

Political economy of carbon pricing: Four opportunities

Jeroen van den Bergh

Institute of Environmental Science and Technology, Universitat Autònoma de Barcelona

ICREA, Barcelona

School of Business and Economics & Institute for Environmental Studies, Vrije Universiteit Amsterdam

Evidence for public support of carbon pricing

Stated preferences (*polls & surveys*)

1. Trust in politicians – revenue use
2. False consensus bias strong among opponents
3. Not more support for stringent regulation than for pricing
4. Non-regulatory instruments popular

Revealed preferences (*referenda, elections, political decisions*)

1. Taxes: low rates & instable over time
2. Label/communication matters: tax vs dividend
3. Support for (supra-national) carbon markets

Experimental studies (*lab and survey experiments*)

1. Policy framing matters: gains/losses
2. Information provision small effect on support
3. Uniform rebates and fairness appeal increase support

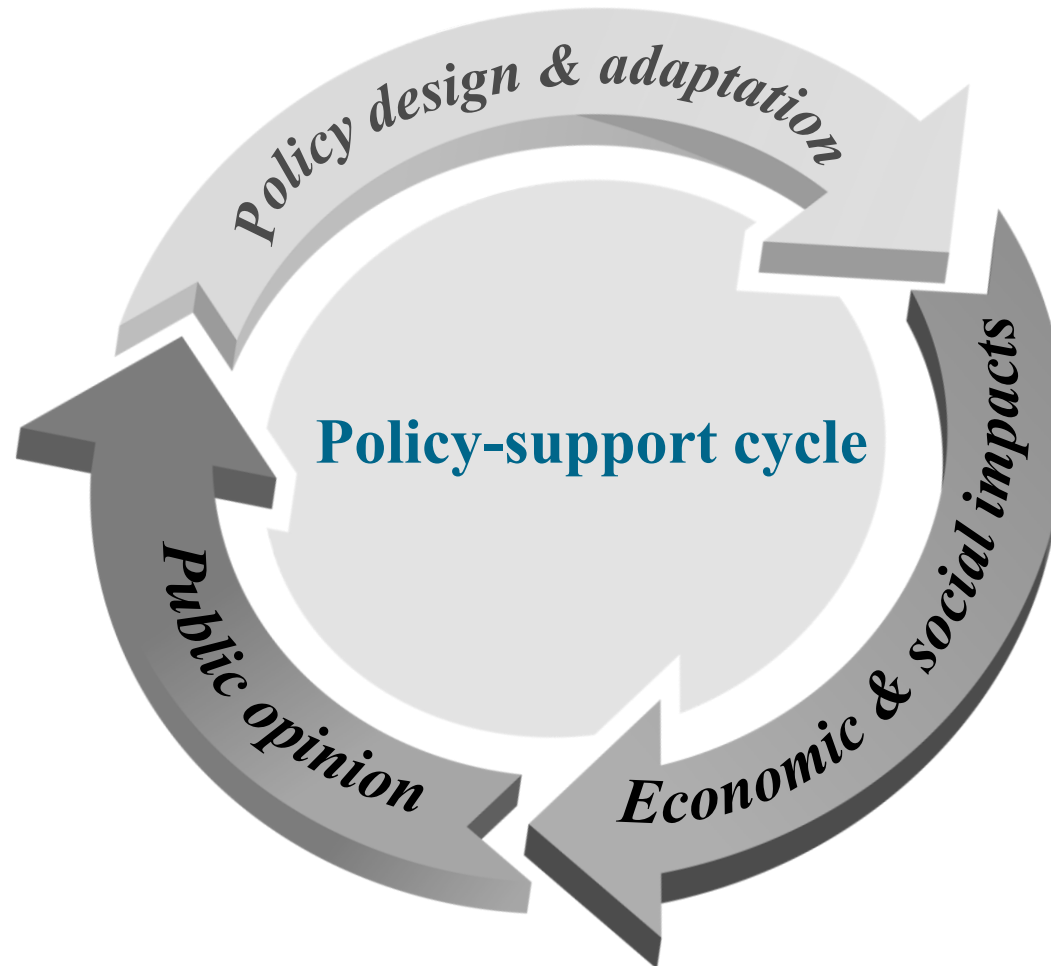
A paradox

- Although people often express concern for inequality, surveys show majority prefers using carbon-pricing revenues for **“climate projects”**
 - Laypersons may **underestimate regulatory effect** of carbon pricing, instead believing key to emissions reduction is **revenue use**
 - Notion **“climate projects”** anyway **confusing**: governments don’t invest much in emissions reduction (e.g., renewable energy).
- Get a wider and better understanding of these issues among voters, politicians, journalists and social/policy scientists

Co-dynamics of policy design & stakeholder support

Most studies of policy support assess **static opinions about static policy**

In reality: **changing** policies & opinions



Co-dynamics formalized (Liotta & van den Bergh, 2025)

