# Economics of Globalization

Sciences Po Saint-Germain-en-Laye

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  $\longrightarrow$ Collective action problem.
- How to transform globalization to answer the challenges posed by environmental change?

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- Environmental damage beyond GHG emissions: biodiversity, deforestation, sea level rise, extreme events, *etc.* $\longrightarrow$ both local and global.
- Direct costs on human life, life quality and economics.
  - Direct costs estimated to 1.3 trillion over the last decade.
  - Indirect costs: Estimations that 1°C of warming reduces GDP by 12%.
    - Conservative cost: does not account for effects on conflicts, mortality, and other nonmonetary effects.

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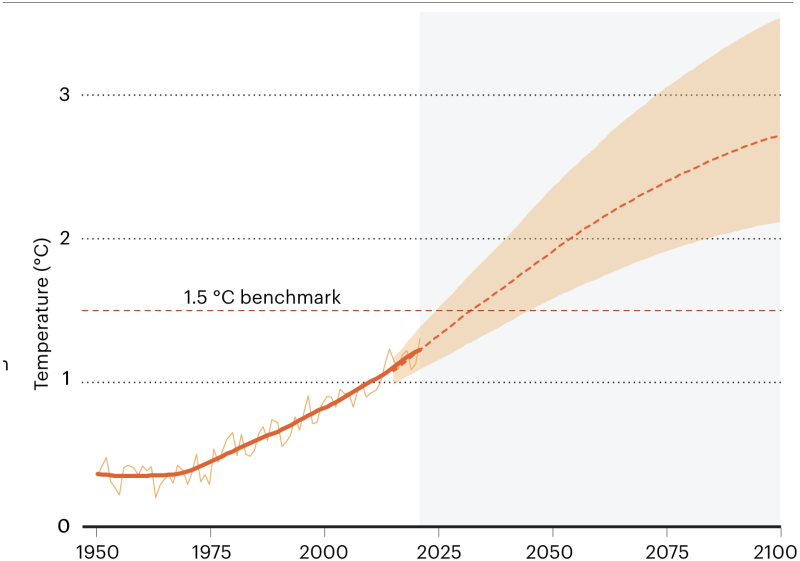

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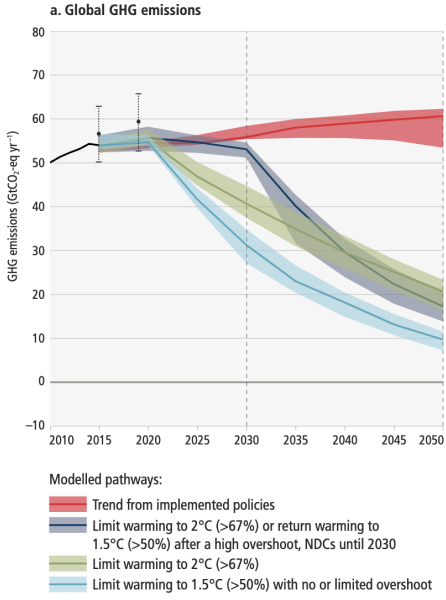

# Globalization and the Environment

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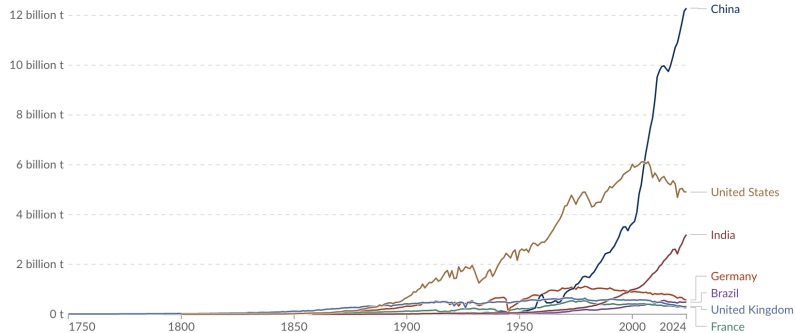
  - **Scope 1**: Direct emissions from production $\longrightarrow$ the smokestack of a vehicle manufacturing plant
  - **Scope 2**: Direct emissions + emissions due to energy $\longrightarrow$ add the emissions due to electricity generation.
  - **Scope 3**: Indirect emissions $\longrightarrow$ the pollution from the plant + from the plants supplying tires, engines to that plant + from the plants and mines supplying rubber, steel, etc. to the input plants, *etc.* + from the use of the product.

