Getting on Track to Net Zero

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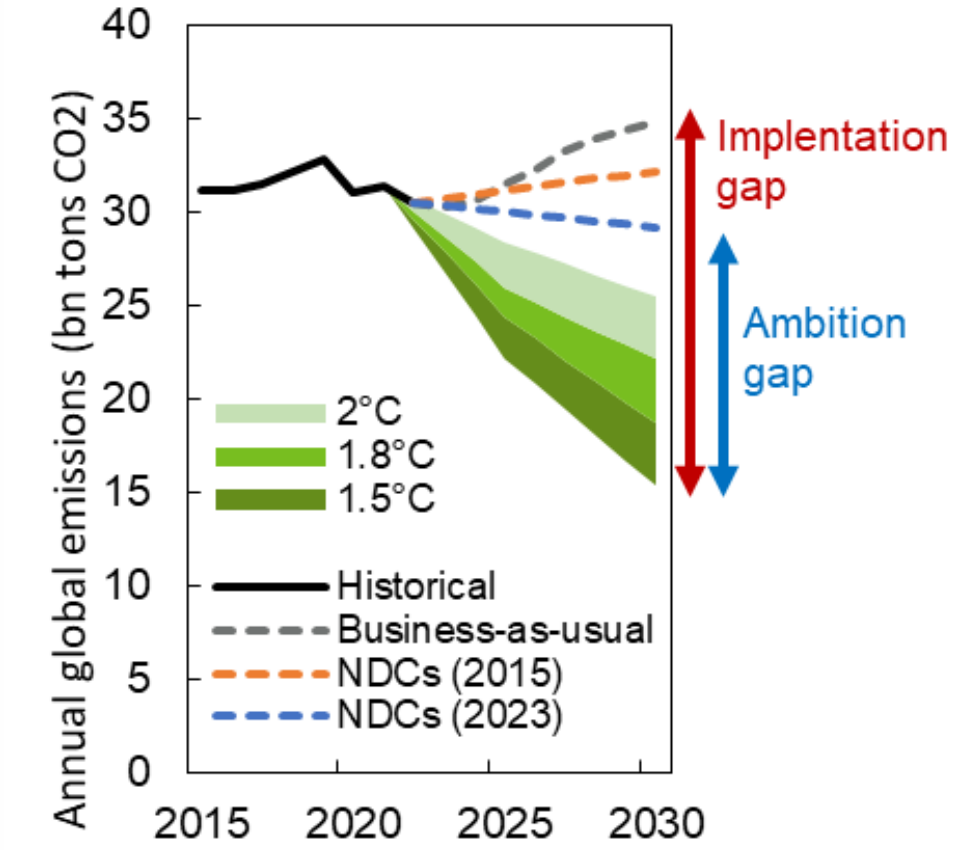
Outline

- **Global Mitigation Gaps**
- **Mitigation Policy Instruments and their Impacts**
- **Moving Policy Forward at Domestic and International Level**
- **IMF FAD Climate Mitigation CD examples**

Global Mitigation Gaps

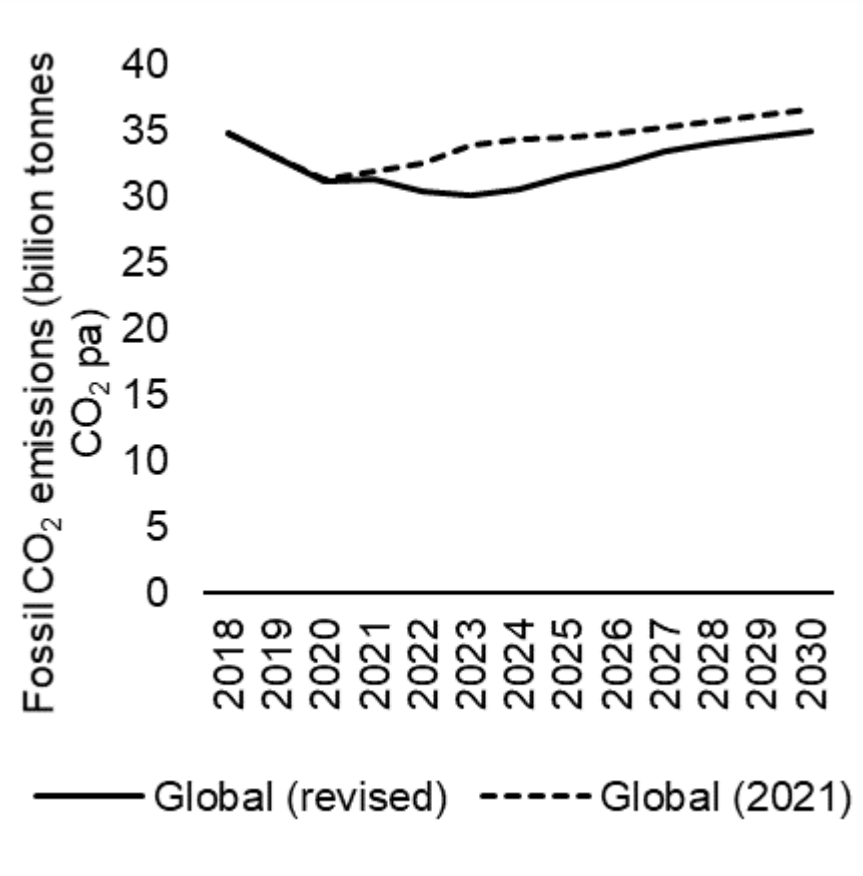
Current Mitigation Pledges for 2030 Fall Short of What's Needed

Twin Gaps in Global Climate Policy (Global CO_2 Emissions vs. Needed for Temperature Goals)



Sources: IPCC and IMF staff using CPAT model.

