Rethinking Energy Policies in Europe Following the Ukraine War: How to Support the Vulnerable and Speed up the Green Transition

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Ian Parry and Karlygash Zhunussova
Fiscal Affairs Department, IMF
Contents

- Carbon pricing
- Reinforcing sectoral instruments
- International coordination
- Implications of energy price surge for mitigation
- Impacts of mitigation policies
Carbon Pricing
Carbon Pricing Has Key Role and is Proliferating
Coverage: Coal or Power/Industry Most Important
Breakdown of CO₂ Reductions by Fuel/Sector under Carbon Pricing, 2030

Panel A. Reductions by fuel
- Advanced economies
- High-income emerging market economies
- Low-income emerging market economies
- G20 weighted average

Panel B. Reductions by sector
- Advanced economies
- High-income emerging market economies
- Low-income emerging market economies
- G20 weighted average

Source: IMF staff from CPAT.
Note. Estimates are for a $75/50/25 carbon price for advanced/high-income emerging/low-income economies. Panel B is for direct emissions. Buildings includes fossil fuel CO₂ emissions from residences, services, agriculture, and forestry but emissions from industrial buildings are included under industry.
## Comparison of Carbon Taxes and Emissions Trading

<table>
<thead>
<tr>
<th>Design issue</th>
<th>Carbon tax</th>
<th>ETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>Administration is more straightforward (e.g. as extension of fuel taxes)</td>
<td>May not be practical for capacity constrained countries</td>
</tr>
<tr>
<td>Uncertainty: price</td>
<td>Price certainty can promote clean technology innovation and adoption</td>
<td>Price volatility can be problematic; price floors, and cap adjustments can limit price volatility</td>
</tr>
<tr>
<td>Uncertainty: emissions</td>
<td>Emissions uncertain but tax rate can be periodically adjusted</td>
<td>Certainty over emissions levels</td>
</tr>
<tr>
<td>Revenue: efficiency</td>
<td>Revenue usually accrues to finance ministry for general purposes (e.g., cutting other taxes, general investment)</td>
<td>Free permit allocation may help with acceptability but lowers revenue; tendency for auctioned revenues to be earmarked</td>
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<tr>
<td>Revenue: distribution</td>
<td>Revenues can be recycled to make overall policy distribution neutral or progressive</td>
<td>Free allowance allocation or earmarking may limit opportunity for desirable distributional outcomes</td>
</tr>
<tr>
<td>Political economy</td>
<td>Can be politically challenging to implement new taxes; use of revenues and communications critical</td>
<td>Can be more politically acceptable than taxes, especially under free allocation</td>
</tr>
<tr>
<td>Competitiveness</td>
<td>Border carbon adjustment more robust than other measures (e.g., threshold exemptions, output-based rebates)</td>
<td>Free allowances effective at modest abatement level; border adjustments (especially export rebate) subject to greater legal uncertainty</td>
</tr>
<tr>
<td>Price level and emissions alignment</td>
<td>Need to be estimated and adjusted periodically to align with emissions goals</td>
<td>Alignment of prices with targets is automatic if emissions caps consistent with mitigation goals</td>
</tr>
<tr>
<td>Compatibility with other instruments</td>
<td>Compatible with overlapping instruments (emissions decrease more with more policies)</td>
<td>Overlapping instruments reduce emissions price without affecting emissions though caps can be set or adjusted accordingly</td>
</tr>
<tr>
<td>Pricing broader GHGs</td>
<td>Amenable to tax or proxy taxes where they build off business tax regimes; feebate variants are sometimes appropriate (e.g., forestry, maritime)</td>
<td>Less amenable to ETS; incorporating other sectors through offsets may increase emissions and is not cost effective</td>
</tr>
<tr>
<td>Global coordination regimes</td>
<td>Most natural instrument for international carbon price floor</td>
<td>Can comply with international price floor; mutually advantageous trades from linking ETSs but does not meet global emissions</td>
</tr>
</tbody>
</table>

Source: IMF staff. Green indicates an advantage of the instrument; orange indicates neither an advantage nor disadvantage; red indicates a disadvantage of the instrument.
Reinforcing Sectoral Instruments
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 CO₂ 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 = CO₂ 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
International Coordination Mechanisms
Coordination Regimes to Reinforce Paris

2030 gaps to address
- **Ambition**: Pledged reductions only 1/3-2/3 of needed
- **Policy**: Global CO₂ price > $75 per tonne needed