# Globalization and the Environment

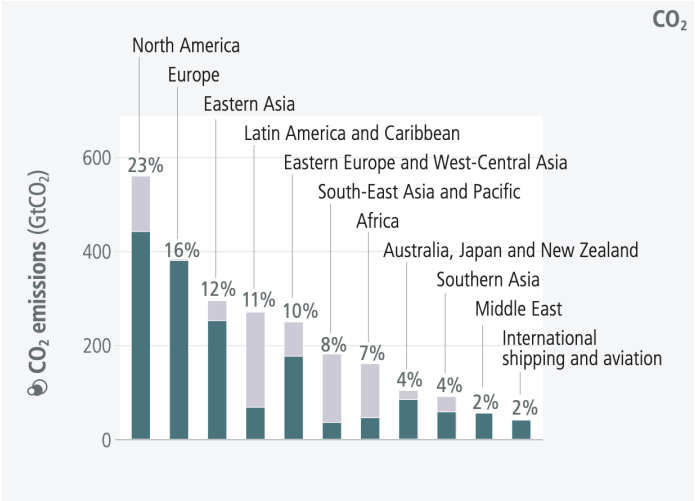
## Fact 1: Most global emissions growth comes from developing countries.




- More developed countries have lower emission rates on average.
- Dirtiest countries have 20 times the emission intensity of the cleanest countries.
- Very recent evidence of flat emissions in China.

# Globalization and the Environment

## Fact 2: Most global emissions stock comes from developed countries.




Stock of global emissions

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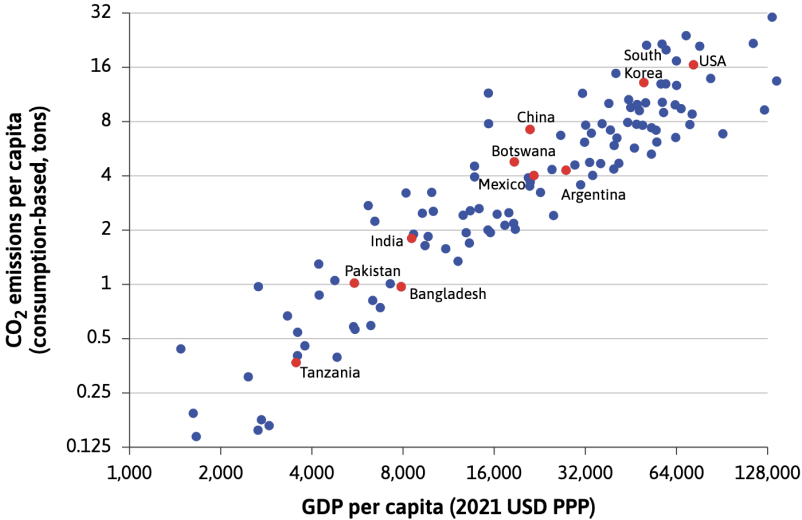
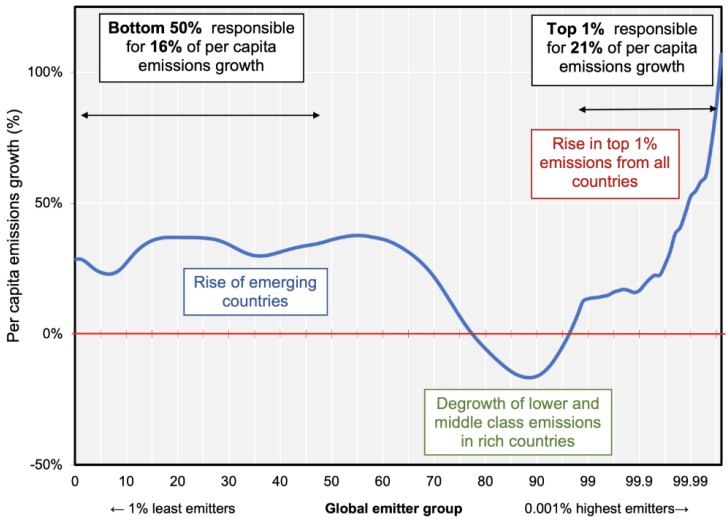