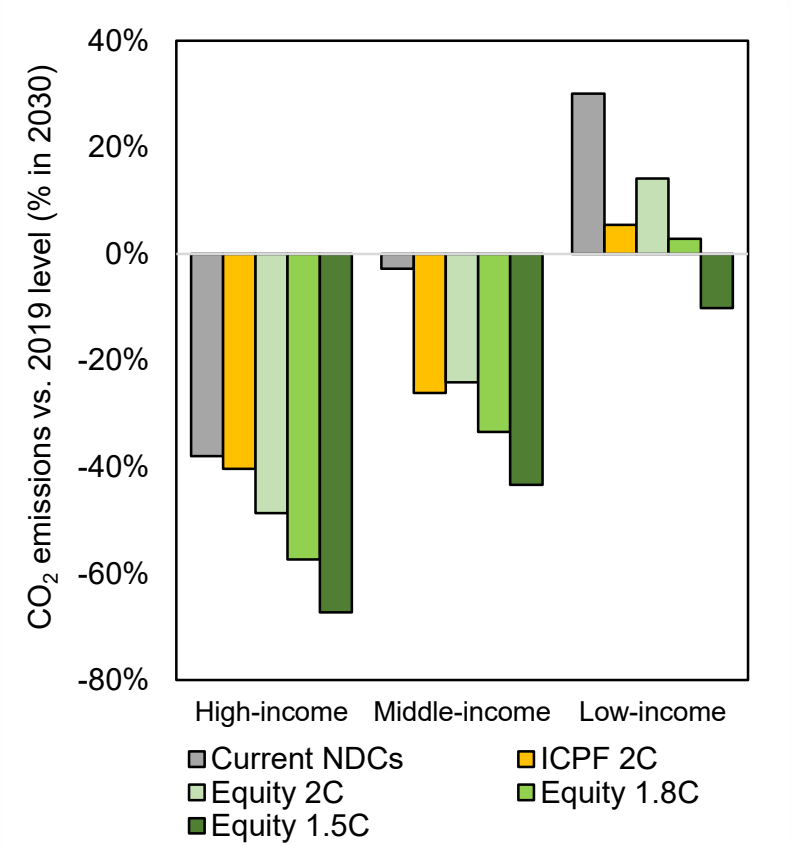
Baseline CO_2 Projections before and after Energy Price Shock



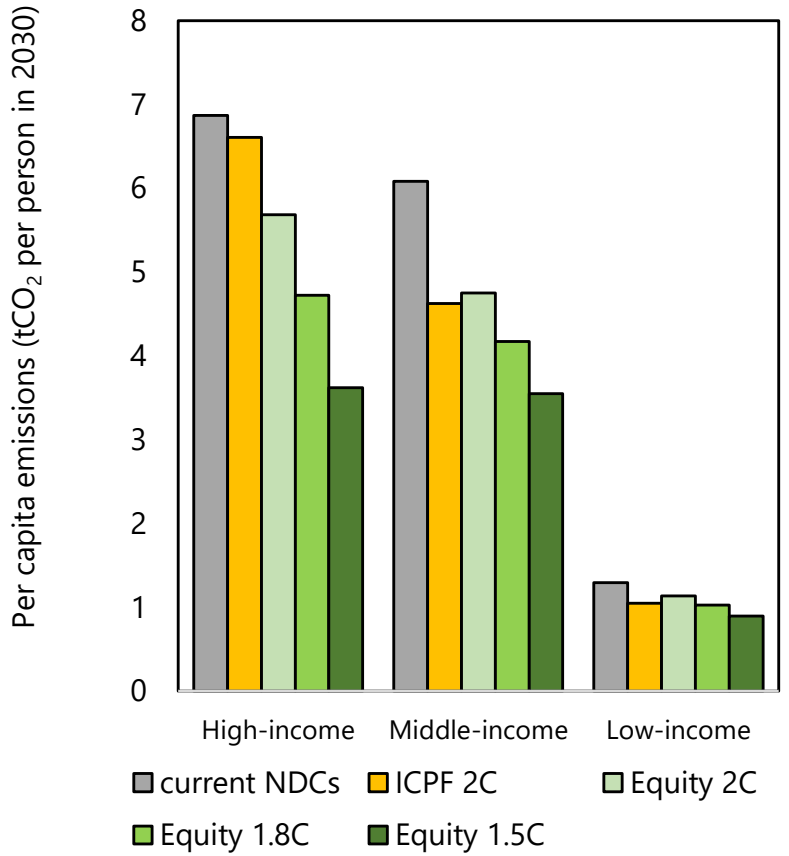
Sources: IMF staff using CPAT model.

