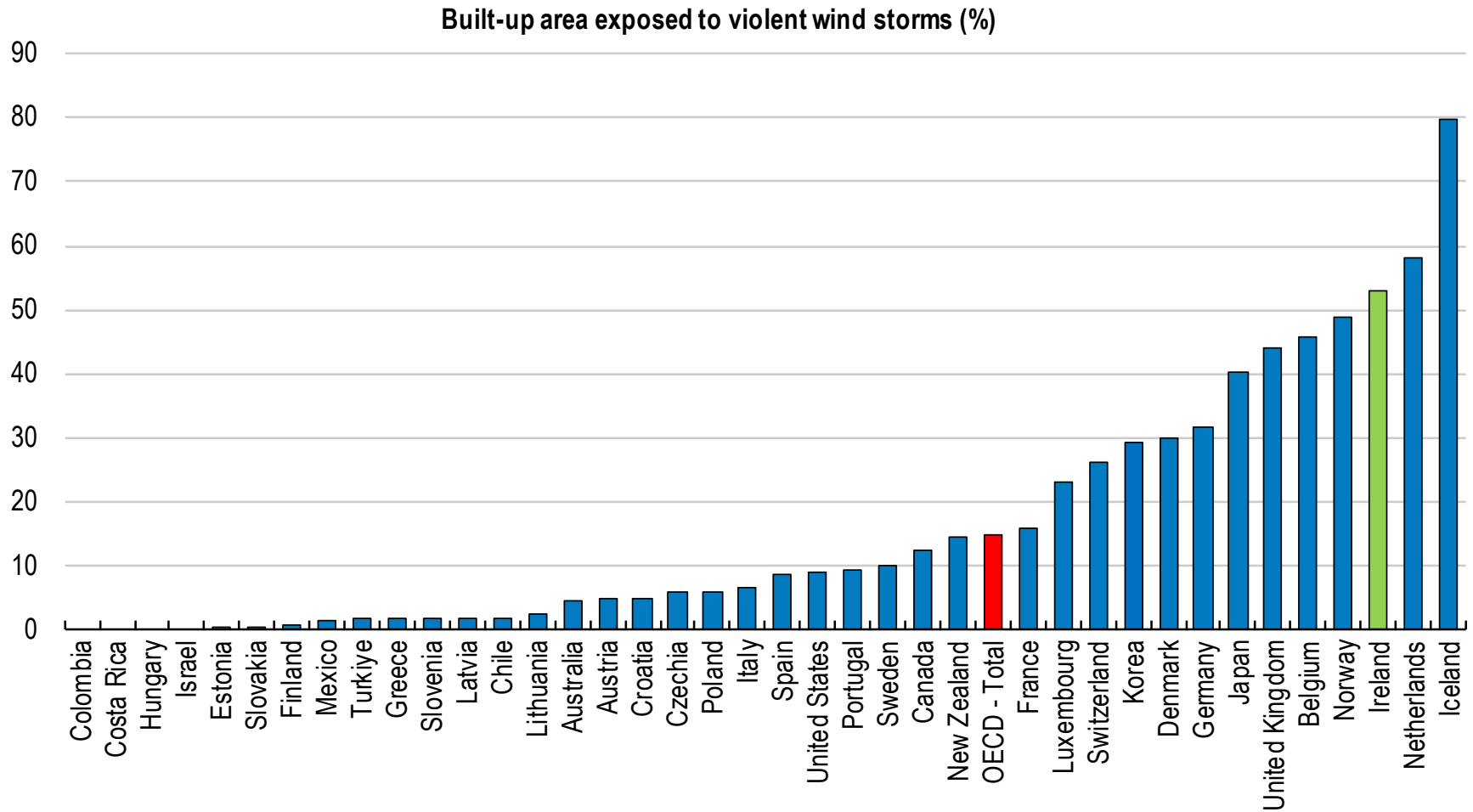


Note: Transitions are defined over a one-year period. Yearly transitions are averaged across the years 2015-2019. The denominator for green (brown) jobs to unemployment transitions is defined as the number of individuals that had a green (brown) job last year plus those that have the same green (brown) job this year, while the numerator is defined as the number of individuals that are unemployed this year and had a green (brown) job last year. How to read: in Spain, nearly 6% of workers transition to unemployment from one year to the next; 7% of workers employed in green jobs transition to unemployment from one year to the next, and 9% of workers employed in brown jobs transition to unemployment from one year to the next.

Stranded assets, workers, communities



Understanding adaptation impacts



OECD, International Programme for Action on Climate,

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