# Globalization and the Environment

## Fact 3: Emissions inequalities



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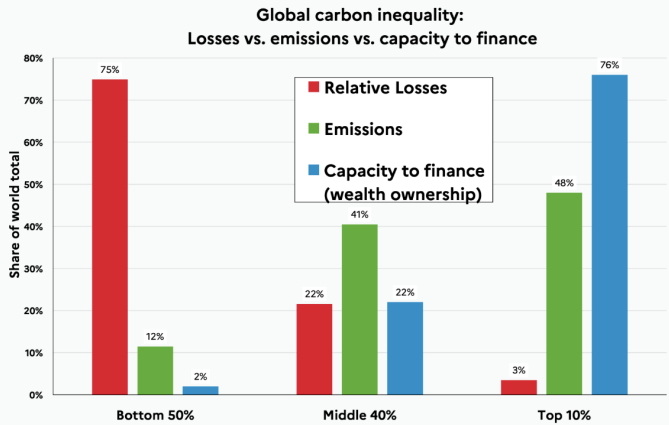


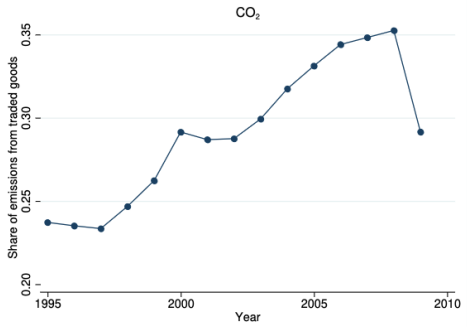

**Figure A:** Global climate inequality: relative losses, emissions and capacity to finance

**Notes:** Relative income losses due to climate change, vs. greenhouse gases emissions vs. wealth ownership. See Figure 29 for methodological details and how to read this graph.

# Globalization and the Environment

## Fact 4: International Trade accounts for a fourth to a third of global pollution emissions.

(a) Carbon Dioxide ($CO_2$)




Share of Global Pollution Embodied in International Trade, by Year

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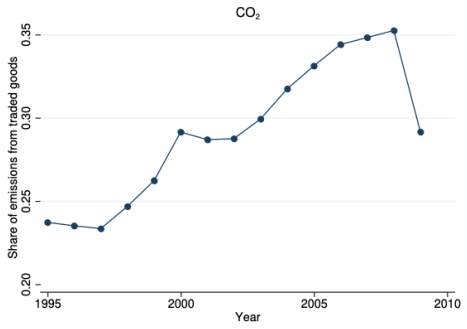


Share of Global Pollution Embodied in International Trade, by Year

Does it mean that 1/3 of emissions will disappear if trade stops?