Equitable Options for Closing 2030 Ambition Gaps

CO2 Reductions

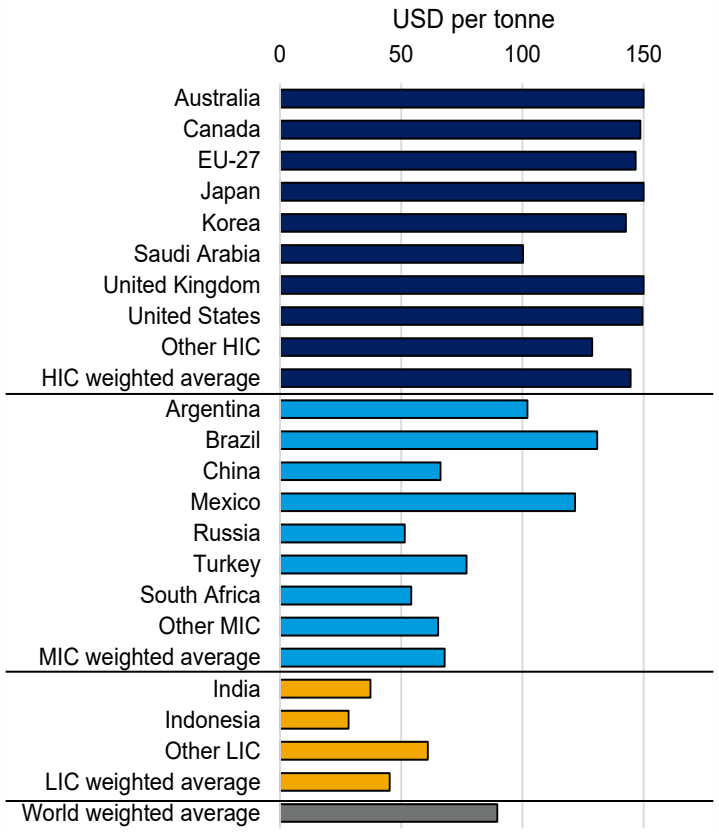


Per capita emissions

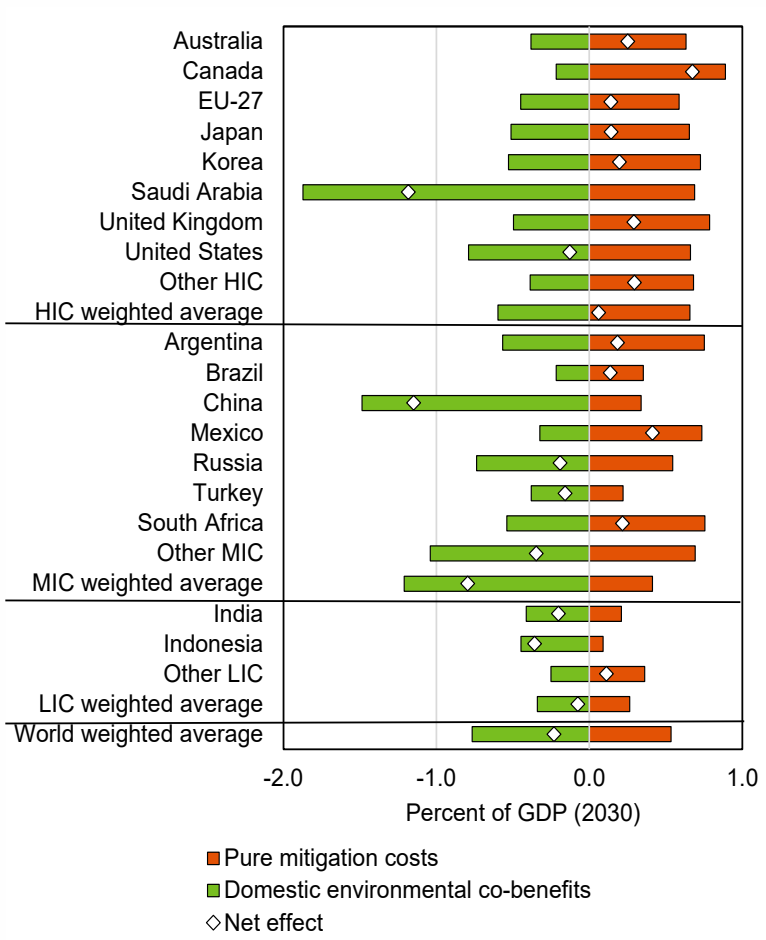


Burdens from Closing Ambition Gaps: Equitable 2°C Scenario for 2030

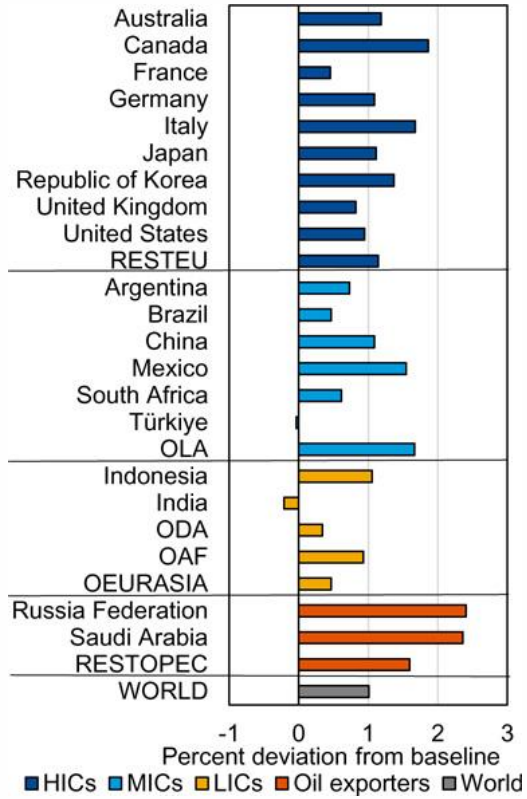
Shadow CO2 prices (incremental mitigation costs)



Mitigation costs and Domestic Environmental co-Benefits



GDP costs



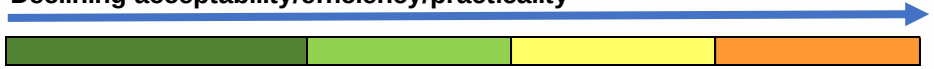
Sources: IMF staff using CPAT model.

Mitigation Policy Instruments and their Impacts

A Mix of Policies are Needed to Accelerate Decarbonization

Instrument	Political acceptability	Economic efficiency	Administrative practicality	Environmental effectiveness by sector					
				Power	Industry	Transport	Buildings	Forestry/ land use	Extractives (methane)
Carbon taxes				✓✓✓	✓✓✓	✓✓	✓✓		✓✓✓
Emissions trading systems (ETSs)				✓✓✓	✓✓✓	✓✓	✓✓		✓✓
Feebate (fees/rebates for dirty/clean firms/ products/activities)				✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓
Tradable performance standards				✓✓	✓✓	✓✓		✓	✓
Subsidies for green technologies/ activities*				✓✓	✓	✓✓	✓	✓	✓
Requirements for green technologies/ activities**				✓	✓	✓✓	✓✓	✓	✓

Declining acceptability/efficiency/practicality



* Subsidies could include tax incentives (e.g. refundable or unrefundable tax credits and accelerated depreciation), green public procurement, direct consumer subsidies, feed-in tariffs (for renewables in power, carbon contracts for difference (CCfDs) and others.

** Requirements for green technologies could include portfolio standards and mandates (for example requirements for renewables as a share of generation, biofuels as a portion of fuels), energy performance certification requirements for buildings, and internal combustion engine bans in vehicles.

Pricing should be Complemented with Sectoral Instruments

- Due to acceptability constraints on pricing (especially when energy prices high)
- Regulations (e.g., renewable shares) and subsidies (e.g., electric vehicles) are common
- But feebates more flexible and cost effective
  - Revenue neutral sliding scale of fees/rebates for products/activities with >/< average CO_2 rates
  - Fiscal analogue of tradable emission rate standard (e.g., Canada)
- Attractions of feebates
  - Promote all responses for reducing emissions intensity (though no demand response)
  - Cost effective (regulations require fluid credit trading)
  - Avoid a fiscal cost (unlike subsidies)
  - No burden on average household/firm (unlike carbon pricing)

