Price Production and Consumption Separately

Carbon pricing in open economies: section 1 in ten slides

One carbon price does two jobs, and in an open economy the second undermines the first. Give each job its own instrument: a feebate for production, a destination charge for consumption, credit for the price signal at the border, and one yardstick for all of it.

Stephen J. Stretton · writing in a personal capacity

Carbon prices are too low and too narrow to meet the Paris goals

28%

of global emissions covered by an explicit carbon price (2025)

~$19

per tonne of CO_2 where a price applies (about $5 averaged over all emissions)

$50–100

per tonne by 2030, at least: the range judged consistent with the Paris goals

A tax on production charges exporters and spares imports, so governments exempt industry and keep the rate low.

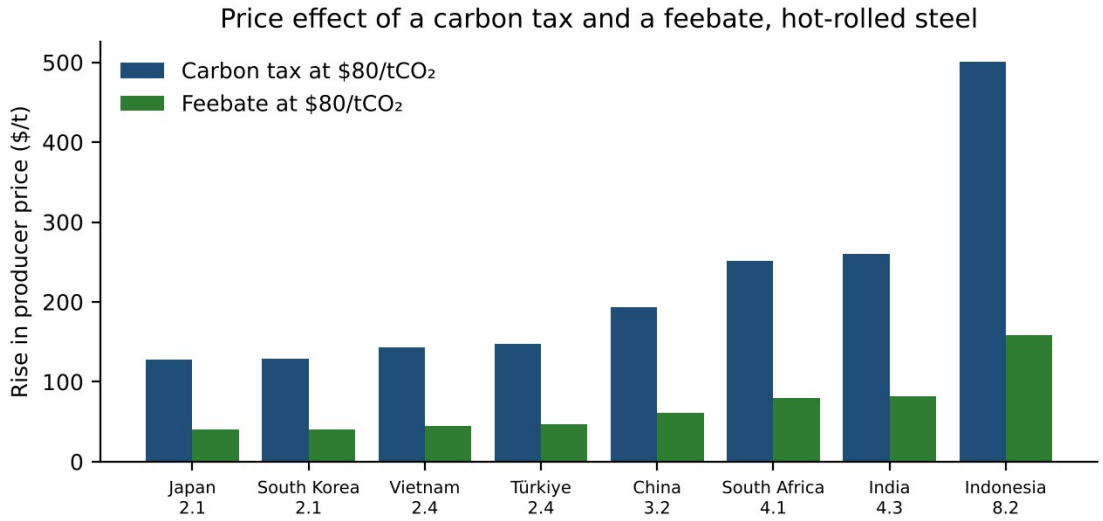
Source: World Bank, State and Trends of Carbon Pricing 2025; High-Level Commission on Carbon Prices (2017).

Give each job its own instrument

Job	Instrument	Paper
Decarbonize production	Revenue-neutral feebate: pay above the sector average, rebate below	1.1, 1.2
Price consumption of goods	Carbon component of VAT; imports charged, exports exempt	1.3
Price consumption of fuel	Obligation on fuel suppliers, fixed a decade ahead	1.3
Recognize policy abroad	Credit the price signal, measured by country and sector	1.4
Measure all of it	Total Effective Carbon Price: one carbon-tax equivalent	6.1

Source: Section 1 overview, Table 1.

A feebate raises steel exporters' costs about a third as much as a tax



Rise in the producer price of hot-rolled steel at $80/tCO$_2$, by exporter (EU default intensities; base price and abatement costs stylized).

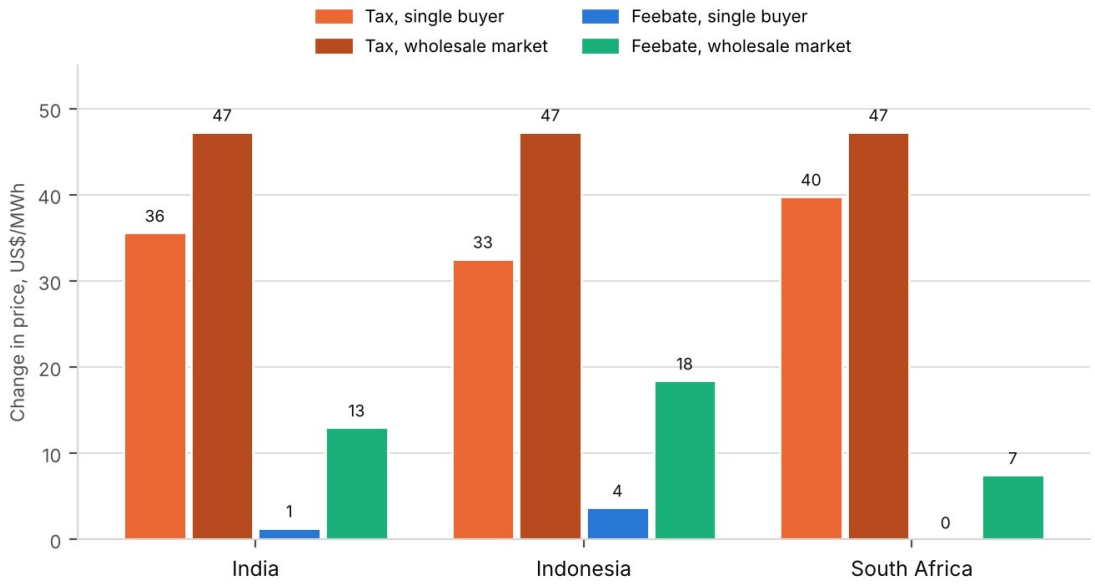
A tax charges every tonne still emitted; a feebate only the cost of cutting.