A policymaker sets a **dynamic carbon tax** $\tau(t)$ to

$$\max_{\tau(t)} \int_0^T e^{-r(t)} U(\tau(t)) dt$$

s.t.: Carbon budget & minimal public support

$$M(t) \leq B, S(t) \geq \bar{S}$$

& initial conditions

Changes in GHG emissions $M(t)$ (with ϵ_{ref} carbon dioxide removal):

$$\dot{M}(t) = e(\tau(t)) - \epsilon_{ref}$$

Changes in public support capturing opinion dynamics and policy stringency

$$\dot{S}(t) = h(S(t), \tau(t))$$

First- vs second-best policy

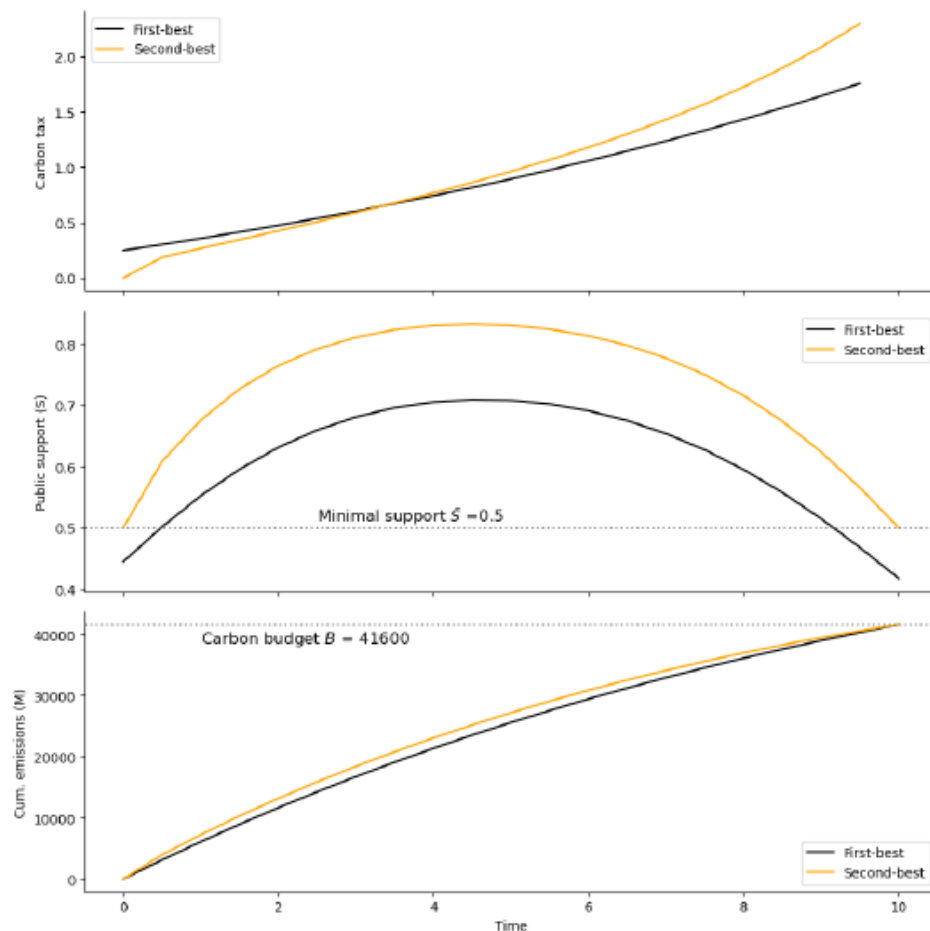


Figure 2: Numerical application, comparing the first- and second-best carbon tax paths, public support, and cumulative emissions. Parameters are as follows: carbon budget $B = 41,600 kgCO_2$, public support threshold $\bar{S} = 0.5$, opinion dynamics parameter $\psi = 1.1$.

Opportunity 1: many arguments for carbon pricing

Not just the classical arguments:



1. Changes *relative prices* of high/low carbon options
2. Equalizes marginal abatement costs among heterogeneous polluters => *efficient/cost-effective*
3. Decentralisation of regulation => *low information needs* for government
4. Permanent incentive for *technology adoption & innovation*

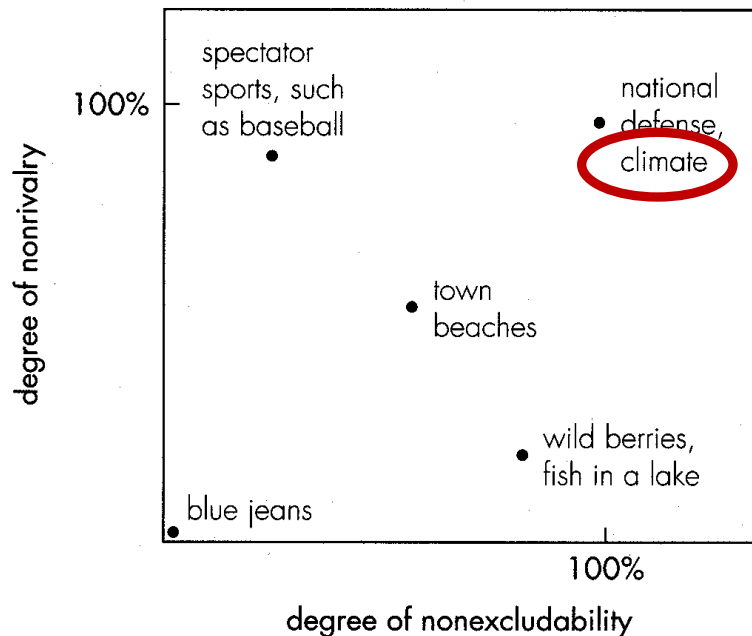
Additional arguments: *little attention*