# Globalization and the Environment

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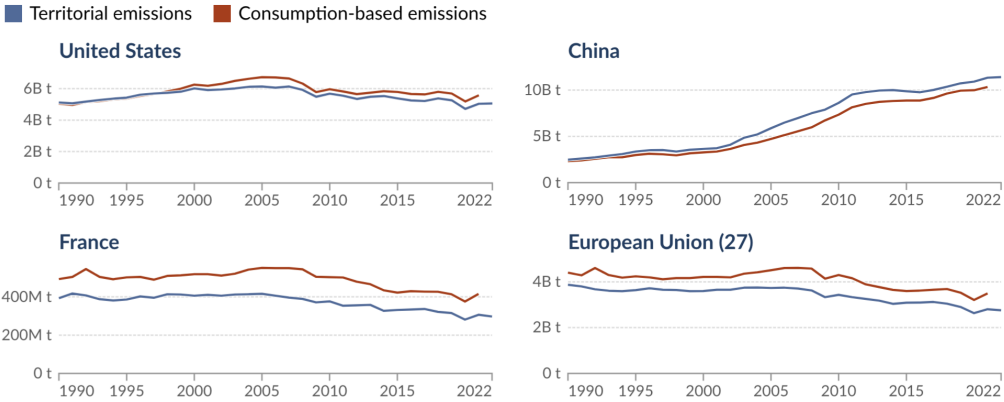

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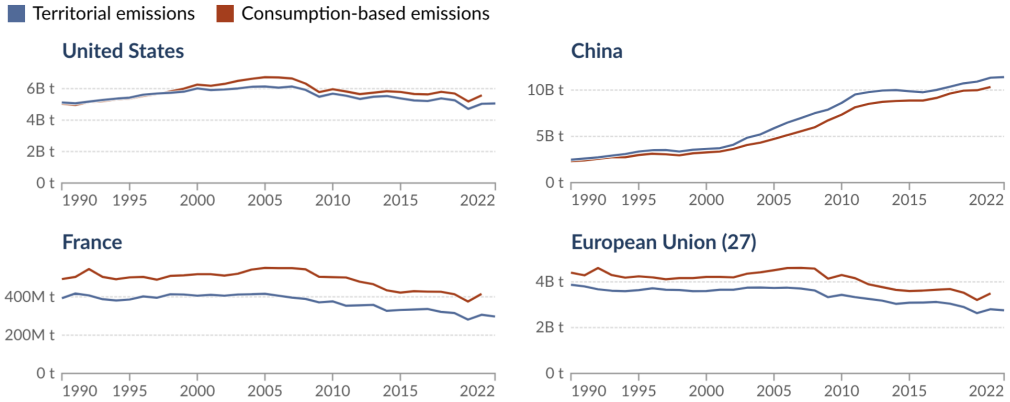


Consequence: French emissions rely a lot on foreign technologies. Decrease in French emissions from 2000 to 2014 driven at 58% by foreign countries, and 12% by China only.

# Globalization and the Environment

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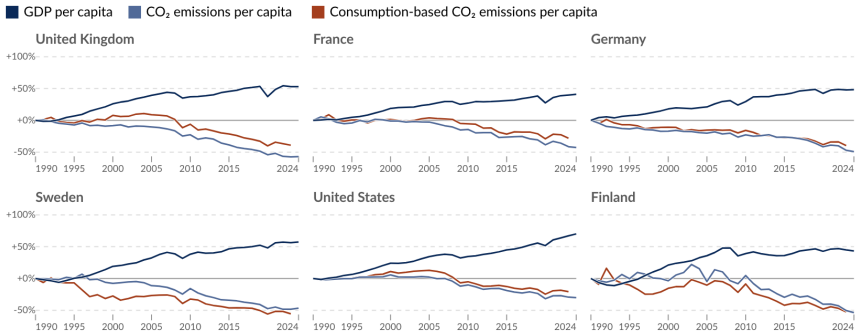

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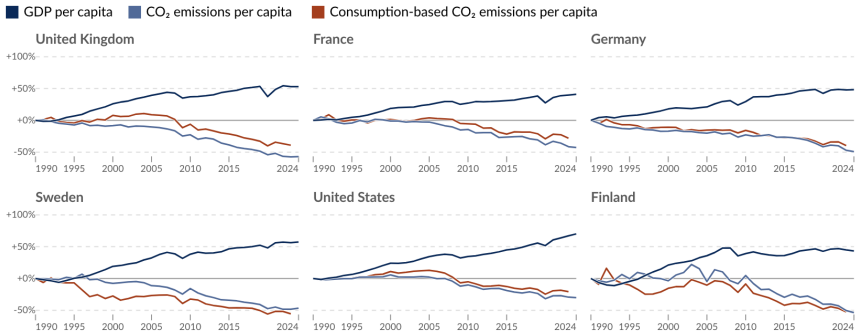


