



Carbon pricing from a macro/fiscal perspective

Impacts, design, and interaction effects

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Structure of the presentation

Section 1: You have more experience with carbon pricing than you might think.

Section 2: How can carbon pricing enhance national economic development?

- Creating a formalized economy
- Making the tax system more growth- and employment-friendly
- Improving equity
- Improving air quality and safeguarding biodiversity
- Improving financial stability

Section 3: How do these economic benefits depend on policy design?

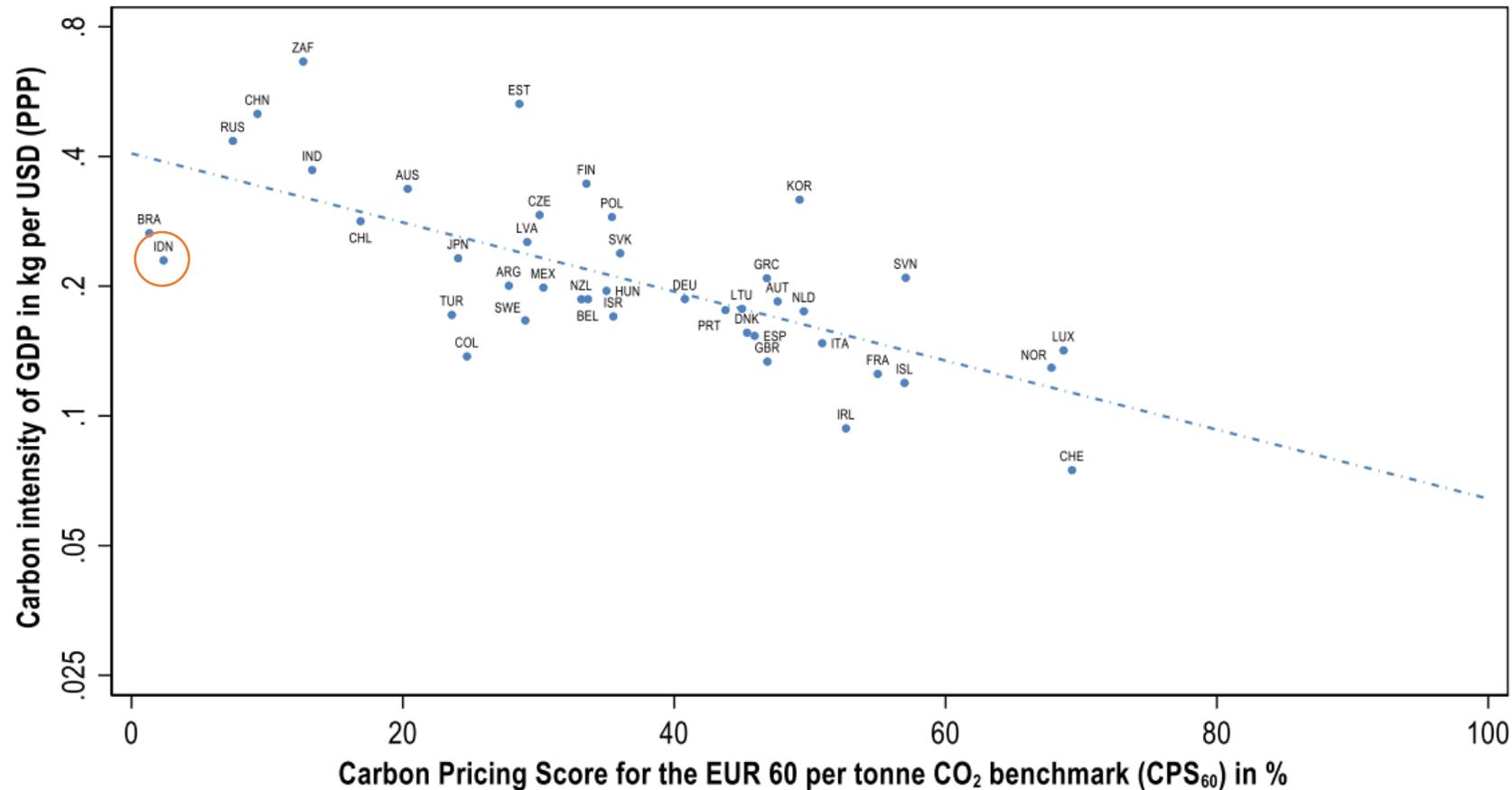
- Point of imposition
- Reusing existing systems
- Managing interaction effects
- Rate and schedule
- Revenue use

You have more experience with carbon pricing
than you might think

Energy-related emissions: you are already pricing carbon implicitly

- Indonesia is already pricing carbon through its fuel taxes and reductions in fuel subsidies.
- This implicit carbon pricing is small, but higher than previously, e.g. due to subsidy reform.

OECD (2021). "Effective Carbon Rates"



Energy-related emissions: you already have the needed systems

Possible reform:

- Improving this carbon pricing is administratively straightforward - scale up fuel tax rates in proportion of the carbon content of fuels.
- No need new tax administration systems, and possible even without MRV systems.
- Introducing carbon pricing for energy-related emissions simply requires simple rescaling fuel tax rates.

Land-related emissions: you are already pricing carbon implicitly

- Indonesia is already pricing carbon through its taxes/subsidies on deforestation-related commodities.
- 3rd-best policy: pricing emissions by taxing emissions-intensive products → e.g. existing commodity taxes on palm oil

Possible reforms:

- 2nd-best policy: setting tax rates on commodities that are competing for the same types of land according to the emissions intensity or wider sustainability of the average way of producing these commodities
- 1st-best policy: letting the tax rate on commodities vary with the sustainability of that commodity

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Land-related emissions: you already have the needed systems

- Under the recent Indonesia-Switzerland trade deal, Switzerland is already implementing the mentioned 1st-best policy. Indonesia could use the same system.