1. **High effectiveness due to complete control:** price correction *proportional to lifecycle emissions* & affects *purchase+use* decisions => *limits rebound*
2. No **separate carbon accounting or ecolabels:** integrate in financial accounting
3. **International policy harmonisation** easiest with pricing => *limits leakage*
4. Shifts revenues from **OPEC** to oil importing countries
5. Pricing spreads pain & selects low-cost efforts => *smooth, least painful transition*
6. Price regulation fits **liberal society** better than bans

Etcetera

Climate is a global public good - *so are climate solutions*

THE SPECTRUM OF PUBLIC AND PRIVATE GOODS



Source: Kahn (2004)

Free riding at **two levels**:

- **Individuals** – public policy needed
- **Countries** – international coordination

Explain better that “solutions” which don’t limit free-riding are ineffective – many strategies in reality are of this kind

Carbon pricing limits free-riding by changing cost/benefit ratios of **all** low- vs high-carbon choices for **all** agents

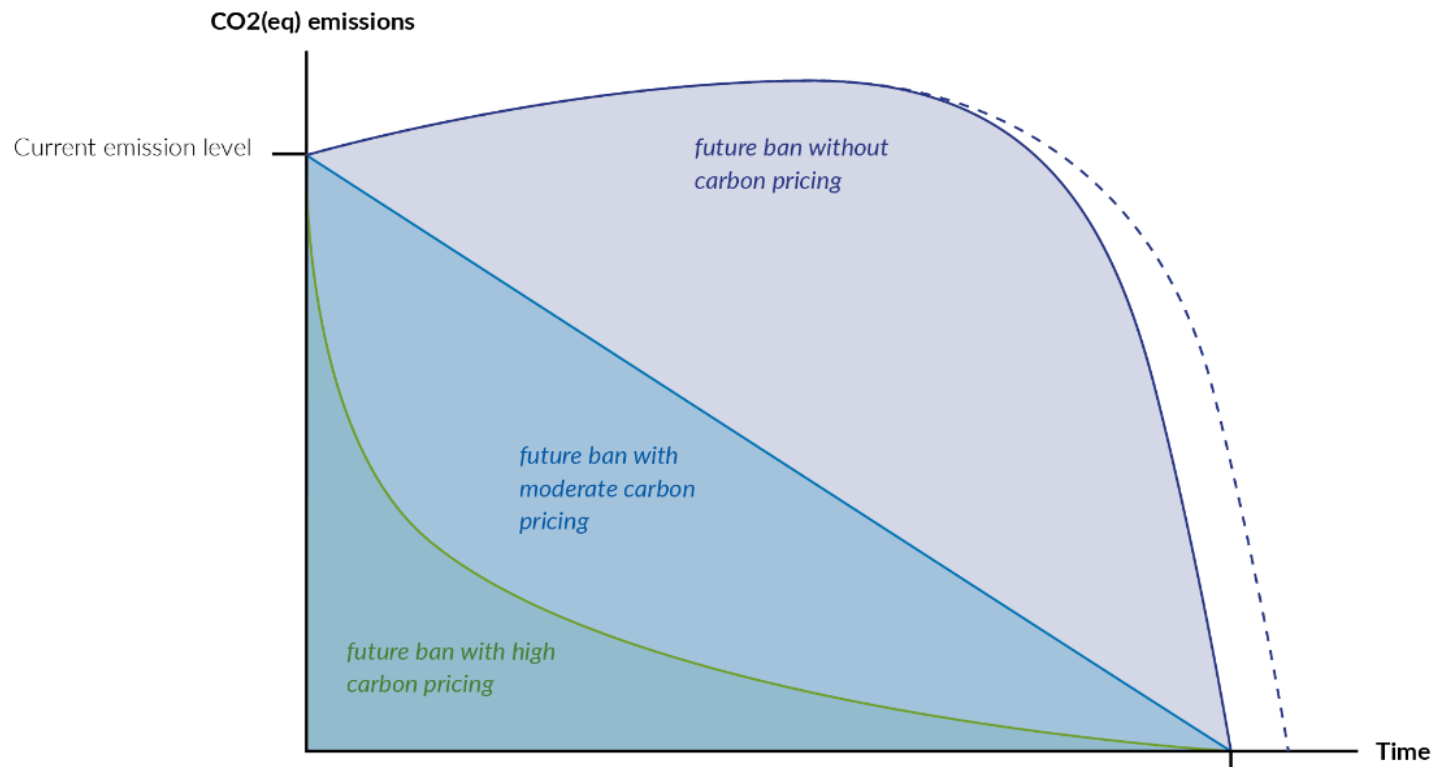
Free-riding expresses itself in distinct & subtle ways