Applications of Feebates

Energy Sector

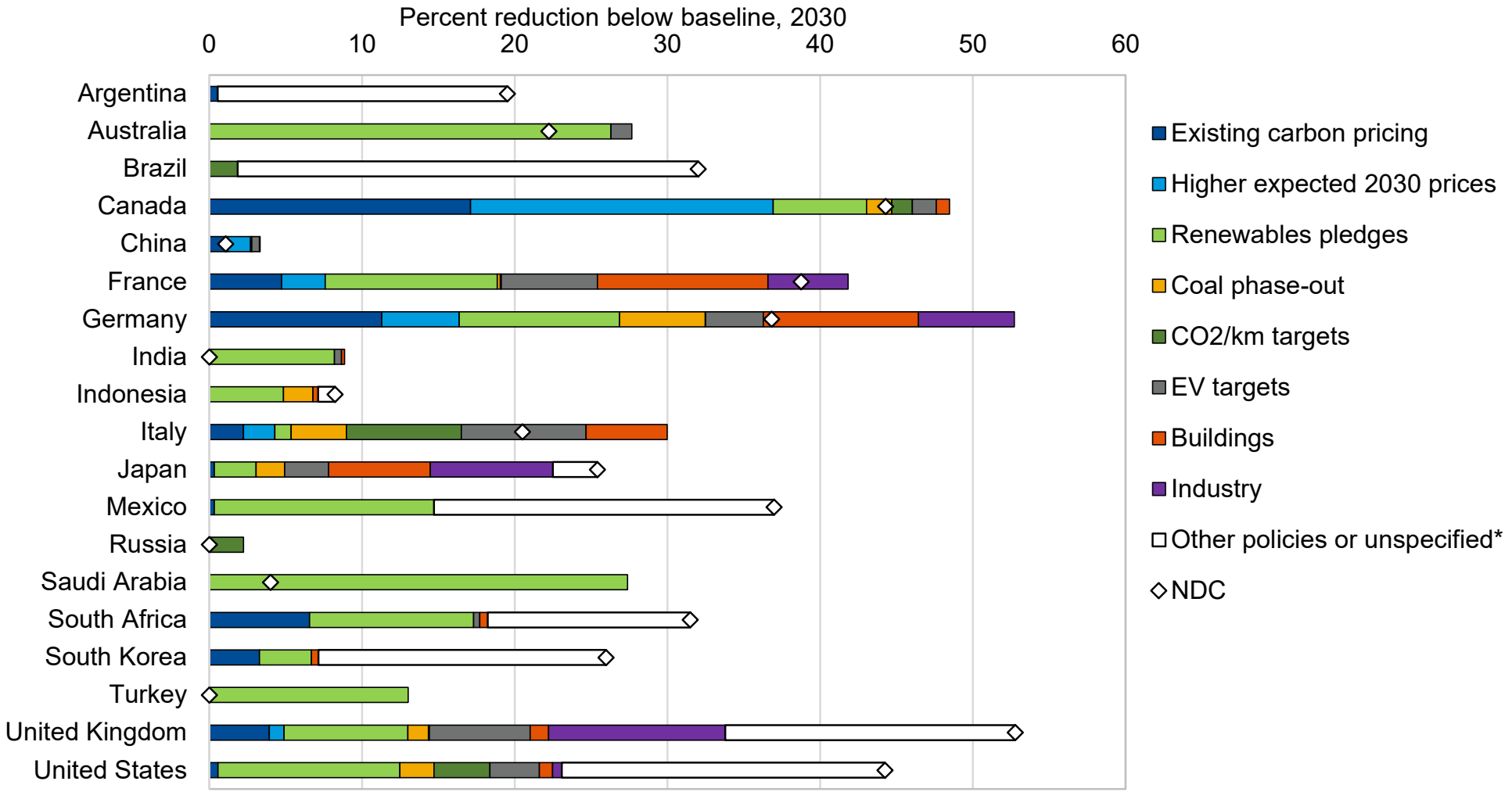
- Vehicles (commonly integrated into registration fees)
- Power generation/industry (limits increase in prices/production costs)
- Buildings (encourage renovations, clean heating, efficient appliances)
- Industry (limits competitiveness/leakage concerns)

Broader sectors

- Forestry
  - Landowners: fee = CO_2 price × (baseline carbon storage ─ current storage)
- Extractives (methane)
  - Revenue neutral shift of current fiscal regimes
  - Proxy pricing based on default emission rates with rebates for cleaner firms

Comparing Mitigation Effort from Current/Planned Policies

Combined effects of current policies and sectoral targets for 2030



Source: IMF staff using CPAT.

Note: *'Other policies or unspecified' includes policies not quantified in this exercise or not yet specified by the authorities.