As before: Switzerland levies a tariff on palm oil from Indonesia

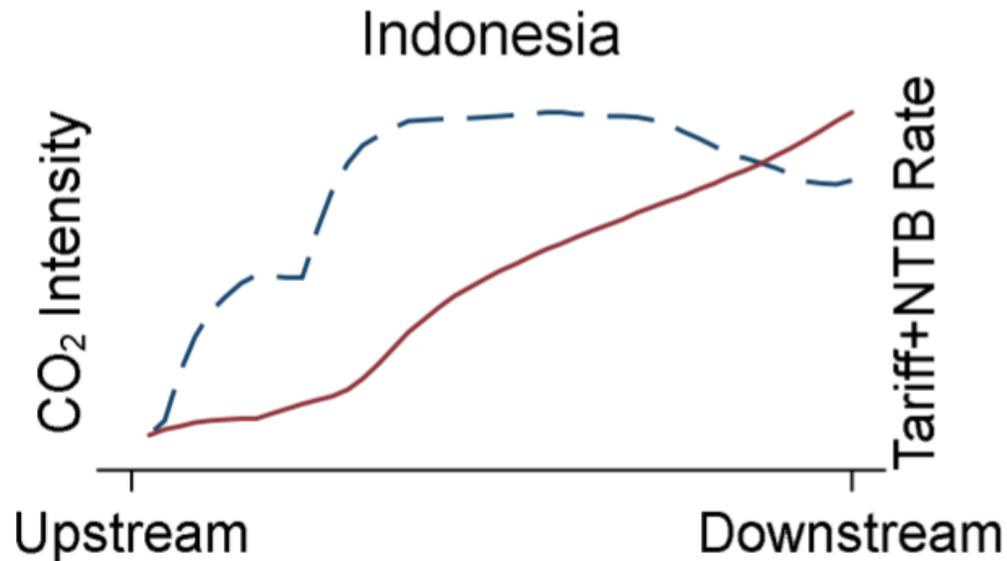
But palm oil that is certified deforestation-free, Switzerland halves the tariff rate.

→ The tariff/tax rate varies by the sustainability of production ~ like a carbon tax

- Indonesia is hence already involved in carbon taxation/tariffication of carbon for land uses, too.
- Can reuse the same system for domestic tax law and expand to other commodities.

Trade-related emissions: you are already pricing carbon implicitly

- Indonesia's tariffs on carbon-intensive goods tend to be higher than for low-carbon goods, which helps enable firms to participate in the global low-carbon transition, although there remains some room for improvement.



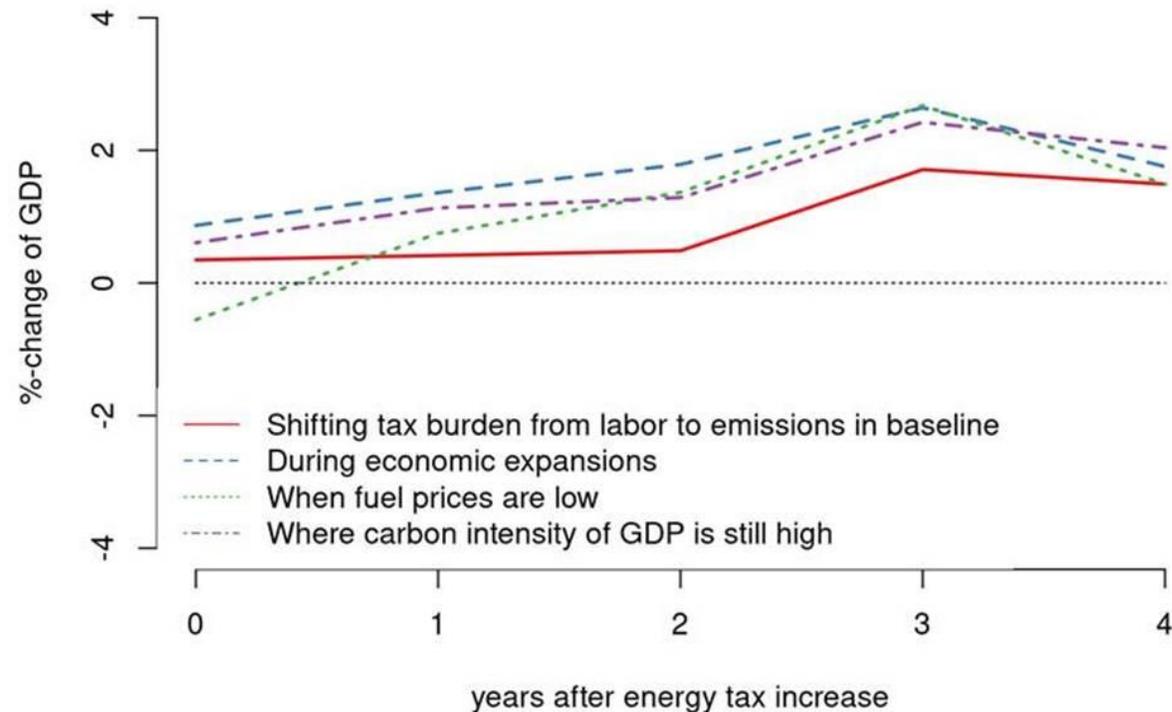
--- CO₂ Intensity — Tariffs+NTBs

Source: Shapiro 2020, QJE.

How can carbon pricing enhance national economic development?

Output

- Fuel pricing can generally raise revenues at lower output costs than conventional taxes, especially on labor
- There is hence often an opportunity for improving both output and emissions by raising carbon taxes and using revenues to reduce taxes on low-income labor