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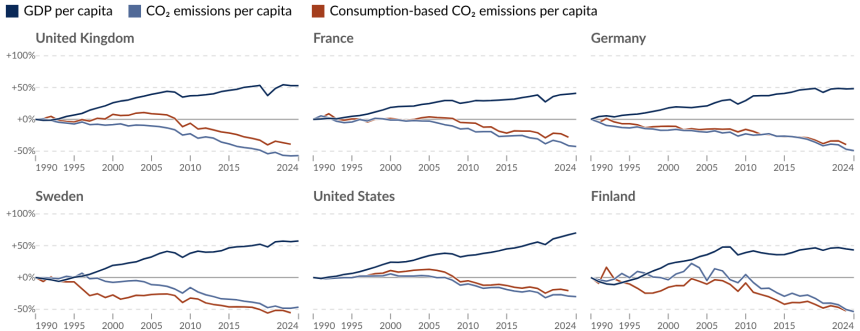


How is it possible?

$\longrightarrow$ **Offshoring**; **Efficiency** (better technologies allow to use less energy to produce one $ of GDP), **Reallocation** (switch from high-emissions – fossil fuels – to low-emissions sources of energy – renewables, nuclear energy).

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## Domestic policies

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  - Limits: leakage effects, can be regressive (eg Yellow Vests), how to find the right social carbon price (between 100$ and 1000$)?

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- Alternatives: regulatory standards and bans, industrial policies to foster innovation, investment in green infrastructure and public goods, etc.

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  - Cap-and-trade policies such as the ETS.
- Evaluation of carbon tax find positive effect on the reduction of emissions (between 5% and 20% depending on the tax)

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## Emissions Trading Schemes

- ETS are cap and trade systems designed to limit the total amount of GHG that can be emitted.

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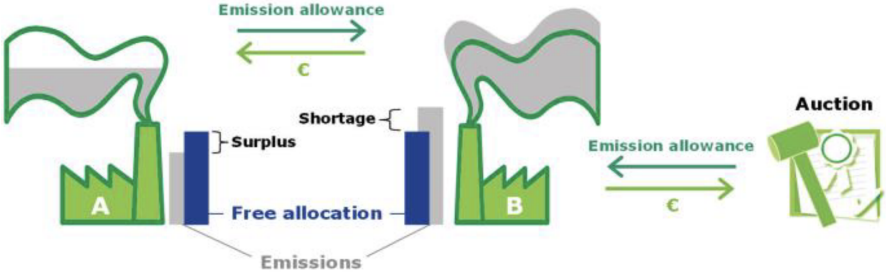
- To emit GHG, firms need permit that they can trade among each other.
  - The total number of permits is fixed so that the government can control the total number of emissions.
  - Given that firms vary in their production technologies, how will the total amount of required abatement be divided among them?
  - The abatement should be done by the firms for which this is least costly because this saves scarce resources that can be used elsewhere.
  - Works for *in-scope* industries *e.g.* 45% of the EU emissions are within the EU-ETS, 80% for the Californian ETS, 14% at the World level.