Difficulties in Paris Agreement
- **Negotiation**: too many parties/parameters
- **Unilateral policy**: deterred by competitiveness

Elements of coordination regimes
- Small number of large emitters
- Minimum carbon price

Baseline CO₂ Emissions, 2030

Source: IMF staff estimates.
Coordination Regimes to Reinforce Paris

Differentiated responsibilities
- Differentiated floors/support for low-income countries
- $75/50/25 floor price aligns global emissions with <2C with 6 participants

Accommodate non-pricing approaches
- CPAT maps other policies into CO₂ reductions/carbon price equivalent

Alternative coordination through carbon markets
- Must accommodate countries without ETS
- Address equity
- Needs prices/caps aligned with temp. goals

Unilateral Border Adjustment Regime is Ineffective

Fraction of Domestic Carbon Emissions Embodied in EITE Exports to Trading Partners, 2015

Implications of Price Surge
Implications of Energy Price Surge

- Underscores urgency of transition: to clean/secure energy
- Household assistance: targeted/unrelated to energy use
- Modest emissions impact: gas/coal price increased, surge is partially temporary

Carbon price signal needed

- Receding fuel prices → time to lock in pricing
- Affects pricing/non-pricing policy balance
Impacts of Mitigation Policies
The Climate Policy Assessment Tool (CPAT)

Helps policymakers design, compare, and implement policies to achieve NDCs and SDGs

- Spreadsheet ‘model of models’ covering **200 countries**
- **Developed jointly** by IMF (FAD) & World Bank (SD & EFI)
- Aimed at **economists** in IMF, WB; finance, planning & line ministries

**Policies**

- Carbon pricing, fuel tax reform, performance standards, clean technology subsidies

**Metrics**

- **energy & emissions** – prices, consumption, fuel mix, global and local pollutants
- **macroeconomic** – GDP, revenues, welfare cost, trade balance
- **distributional** – by income group, region, industry
- **co-benefits** – pollution/mortality, road safety, congestion
Recent reports using CPAT

If no action taken emissions will continue to grow

Global GHG Emissions, Nationally Determined Contributions (NDCs), and Temperature Targets

Historic

Projections

- Business-as-usual
- NDCs (2015)
- NDCs (2021)

Drivers of CO₂ emissions growth

- Australia
- Canada
- EU-27
- Japan
- Korea
- Saudi Arabia
- United Kingdom
- United States
- Other HIC
- HIC weighted average
- Argentina
- Brazil
- China
- Mexico
- Russia
- South Africa
- Turkey
- Other MIC
- MIC weighted average
- India
- Indonesia
- Other LIC
- LIC weighted average
- World

- Total CO₂ emissions
- Energy intensity of GDP
- CO₂ intensity of energy
- GDP
Carbon pricing can reduce emissions...

- Heterogeneous responsiveness to carbon pricing across countries:
  - $50/tonne in 2030 cuts some middle-income country emissions up to 30%

- A $75+ carbon price is needed to reduce G20 emissions consistent with 2°C
Relatively higher revenue potential in middle/low-income countries:
- Low-income: ~1.4% for $25/tonne
- Middle-income: ~1% for $50
- Emission-intensive: 2-3% for $50

More moderate revenues in high-income
- 0.5-1.5% for $75
Carbon pricing schemes increase energy prices...

Impact of $50 carbon price on energy prices, 2030
Revenue recycling contains household burdens

- First-round impact on households is moderately regressive or neutral
- Revenue recycling could offset ~ 80-90% of average household burden
  - … and make the reform progressive and pro-poor
Co-benefits include reductions in:
- local air pollution mortality,
- road congestion,
- accident externalities
Mainly these industries have

- high embodied carbon
- limited ability to pass production cost increases forward into higher consumer prices

Direct cost increases 5-10% percent for aluminum/steel but ≤ 30% for cement

Relatively large indirect cost increases (carbon embodied in electricity inputs)
Other mitigation policies at the sectoral level can be effective at reducing emissions

Transport Sector Targets

A. Sectoral CO\textsubscript{2} reductions

B. SCPEs

C. Economywide CO\textsubscript{2} reductions

SCPEs = sectoral carbon price equivalents
Supporting Policies Needed to Enhance Effectiveness and Acceptability of Mitigation Strategy

- Pricing of broader emissions
- Industrial competitiveness
- Sectoral feebates/regulations
- Public investment/technology
- Just transition
- Productive/equitable use of pricing revenues

Carbon pricing
Thank you