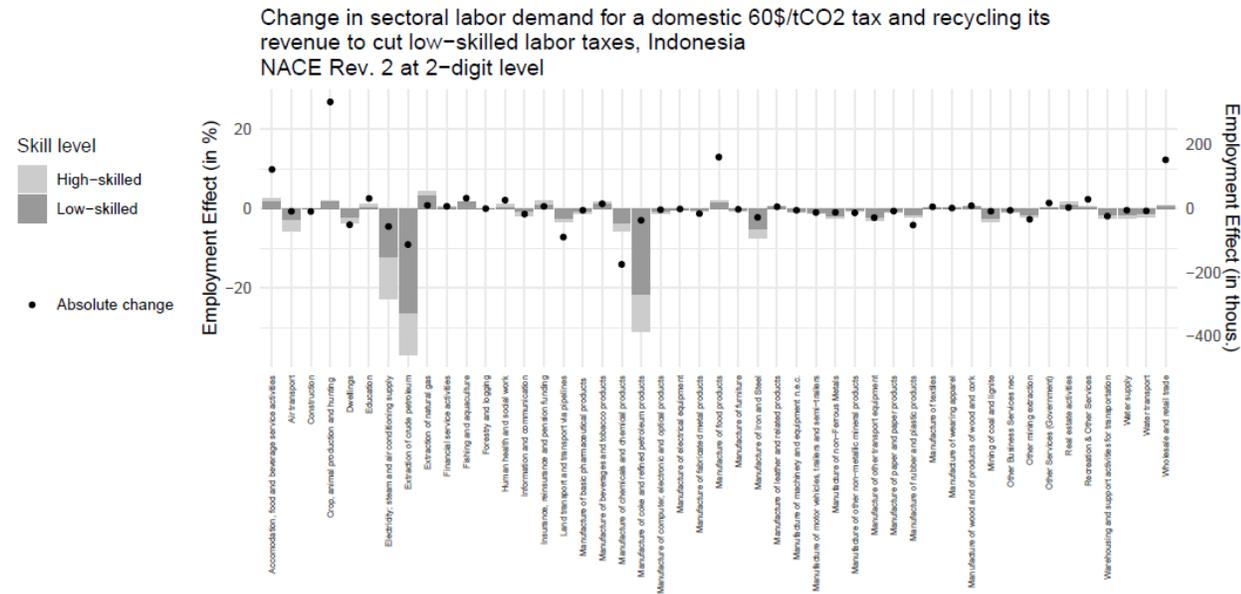
A driver of these good output effects: informality

- Conventional, direct taxes struggle at covering the informal sector
- Taxing carbon at chokes points (e.g., upstream where fuels enter the economy and at export gate for commodities) covers also informal sector
- Taxing carbon helps reduce formal-informal tax wedge, which in turn supports growth
- Fiscal reforms can address the development problem of informality while reducing emissions

Caveat: Losing this benefit if carbon price not applied at choke points

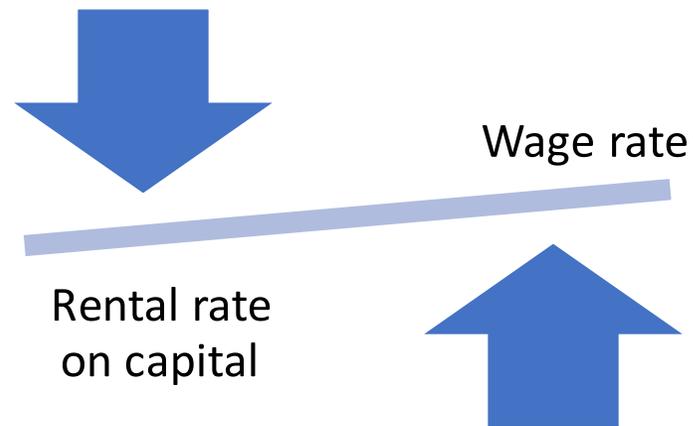
Employment

- The structural change induced by decarbonization generally raises the labor intensity of production, raising labor demand
- But the effects on employment are best if carbon revenues are used to reduce labor taxes on low-income earners



Equity

- Since low-carbon production processes are often more labor-intensive, and high-carbon production processes more capital-intensive, decarbonization changes relative returns to labor and capital, which raise equity.
- Again, the effect is enhanced if carbon revenues are used to reduce labor taxes on low-income earners

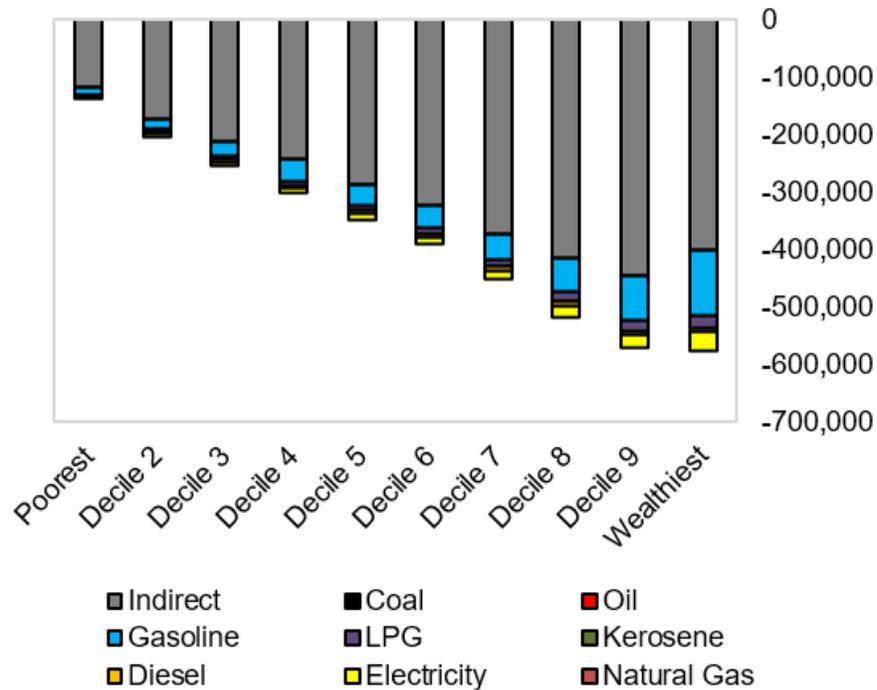


Equity

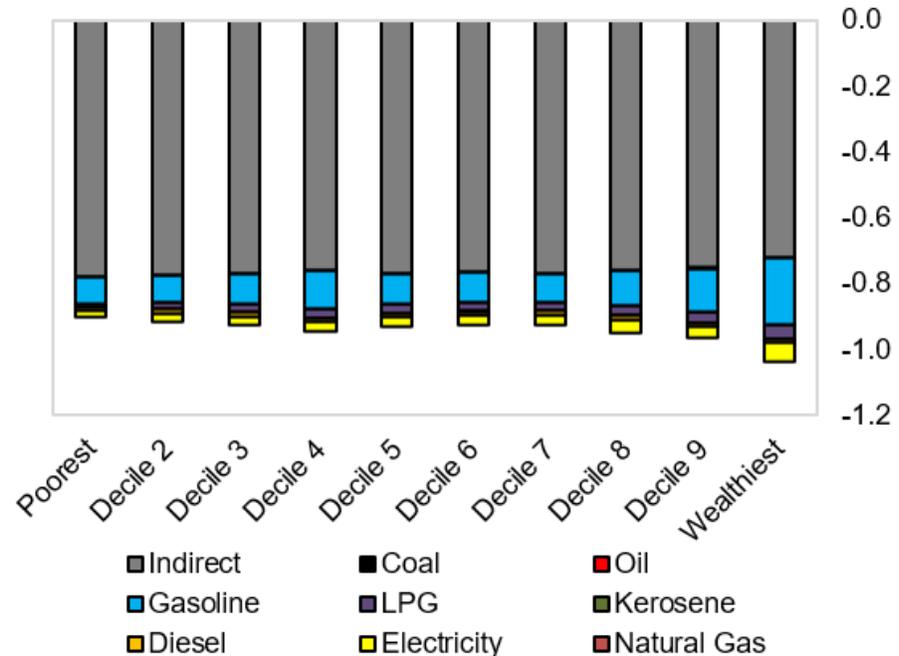
The concentration of fuel consumption among higher-income groups means that also the impact of carbon pricing on prices tends to be progressive