Türkiye-intensity mill: +25% under a tax, +8% under a feebate.

The dirtiest exporters gain most from choosing a feebate.

Source: Paper 1.1, Table 1 and Figure 2.

In coal-heavy power, a feebate runs plants as a tax would and barely moves regulated tariffs



Single buyer at $50/t: tariffs +$1.3/MWh in India, +$3.7 Indonesia, 0 South Africa; a tax adds $33–40.

Wholesale market: +$7–18 against $47 for a tax.

The benchmark decides: it must fall as the grid cleans and measure a dominant utility against everyone else.

Source: Paper 1.2, Table 2 (2024 generation mixes; costs illustrative).

Price what Europe consumes inside VAT, and oblige fuel suppliers now

40% of the carbon in EU households' VAT-taxable purchases is emitted outside the Union.

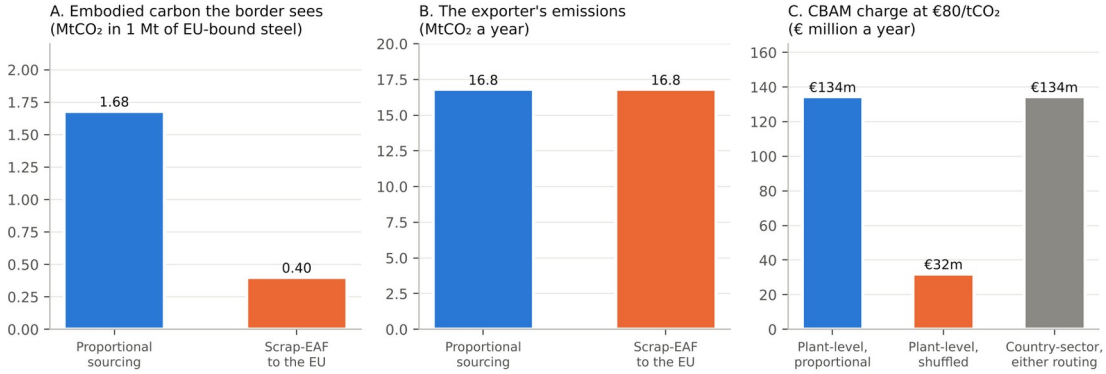
A carbon component of VAT: credited along the invoice chain; one default per product, the EU average, for every origin, rebuttable.

Revenue-neutral by rule: cut the value part of VAT each year by last year's carbon receipts.

Fuel obligation: floor rising to €200/t in 2037; €138bn a year, €310 per resident; passes by qualified majority.

Source: Paper 1.3.

At the border, measuring plant by plant pays exporters to route clean steel to Europe



Routing is worth €98–626/t of steel across thirteen exporters at €80/tCO_2, with no fall in emissions.

A feebate earns nothing: the CBAM credits a price paid, net of rebates.

Measure by country and sector, and credit the price signal, phased in as free allocation ends.

Source: Paper 1.4; Regulation (EU) 2025/2083, Art. 9(1).

One yardstick lets every policy earn credit for the emissions it cuts

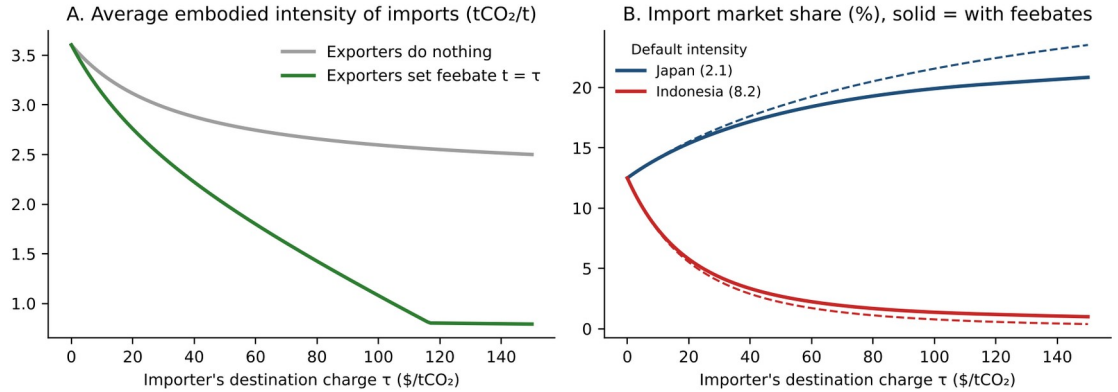
Explicit-price metrics score a feebate or a fuel standard at zero.

The Total Effective Carbon Price is the uniform tax that would cut emissions as much as a policy mix.

In a stylized economy, a mix rated $21/t on explicit prices has an effective price of $37/t.

Source: Paper 6.1; Black et al. (2022).

Border charges by country and sector turn leakage into a race to the top



Simulated steel import market, eight exporters at EU default intensities (prices and costs stylized).

Each exporter's best feebate rate equals the charge in its markets.

At a $100 charge, import carbon falls 28% through supplier mix, 70% when exporters respond.

Climate finance above half the rate makes adoption a gain.

Source: Paper 1.1, Propositions 6–7 and Figure 4.

What to do

What section 1 shows

Feebates price production at rates no tax could reach, at no cost to the treasury.

Destination charges price consumption without leakage.

Recognition of the price signal rewards cleaner production, not routing.

One yardstick for crediting and recognition.

Actions

Exporting countries: a production feebate, in power and in the sectors that sell to the EU.

The EU: country-sector values; credit feebates at their carbon-price equivalent; propose the fuel obligation; negotiate a VAT carbon component.

Development banks: pay for verified cuts in sector intensity, above half the induced feebate rate.