Consumers: organic food & recycling but large house, car & holiday flights

Firms, cities: considerable greenwashing

Politicians: paying lip-service to the climate

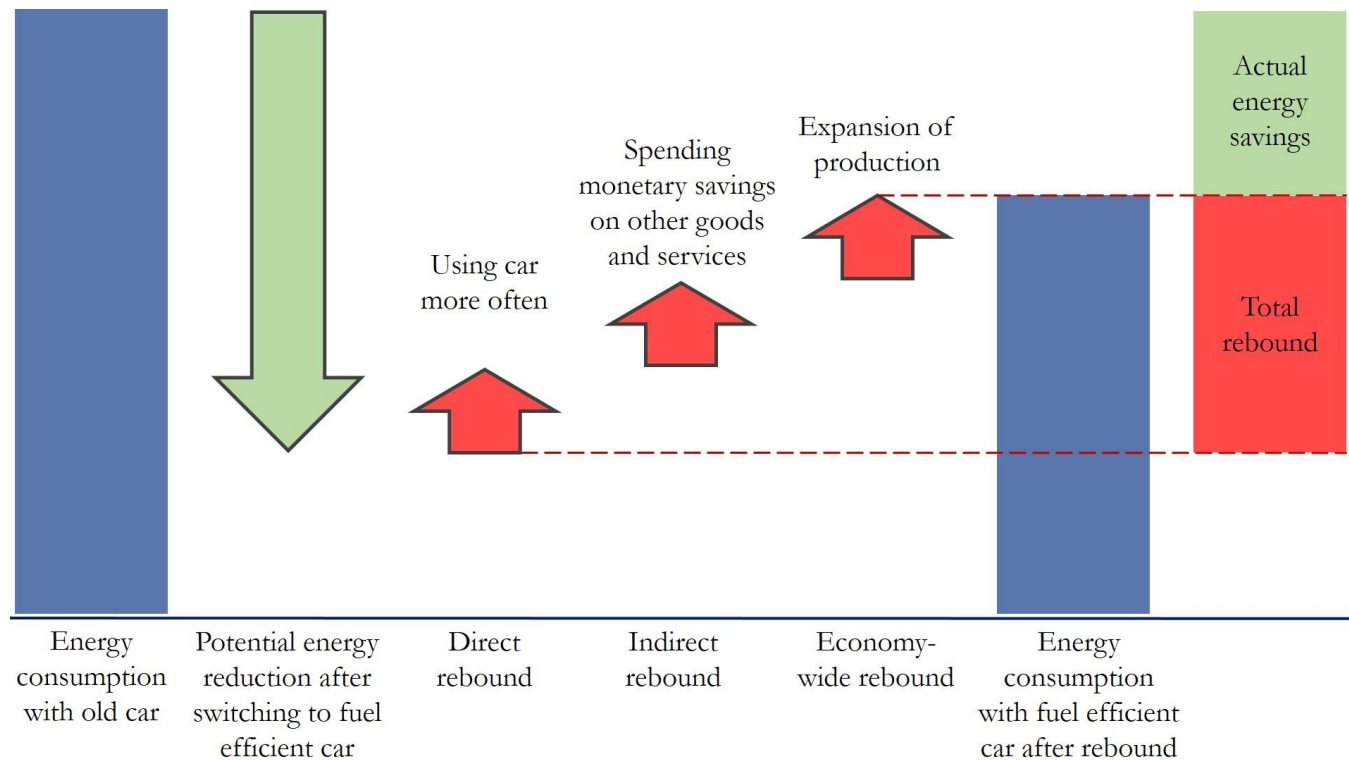
Paris Agreement: medium/long-term targets instead of effective policies