Example of Vietnam

Absolute mean consumption effect (in real 2018 LCU for \$25 Carbon tax per tCO₂e in 2022), Vietnam



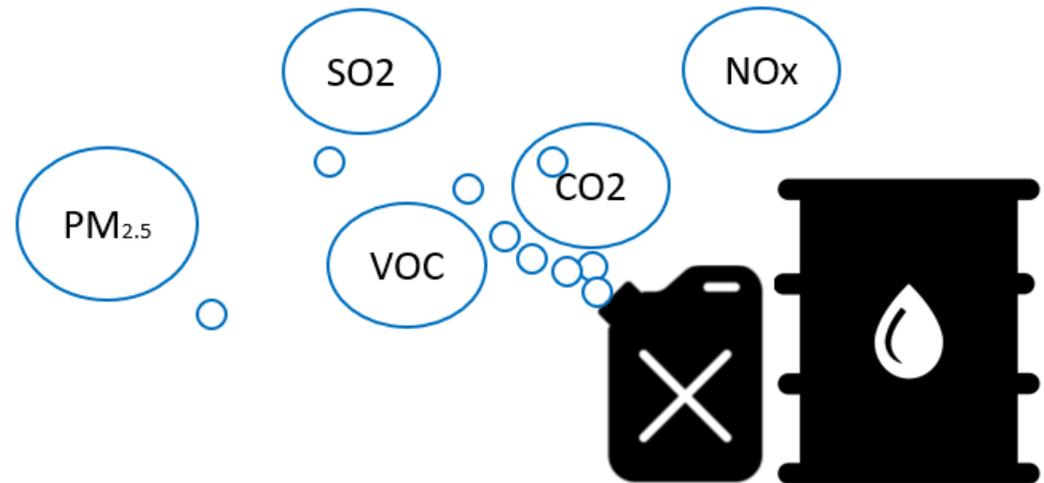
Relative mean consumption effect (% consumption for \$25 Carbon tax per tCO₂e in 2022), Vietnam



Public health

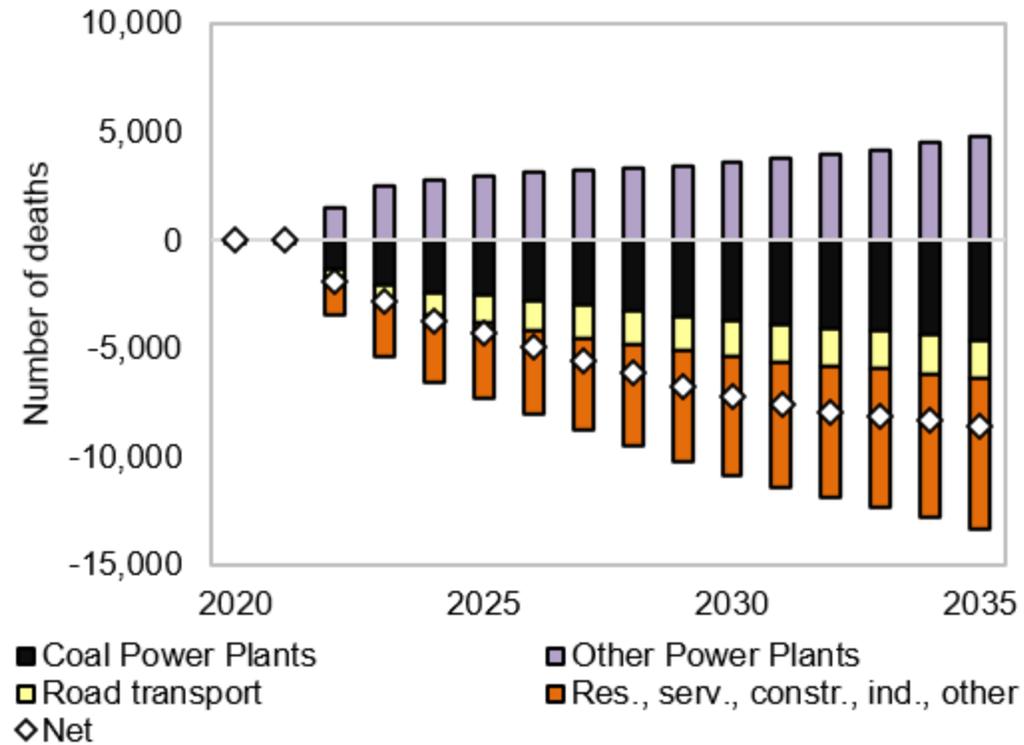
Reducing fossil fuel use has local health cobenefits.