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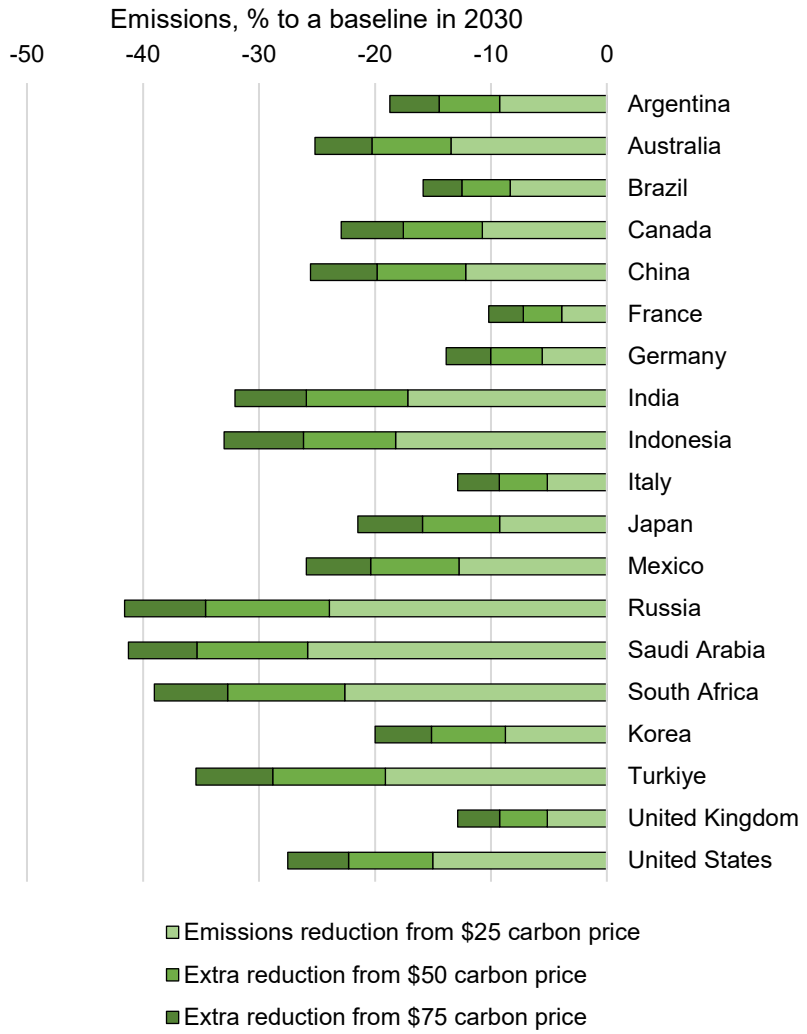
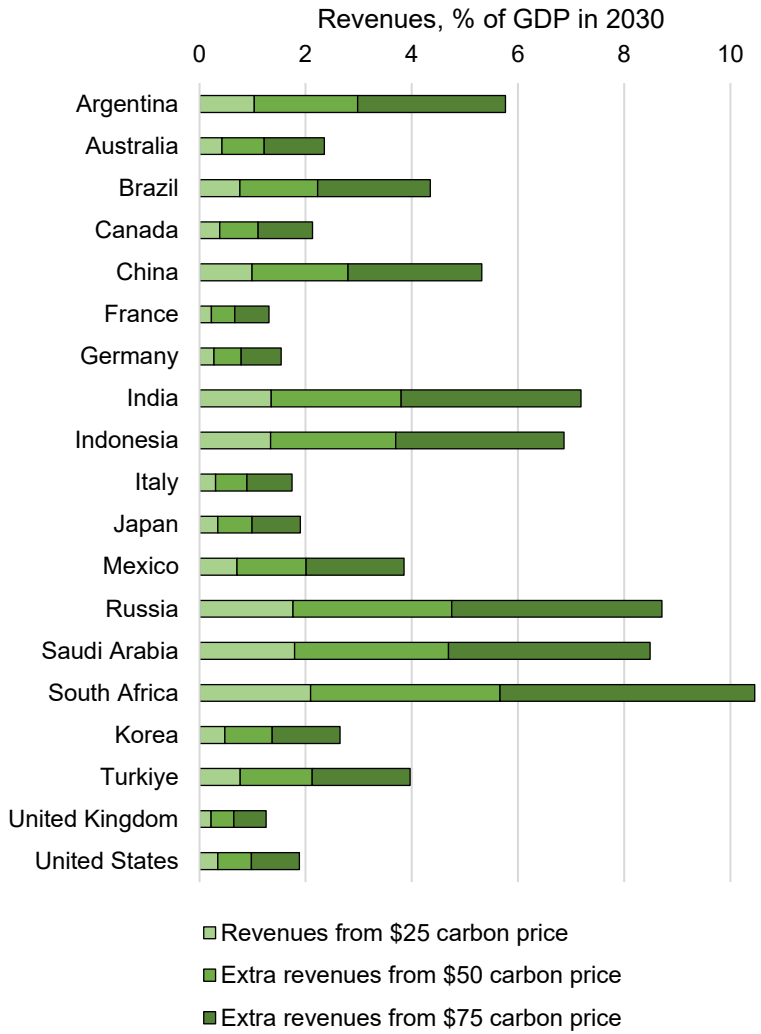
Impacts of Carbon Pricing: Emissions and Fiscal

Emissions



Revenue



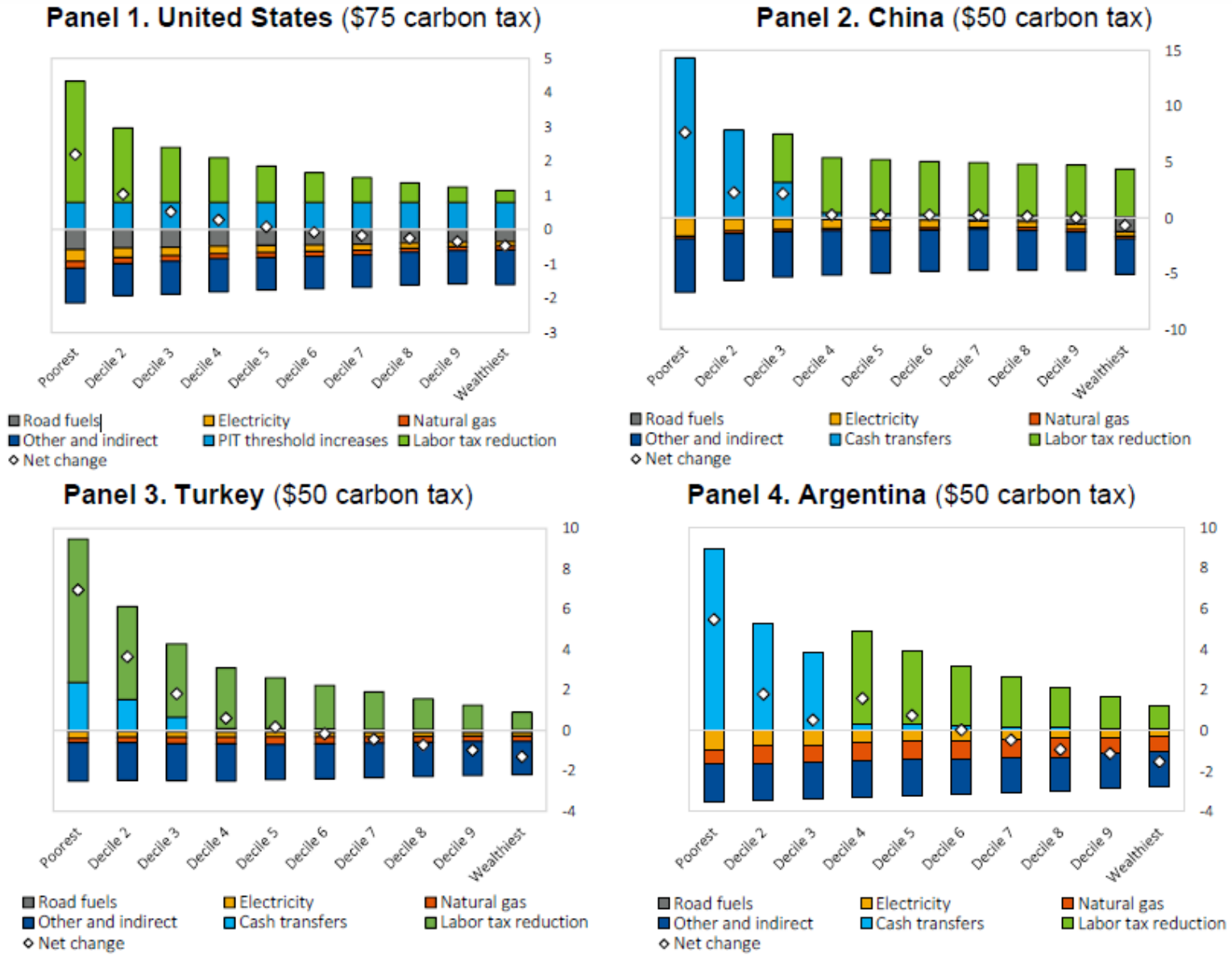
Source: IMF staff using CPAT.