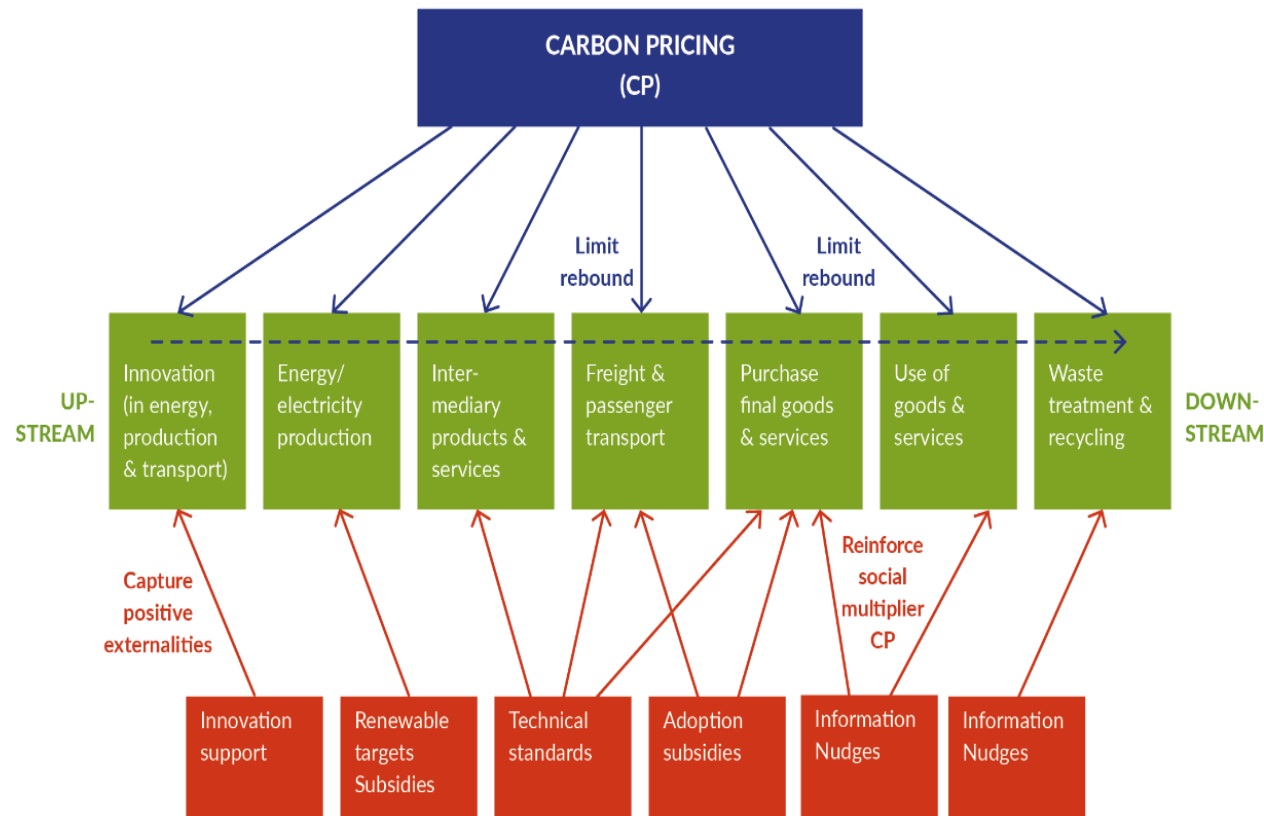
Source: van den Bergh and Botzen (2024)

Only pricing carbon limits direct & indirect *energy rebound*

Potential CO₂-emission reduction of adopting an energy-efficient *technology or practice* is offset by subsequent *behavioral & systemic responses* that increase energy use, resulting in *diminished net-energy saving & carbon-emissions reduction*



Reason: *carbon pricing best discourages indirect emissions*



In policy debates
too much focus on direct emissions

=> Encourages preference for standards & subsidies

This limits finding more effective *systemic solution* as through carbon pricing

Opportunity 2: Resistance to carbon pricing in social sciences

- Many sociologists, political scientists, philosophers & geographers show little enthusiasm for, or even resist, carbon pricing.
- Often focus on **climate justice** while little concern for **effectiveness**
- Some propose bottom-up solutions through **local action & voluntarism**:
 - Low effectiveness
 - Rebound & negative psychological spillovers of voluntary action ≥50% (Sorrell, 2018)
- Others suggest **industrial policy** as alternative (Cullenward & Victor, 2020).
 - Non-systemic policy => rebound
 - Hard to harmonize internationally => carbon leakage
 - Lobbying => weak, non-regulatory
 - **≠ innovation policy** – complementary to, no substitute for, carbon pricing & regulation

Arguments pro CP weigh heavier than contra

CRITICISMS OF CARBON PRICING

1. The only advantage is efficiency
2. It causes small emissions reductions
3. Limited empirical evidence
4. It cannot achieve deep decarbonization
5. It is inequitable
6. It enjoys little political support
7. It performs worse than other instruments
8. Sectoral and unilateral policy are better

COUNTERARGUMENTS

1. It is effective because systemic
2. Disregards cumulative threshold and rebound effects
3. Ignores five types of evidence
4. Counterarguments 1, 2 & 3 jointly support large changes
5. Unlike other instruments revenues to compensate inequity
6. Many & some strict carbon-pricing schemes worldwide
7. Alternatives perform worse on key criteria
8. It harmonizes incentives which limits free-riding

Main worry of many critics is inequity/justice

- Carbon pricing often depicted as inequitable.
 - But rich households consume relatively much energy/carbon and hence will be much affected.
 - Moreover, carbon pricing only instrument that automatically generates **revenues for redistribution**, allowing compensation of poor households

- Also overlooks that other policy instruments are inequitable:
 - *Adoption subsidies for electric vehicles or rooftop PV* tend to go to well-off households
 - Standards often raise cost for poor households
 - Alternatives do not generate compensating revenues or even use up financial resources (subsidies)