- 9 million people die prematurely from pollution each year
- 92% of which are from developing countries

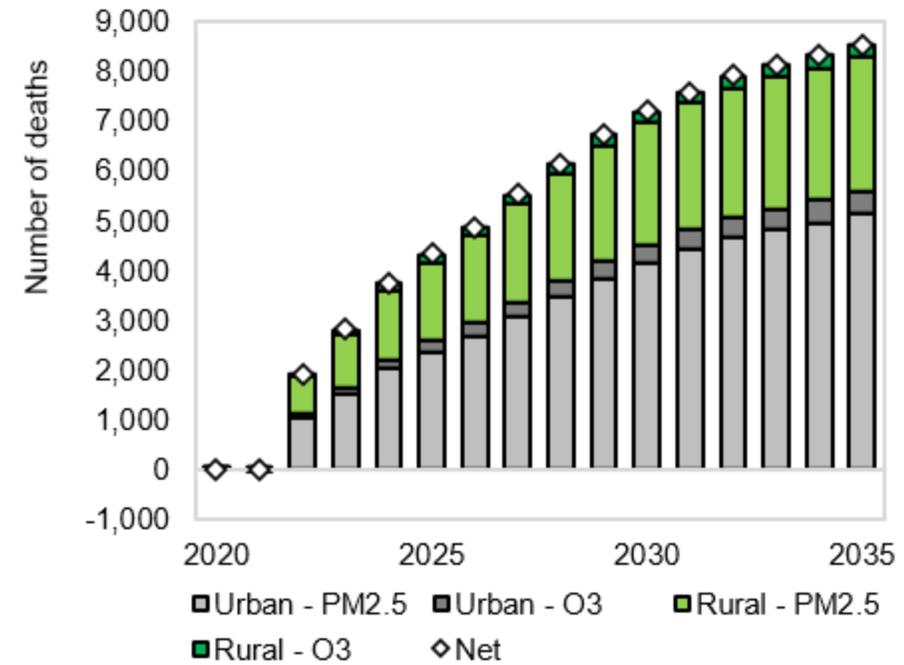


Public health

Change in deaths by emissions type in Indonesia

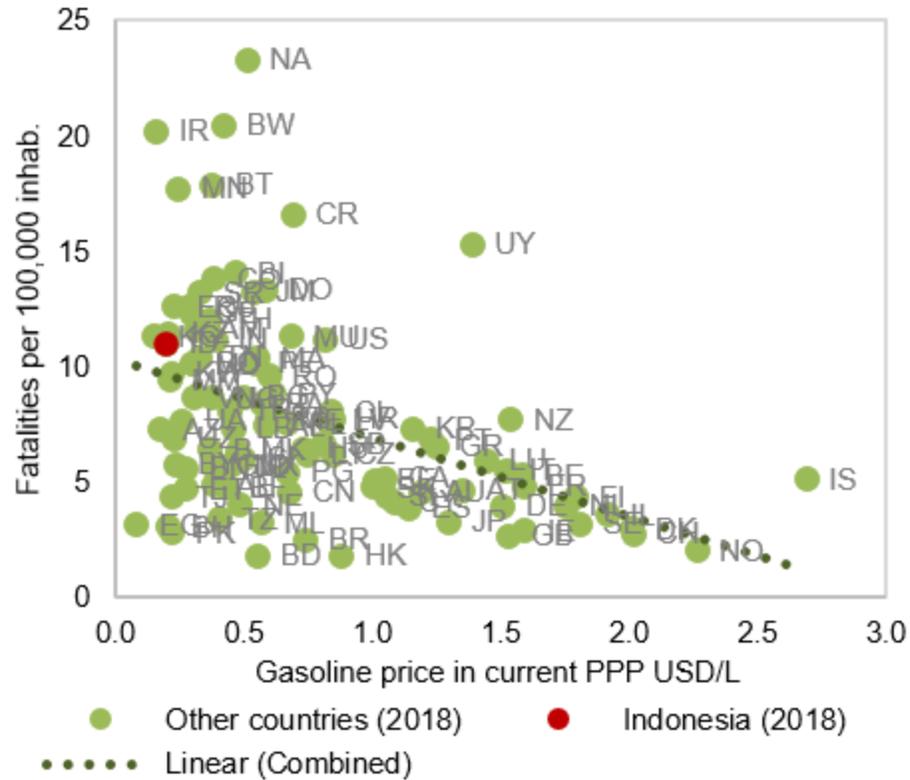


Averted OAP, HAP and O3 deaths in rural and urban parts of Indonesia

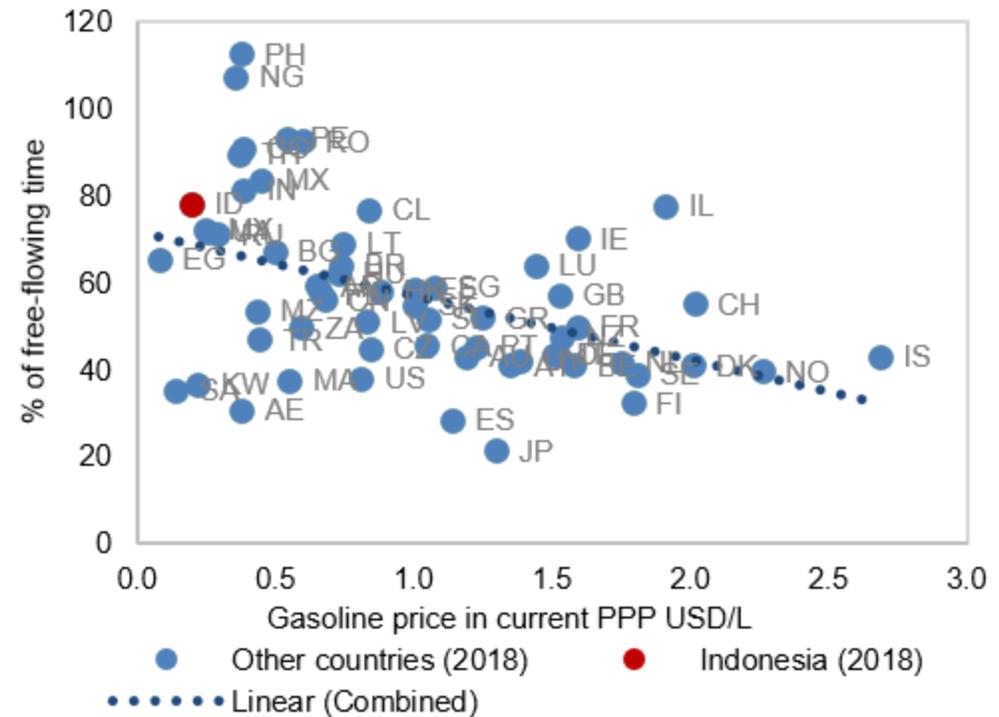


Transport efficiency

Historical relationship between fuel prices and road accident fatalities, global and Indonesia