# Climate policy and globalization

## Emissions Trading Schemes More details



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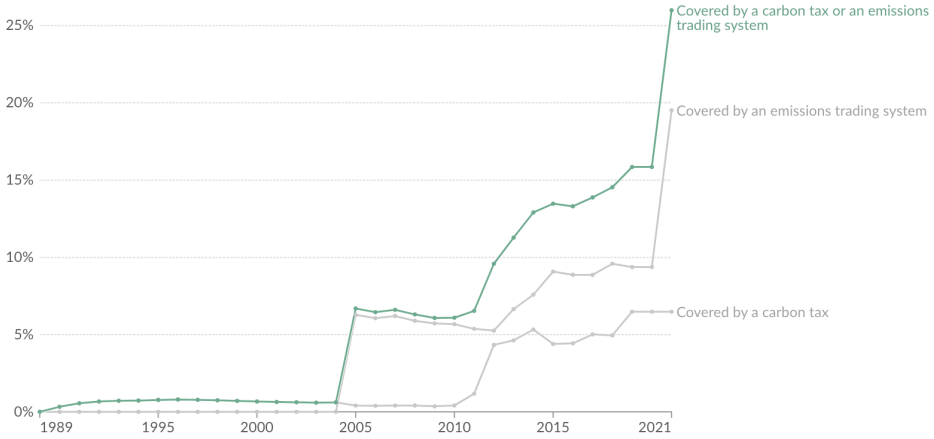
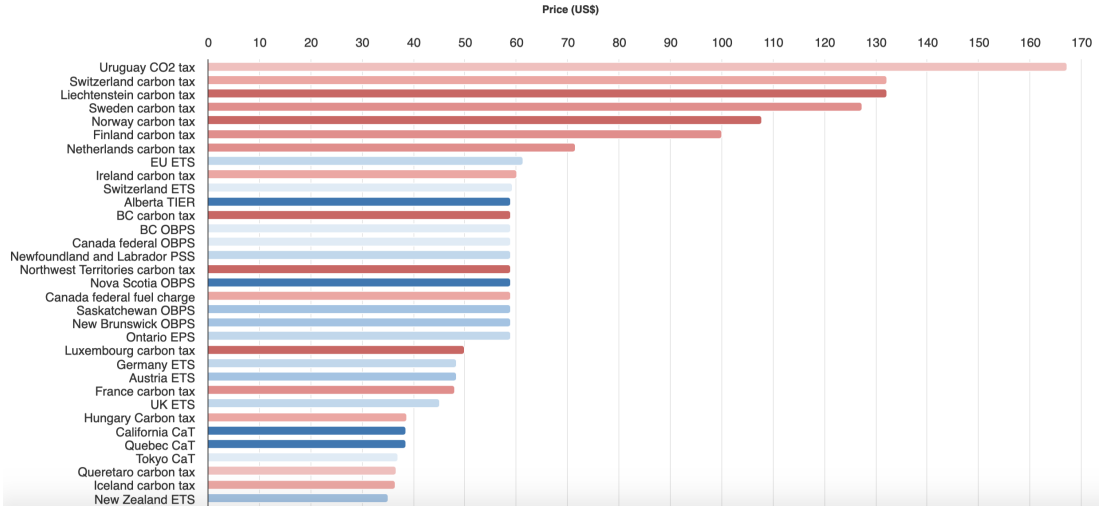


# Climate policy and globalization

## Domestic policies: Carbon Pricing Dashboard



# Climate policy and globalization

## Collective action

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### Talk of a global carbon pricing scheme grows louder ahead of COP30

Brazil wants to use the presidency to push for an international framework

# Climate policy and globalization

## Collective action

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**‘Additional promises mean nothing’: The awkward flaw in the world’s climate talks**

World leaders have vowed to fight rising temperatures for years. Many of those pledges fade when the summits end.

# Climate policy and globalization

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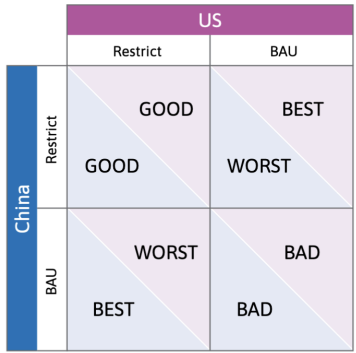
- Why is it so hard to make countries coordinate at the world level?
  - Pollution is a global externality: you do not bear the cost of your emissions.
  - You gain if you free ride $\longrightarrow$ collective action problem.