Missing element: targeting emissions by the *(very) rich*

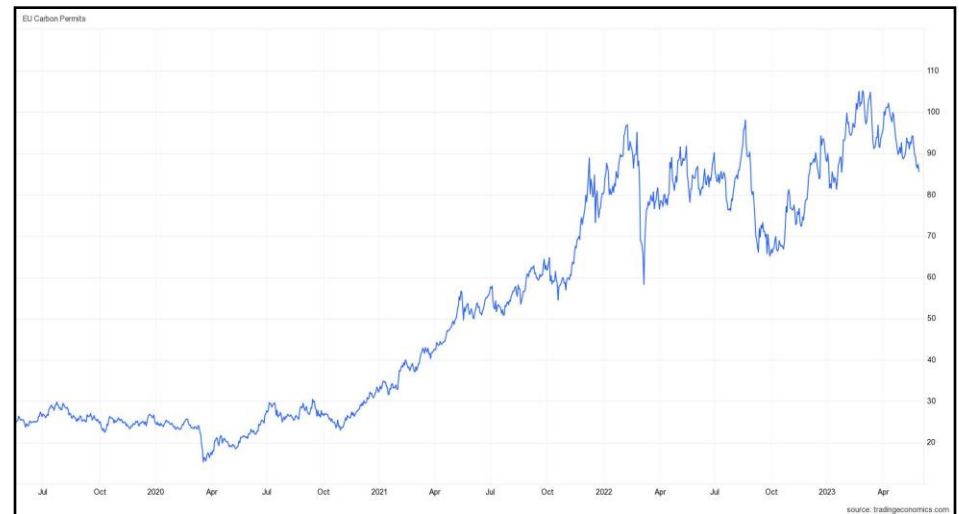
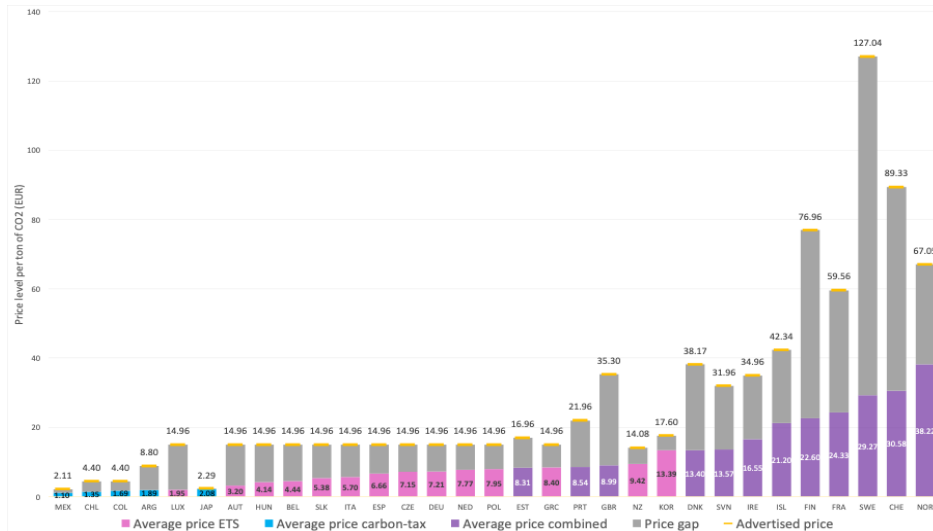
- **Motivation:** 1% richest on Earth generate more than 15% of carbon emissions
 - But don't respond strongly to carbon pricing as they can afford high prices
- Several proposals:
 - **Progressive carbon (footprint) tax:** non-uniform price on carbon, progressiveness arbitrary & need for carbon accounting
 - **(Tradable) personal carbon allowances:** **political feasibility low** as it overturns current income distribution
- **Direct regulation** of carbon-intensive luxury goods **next to carbon pricing**
 - Complements carbon pricing and equitable
 - **Standards:** limiting size cars, boats, houses
 - **Quotas or bans:** on private planes or on multiple house ownership

Opportunity 3: Carbon market (ETS) vs carbon tax

Carbon taxation popular among scientists & policy-makers.

I used to be pro carbon-tax, then indifferent, and now pro carbon-market:

1. Carbon market only instrument so far able to **harmonize** climate policy (EU-ETS 30 countries)
2. Ceiling/cap guarantees effectiveness, **even under economic growth & rebound**
3. Easier to (gradually) achieve **high prices** with ETS – relevant given bounded rationality
4. **Stable**: difficult for governments to cancel (e.g., in times of high energy prices as in 2022)
5. Focus on ceiling **hides exact (future) price** which facilitates political and stakeholder support



Source: <https://tradingeconomics.com/commodity/carbon>

Source: Finch and van den Bergh (2022)