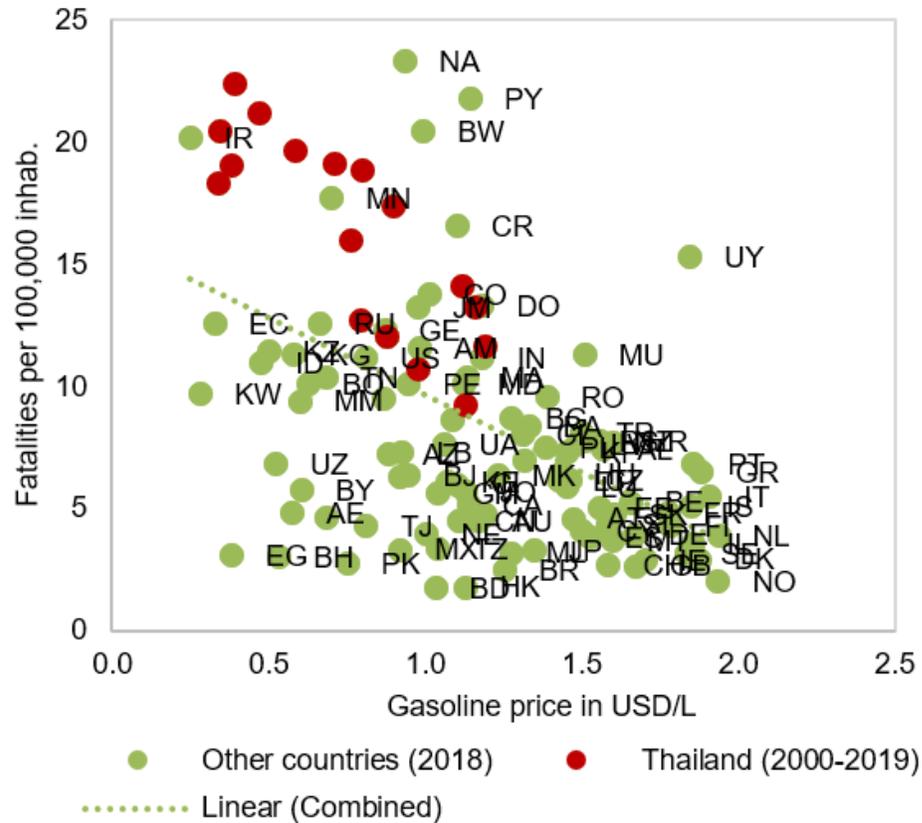


Historical relationship between fuel prices and congestion, global and Indonesia

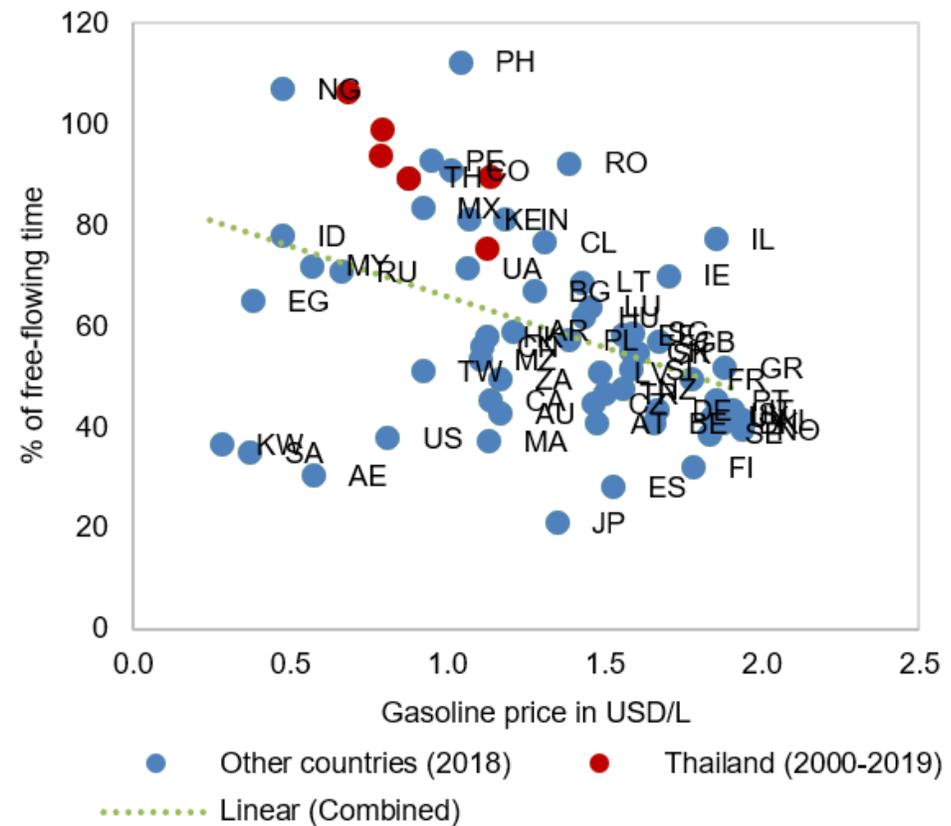


Transport efficiency

Historical relationship between fuel prices and road accident fatalities, global and Thailand



Historical relationship between fuel prices and congestion, global and Thailand



How do these economic benefits depend on policy design?