# Climate policy and globalization

## Leakage effects

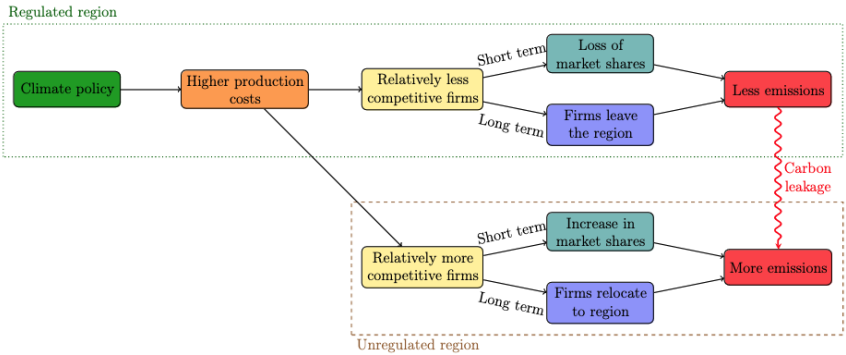
- Leakage: When a coalition of countries regulate pollution emission, this might increase emissions in non-coalition countries.

- Leakage effects reduce the efficacy of domestic policies: carbon emissions embodied in the exports of countries that did not ratify the Kyoto protocol increased by 8%.

# Climate policy and globalization

## Leakage effects: the competition channel

**Figure 2: A schematic view of the competition channel**



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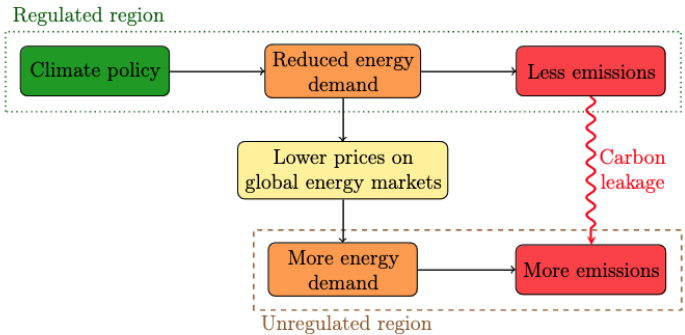
## Leakage effects: the energy channel

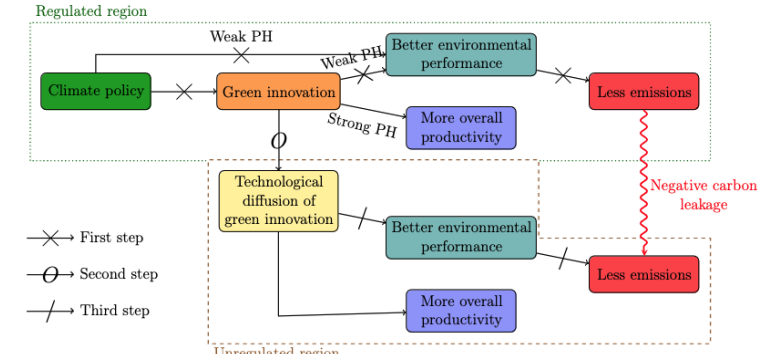
**Figure 3: A schematic view of the energy channel**



# Climate policy and globalization

## Leakage effects: the innovation channel

**Figure 4: A schematic view of the innovation channel**




Note: PH = Porter Hypothesis

Porter hypothesis: strict environmental regulations can induce efficiency and encourage innovations that help improve commercial competitiveness.

# Climate policy and globalization

## Addressing Leakage effects.

- Addressing leakage effects requires aligning incentives.