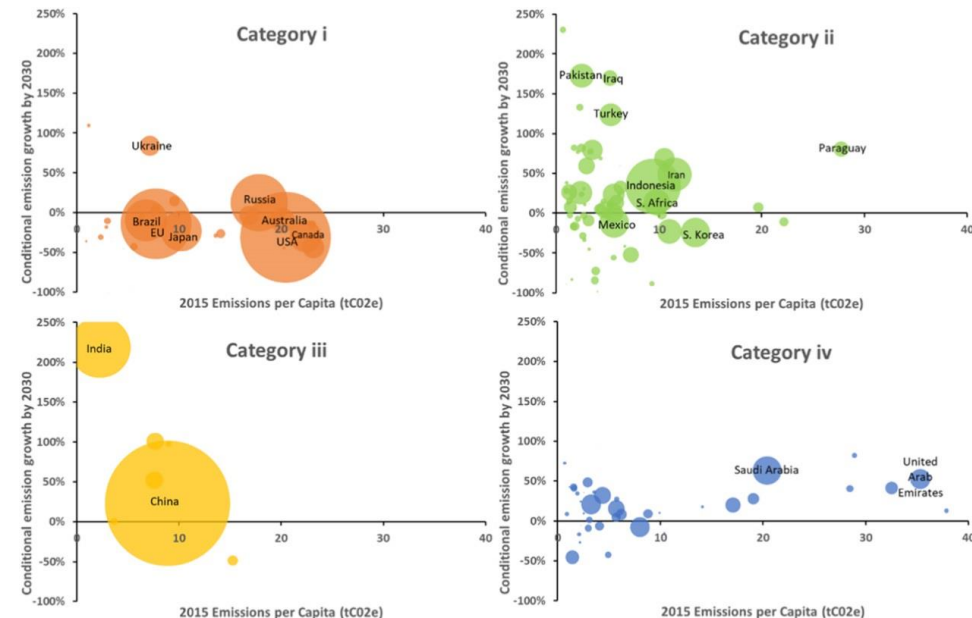
Note: confusion about carbon markets vs offsets

- Many critics lump together genuine carbon market (ETS) & carbon offsets (CDM, JI, REDD), suggesting criticism on latter extends to first
- Confusing use of term “voluntary carbon market” for offsets
- Many in favour of ETS are critical of env. integrity & additionality of offsets
- In line with this, New Zealand's, Swiss' and EU's ETS don't accept offsets

Opportunity 4: Towards a global carbon-pricing club

Key weakness Paris Climate Agreement: hasn't overcome *free riding*

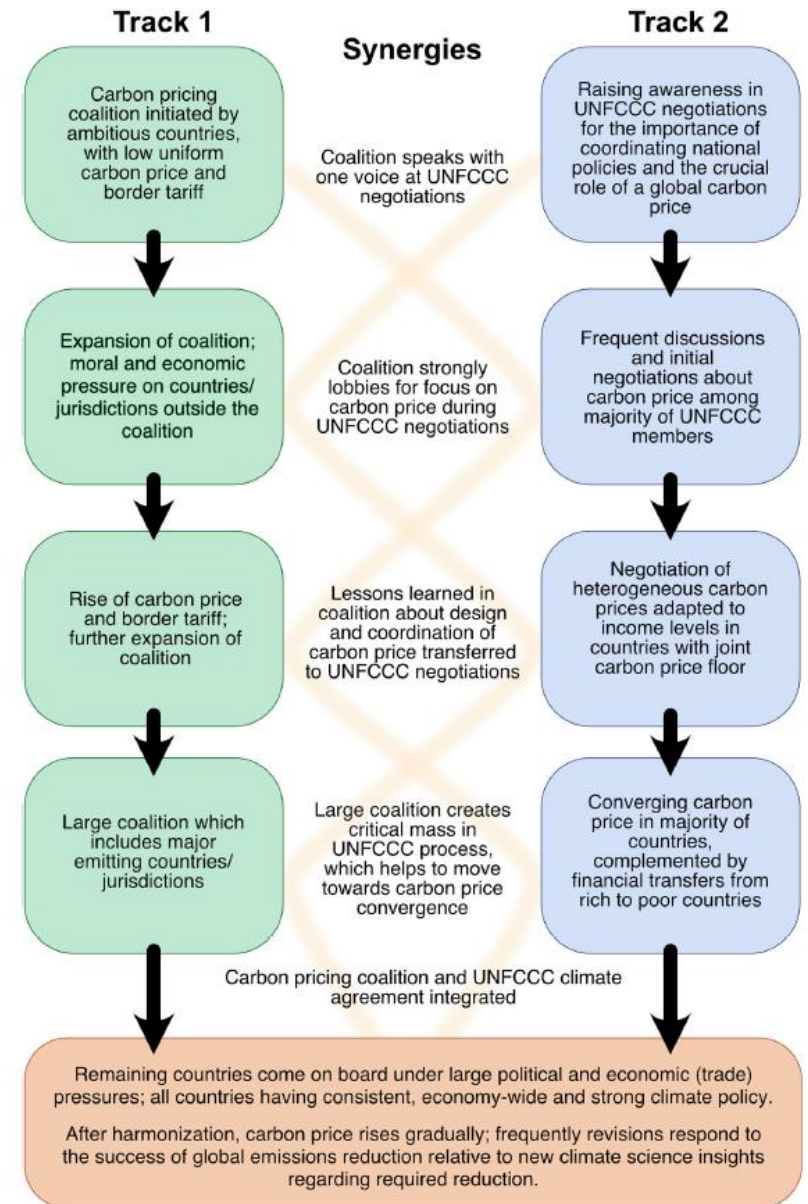
- Diverse + weak pledges
- No policy harmonization
- **Reason:** no binding agreement due to diverging interests: *rich vs poor nations* & *fossil-fuel importers vs exporters*
- **Consequence:** lax policies, rebound & carbon leakage