Moving Policy Forward at Domestic and International Level

Carbon pricing can be progressive and support the poorest with revenue recycling

- Recycling:
  - Targeted assistance (e.g., social safety nets).
  - Other revenues for broad tax cuts/SDG investments.
- Non-pricing approaches: first-round households burdens much smaller.
  - But no revenues to alter distributional impacts.

Household Burdens from Carbon Pricing, 2030

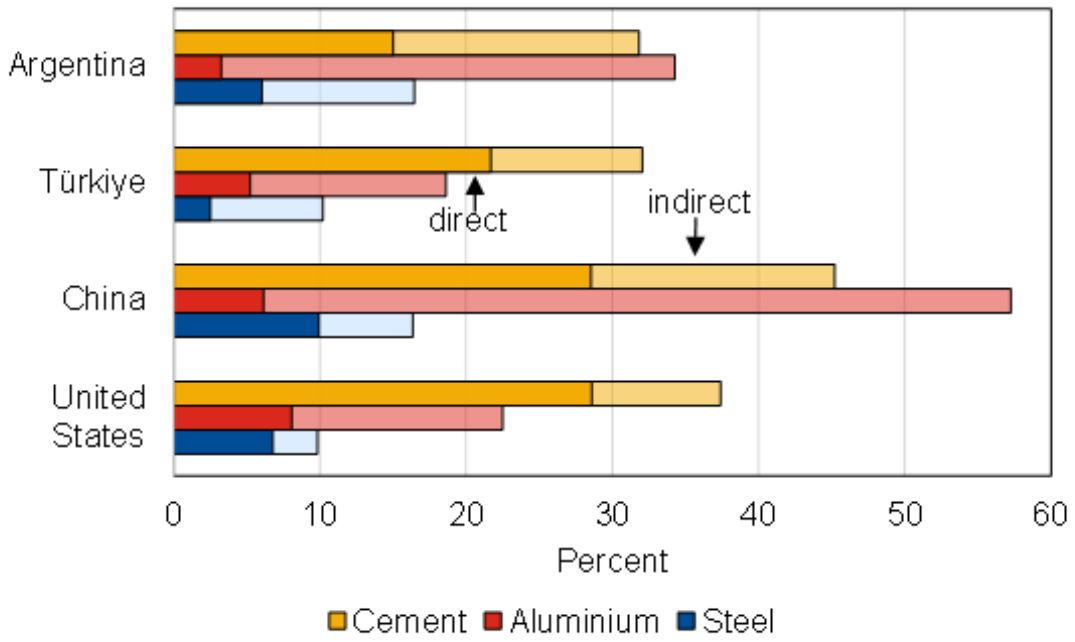


Source: IMF staff using CPAT.

There are several options for addressing competitiveness effects

- Pricing: assistance measures may be needed.
  - Free allowances.
  - Output-based rebates.
  - Border adjustments.
- Non-pricing approaches: less need for assistance.
  - Tradable performance standards/feebates.
- International coordination.

Production Cost Increases from $75 Carbon Price in 2030

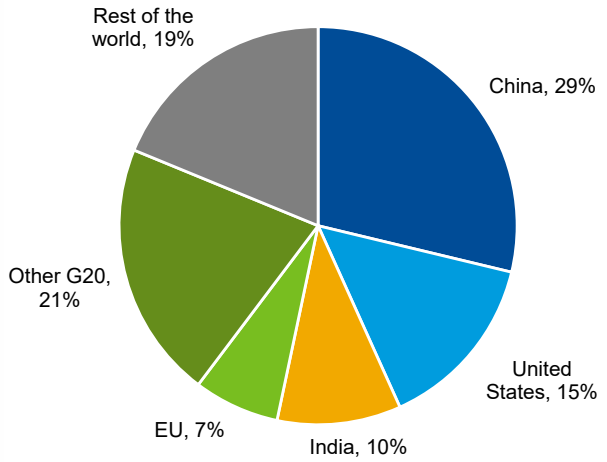


Source: IMF staff using CPAT.

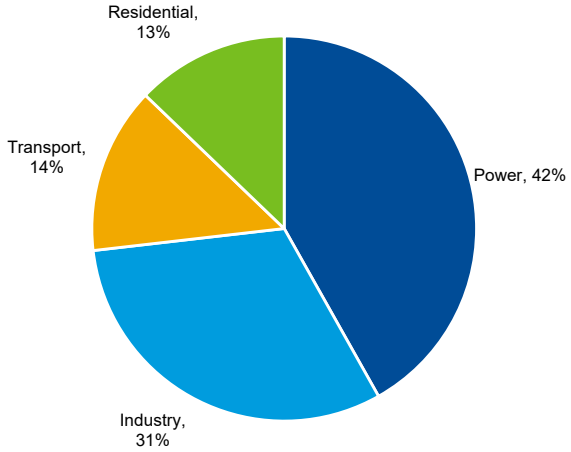
An international coordination mechanism is needed to scale up global action

- Key elements.
  - Small number of large emitters.
  - Concrete policies that will achieve needed emissions reductions.
  - Could focus initially on power/industry.
- Example: International carbon price floor.
  - Pragmatic: focus on pricing (transparent parameter) but allow for other (emissions equivalent) instruments.
  - Equitable: Differentiated prices, support for LICs.
- Unilateral border carbon adjustments.
  - May emerge without coordination but far less effective.