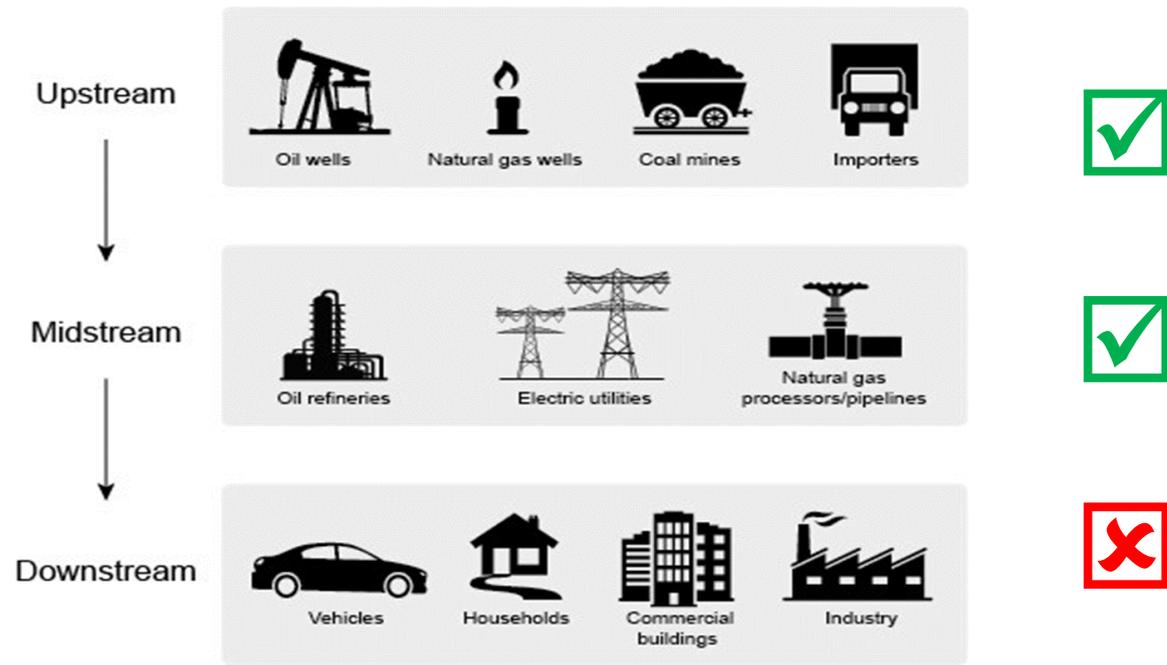
Point of imposition

- To be able to cover the informal sector, and to minimize administration costs, the carbon price must be implemented at a choke point.
- This is generally NOT the point of emissions.



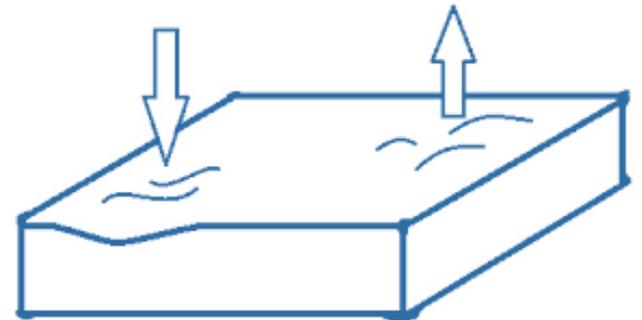
→ Energy-related emissions: where the fuels enter the economy

→ Land-related emissions: where commodities are exported or processed



Manage/avoid the waterbed effect

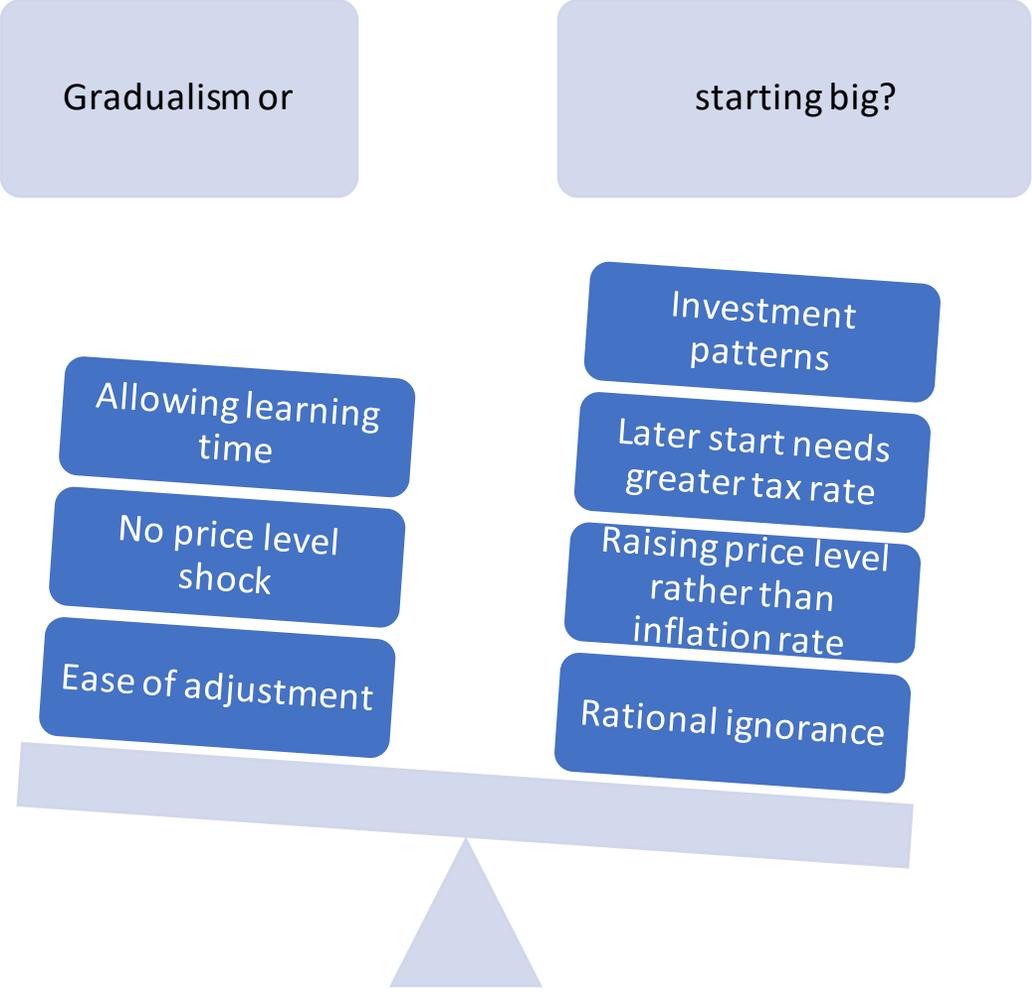
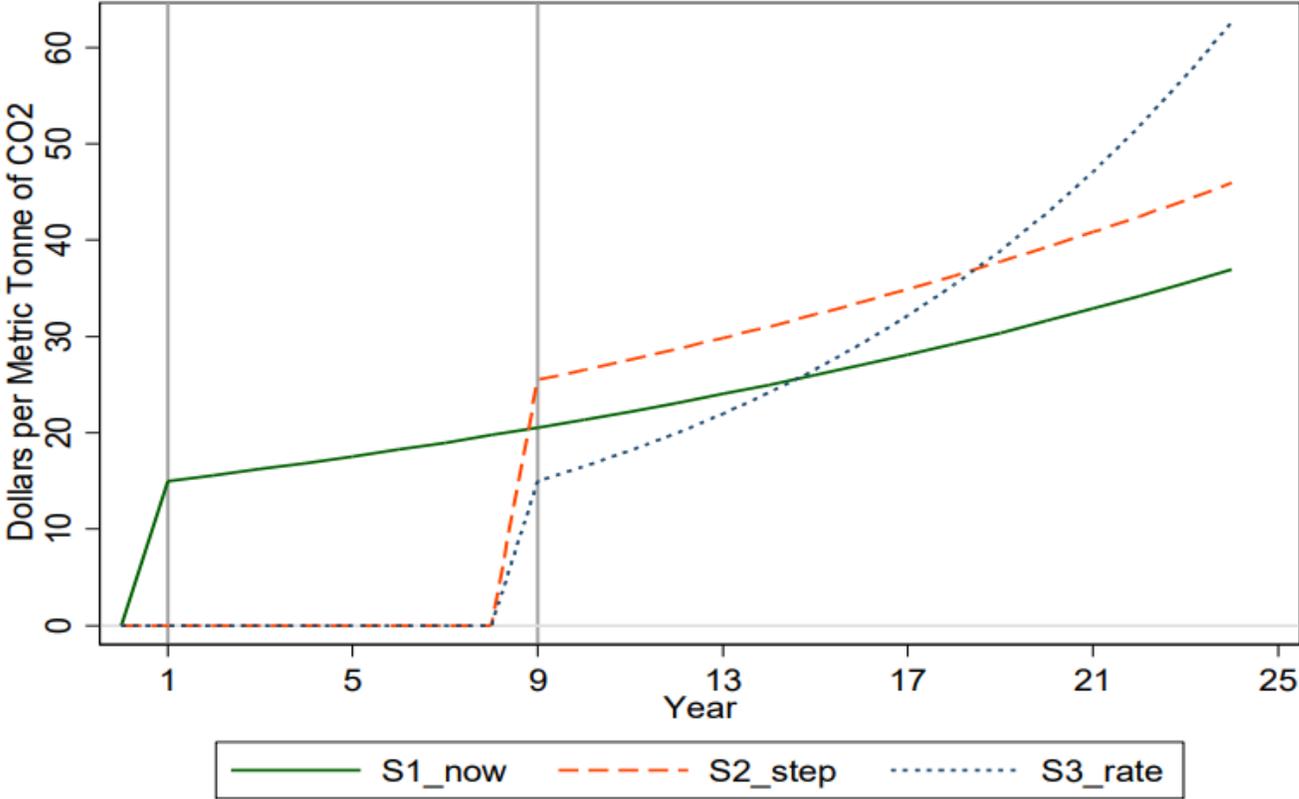
- If the country chooses an emissions cap, it is essential to manage interaction effects with any non-price intervention (Green Sukuk, tax reform, innovation, public investments, citizen action)
 - When any other intervention reduces emissions of an industry under the cap, the demand for emission permits falls, reducing the CO2 price, raising emissions elsewhere
- Risk of neutralizing all non-price mitigation interventions
- ETS would require careful management and close inter-ministerial coordination (no such risks for carbon taxation)