Source: King and van den Bergh (2019)

Expanding climate club to fight free riding

- Create with ambitious countries **carbon-market club** next to Paris Agreement – to gradually expand into full agreement
- EU-ETS already club with 30 members
 - Use CBAM to expand
 - **End goal:** harmonized carbon pricing worldwide: no free-riding incentives
- *Unfortunately, we mainly talk about the great idea of climate clubs in academia, not in politics*

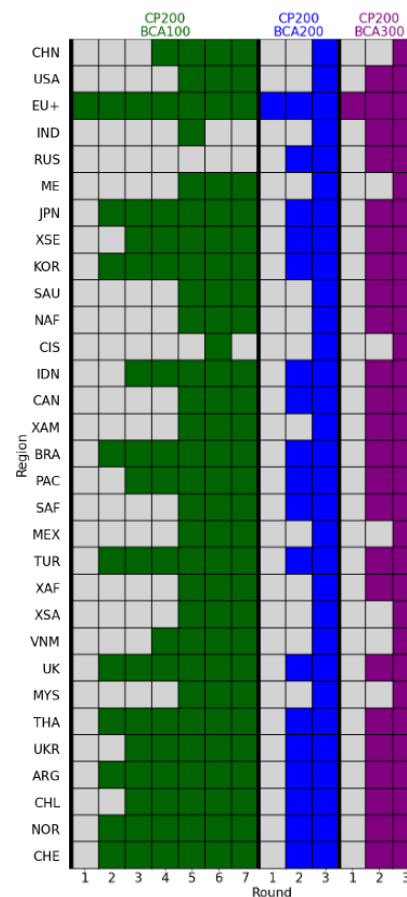
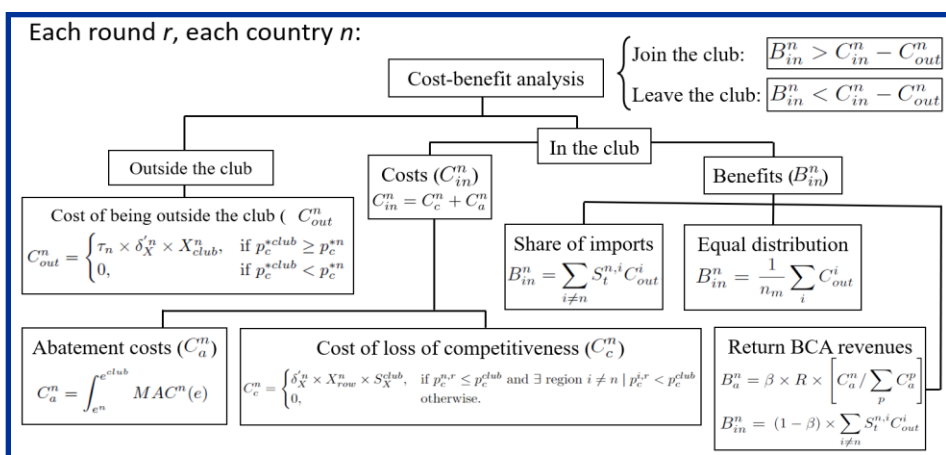


Expected dynamics of a climate club

Source: Núñez Yebra, van den Bergh & Savin (2025)

Research to understand: the conditions, pathways & likelihood for a climate club to evolve into an ambitious global agreement

Dynamic multiregional modelling – *complementing the equilibrium approach of Nordhaus (2015)*



Expansion to full membership can in most cases be achieved if:

- initiated by a **large region**
- If **border carbon tariff** equal to or higher than carbon price

Returning part of revenues contributes to successful outcomes – and can **counter retaliation**

Concluding remarks

1. **We must explain better all advantages of carbon pricing:** not just efficiency, also effectiveness related to indirect emissions & rebound
2. **Counter resistance to carbon pricing in the social sciences:** creates doubts among politicians
3. **Forget about national carbon taxes, focus on supranational carbon market:** Easier to harmonize & future high prices invisible to voters/politicians
4. **Global carbon-market club:** History shows many successful agreements started small & then gradually expanded
5. **Challenge:** Getting low & middle-income countries on board. Co-funding by rich nations vs initially heterogeneous carbon prices