Baseline CO_2 Emissions, 2030



CO_2 Reductions by Sector under $25/50/75 Carbon Price, 2030



Sources: IMF staff using CPAT model.

IMF FAD Climate Mitigation CD

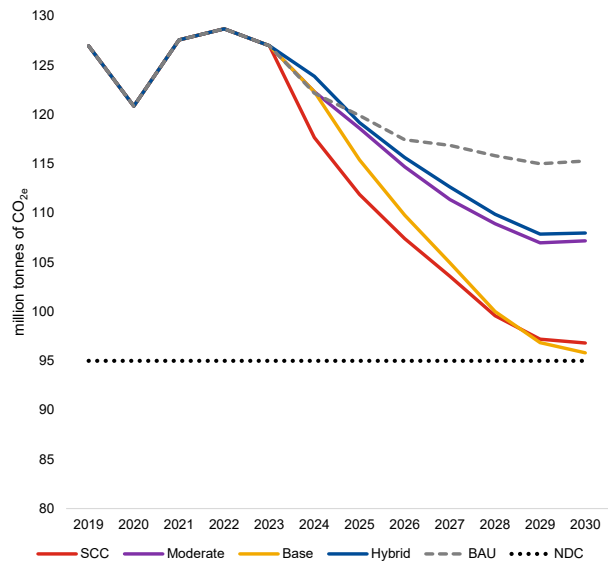
The Climate Policy Assessment Tool (CPAT)

- A spreadsheet-based 'model of models' for over 200 countries, being developed jointly by IMF & World Bank
- Allows for **estimating the effects of climate mitigation policies –** carbon pricing and fossil fuel subsidy reform:
  - **impact on energy & emissions** – prices, consumption, global pollutants (GHGs), local pollutants (PM2.5, NOx, etc.)
  - **macroeconomic impacts** – GDP, revenues, trade balance
  - **distributional impacts** – effects of policies including revenue recycling across on households (across income distribution and urban vs. rural) and firms
  - **development co-benefits** – reductions in mortality & morbidity from improved in air quality and road safety, reduced congestion
- **Helps policymakers assess impacts and design, compare, and implement** policies to achieve their climate mitigation targets (Paris Agreement NDCs) and development goals (SDGs) jointly

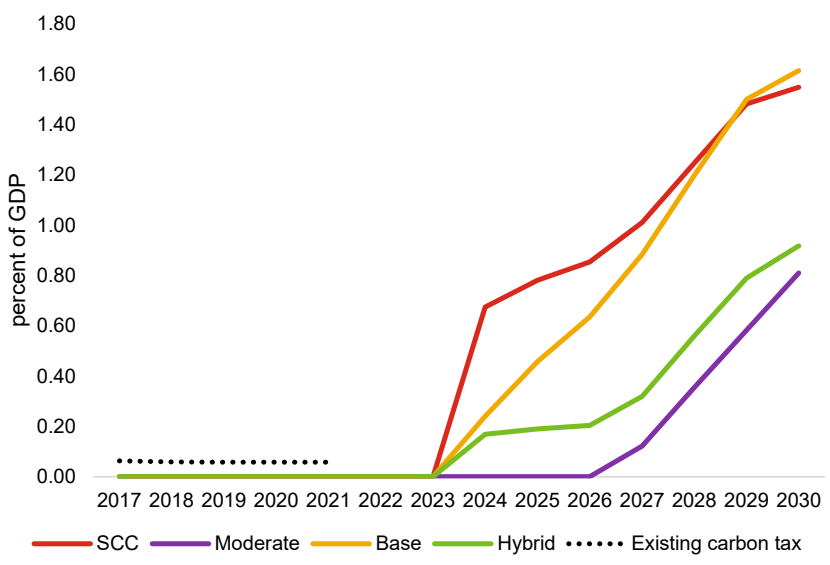
CPAT example: Chile's proposed green tax reform

The CD mission presented four reform options to support the authorities green tax reform efforts. Options were evaluated on their:

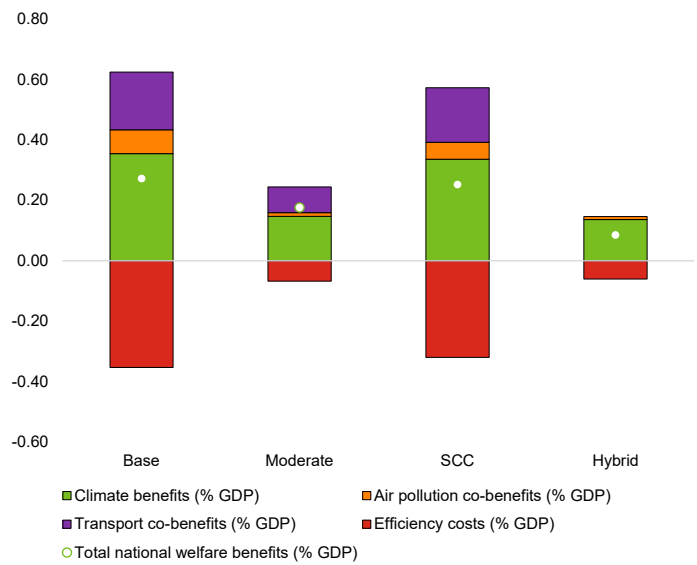
Emissions reductions



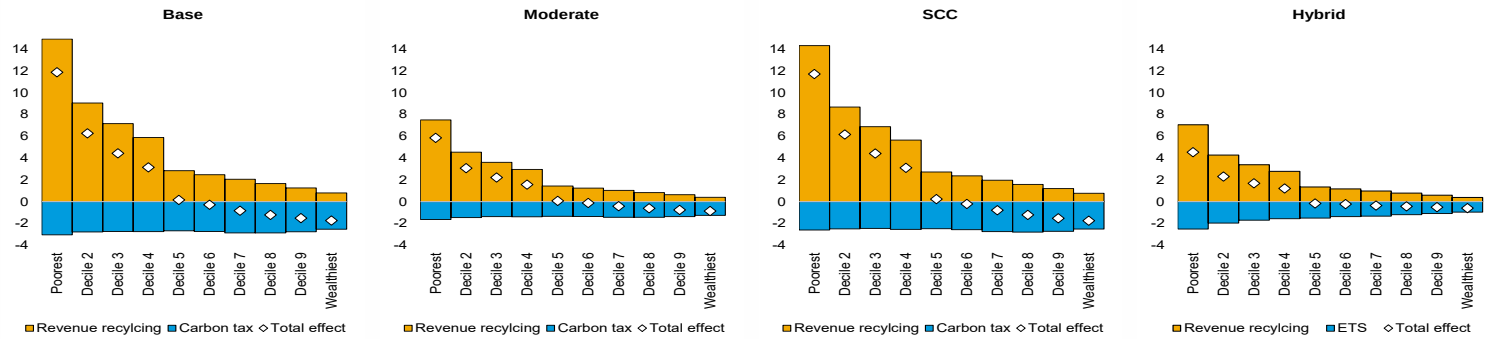
Revenue raising potential



Welfare impacts



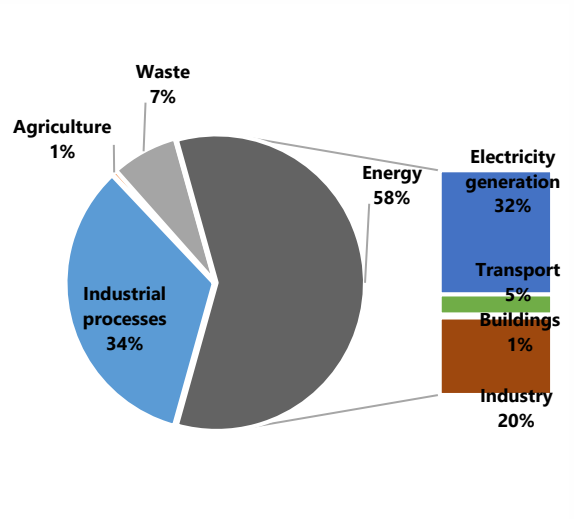
Purchasing power effects and offsetting revenue recycling options



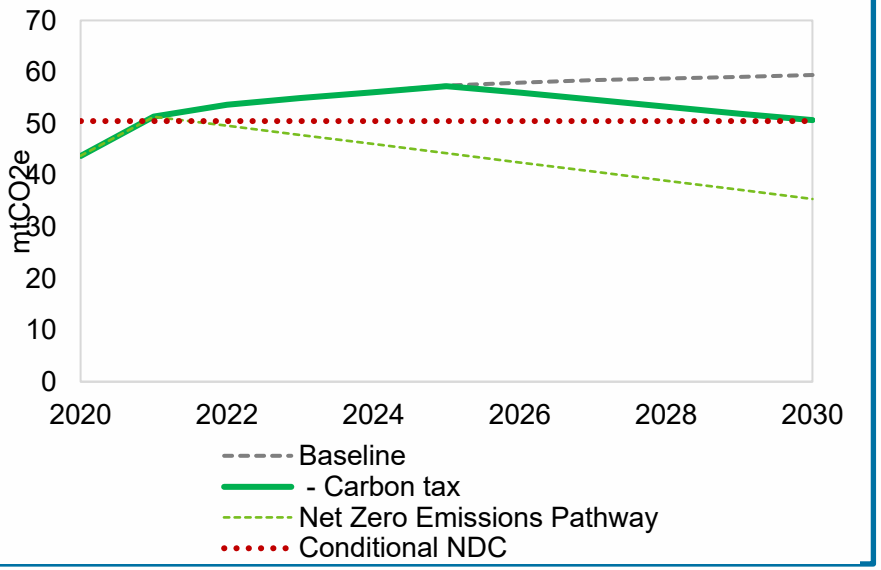
CPAT example: Trinidad and Tobago's energy transition issues

The CD mission presented an illustrative emissions scenario of a carbon tax

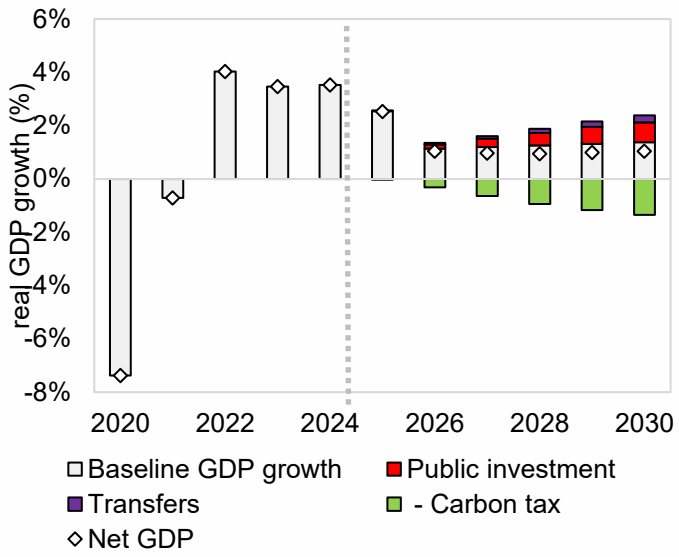
GHG Emissions



Carbon Tax effect on NDC



GDP effect



Concluding

Takeaways

- To avoid large damages from unchecked climate change, global emissions must be cut by 25 to 50 percent by 2030 compared with 2019 levels, but large gaps remain
- Energy crisis underscores the urgency of transitioning away from fossil fuels to address climate crisis and reduce dependence on insecure energy
- Energy price shock is no substitute for carbon pricing, declining energy prices provide an opportunity for locking in carbon pricing in the long term
- Countries need holistic mitigation strategies that include packages of mitigation instruments as well as just transition measures
  - In the immediate term, climate strategies may focus more on non-pricing approaches, like feebates
  - Assistance for low-income households is needed, but should be targeted and unrelated to energy consumption
- An international coordination mechanism, to complement and reinforce the Paris Agreement, is needed to scale up global action.

References

- Black, Simon, Danielle Minnett, Ian Parry, James Roaf, and Karlygash Zhunussova (2022). A Framework for Comparing Climate Mitigation Policies Across Countries
- Black, Chateau, Jaumotte, Parry, Schwerhoff, Thube, Zhunussova (2022): Getting on Track to Net Zero: Accelerating a Global Just Transition in This Decade
- Parry, Ian, Simon Black, and Karlygash Zhunussova (2022). Carbon Taxes or Emissions Trading Systems? Instrument Choice and Design