Manage/avoid interaction effects with fuel and commodity taxes

- The overall carbon price includes the country's commodity/fuel consumption taxes minus consumption subsidies
 - If the former fall while explicit carbon prices rise, mitigation incentives are undermined
 - There is no benefit from relabeling systems without changing rates
- Coordinate that fuel/commodity taxes do not fall, OR
- Directly use the fuel/commodity taxation system for carbon pricing

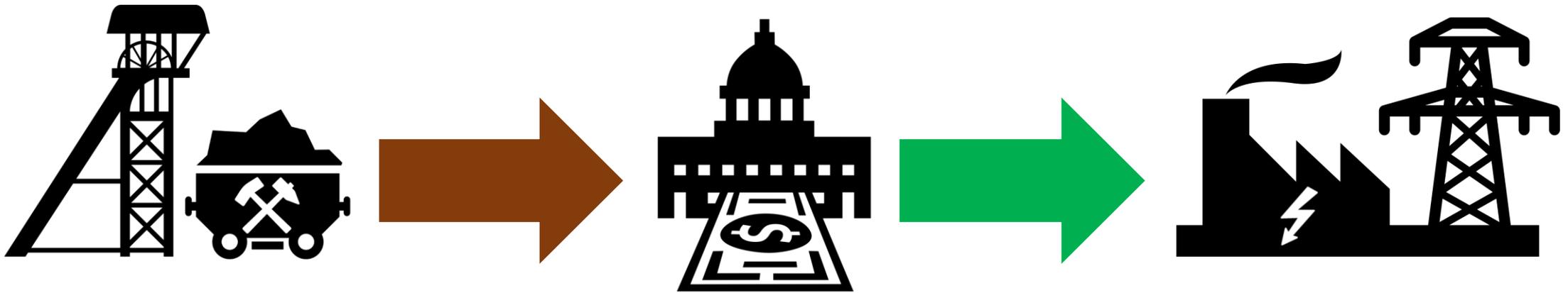
Setting carbon price levels



Cover all sectors evenly, without exemptions

- General principle of growth-oriented tax policy: tax all sectors evenly instead of some high and some low
- Likewise for climate change mitigation: cost of decarbonization least if all sectors face the same carbon price
- Yet, still possible to protect industries, even without exemptions, by using revenues for output-based subsidies or reduced CIT of protected industry

Achieving industrial policy objectives without exemptions



Upstream tax based on default value for average pollution content (\$/ tonne of carbon content)

Output-based rebate (e.g. \$ / MWh of electricity produced, or \$ per tonne of steel produced)

Use of revenues for general budget, not for green projects

- The reason why a carbon price reduces emissions is because of the price and NOT because of whatever the revenue is used for. *It is a normal tax*, and should be part of the normal budget process with its governance surveillance.
- Carbon price reforms can simultaneously reduce emissions and improve growth, employment and equity *IF* the revenues are used for addressing growth and employment priorities.
- Countries which earmarked carbon revenues to environmental expenditures have generally not been able to raise carbon prices to the levels needed for reducing emissions, and often struggled with inefficiency from off-budget funds
- Countries which allocated revenues to address growth/employment/equity issues create a coalition supporting the reform beyond the environmental community

Thank you