# Climate policy and globalization

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- Addressing leakage effects requires aligning incentives.
- EU-Carbon border-adjustment mechanisms (CBAM) in place from October 2023 to avoid leakage effects.
- Main objective: ensure the carbon price of imports is equivalent to the carbon price of domestic production.
- Applies on carbon-intensive goods and goods at risk of leakage effects.
  - Cement, iron and steel, aluminium, fertilizers, electricity and hydrogen
- Capture 50% of the emissions in the European Trading Scheme when fully phased-in.

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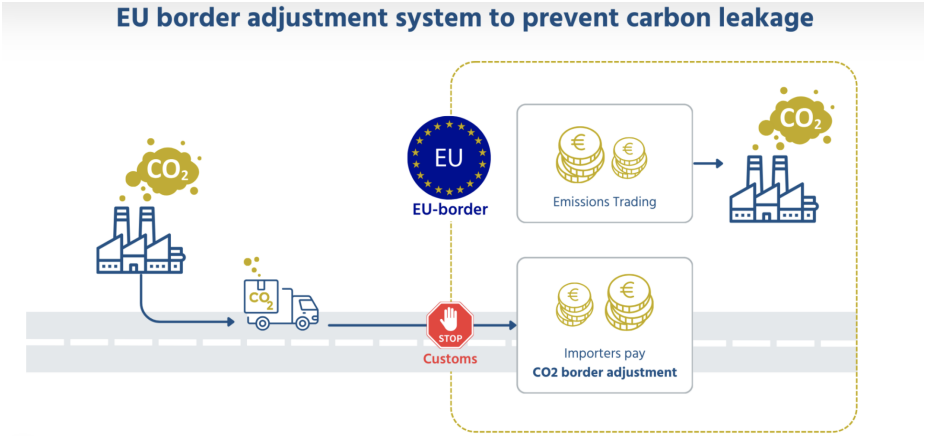

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  - Problem: Need to put many big countries in the club to make it work.

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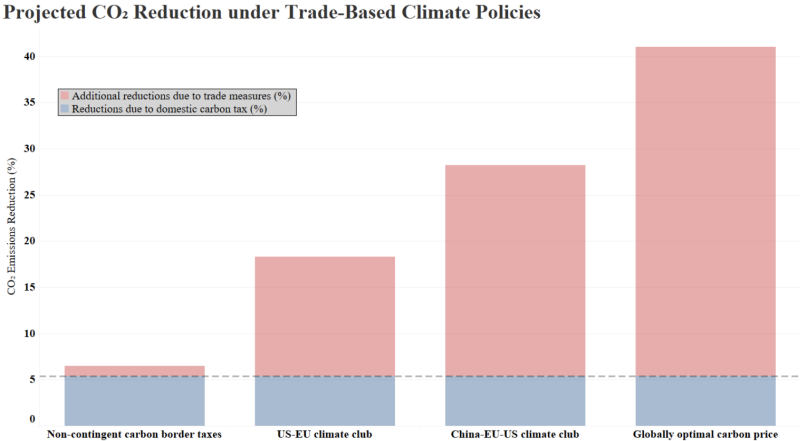

# Trade and investment policy

## Openness and environmental policy

- Openness might constrain environmental policy: trade policy limits the use of many instruments (tariff, quotas, subsidies).
- Trade liberalization might be compensated by weak environmental policies or specific product standards that can be seen as a subsidy to domestic producers.
- Risk of lobbying increases.
  - Closed economy: regulations increase costs which are partly passed-through consumers.
  - Open-economy: prices are less sensible. Producers tend to bear the costs and will be more resistant to tighter environmental regulation.
- Regulatory competition can also go through the investment policy (cf. ISDS discussed in previous classes).

# Trade and investment policy

## Using trade policy

- Trade policy can be used to restrict products that cause environmental damages.
  - Chinese restrictions on the export of rare earths to limit pollution.
  - Generated price increase: U.S. Canada, the EU and Japan filled a complaint at WTO.
  - WTO ruled against China with the motive that other instruments were available and that export quotas were “designed to achieve industrial policy goals rather than conservation”.

$\longrightarrow$ Environmental policies might be confounded by industrial policy.

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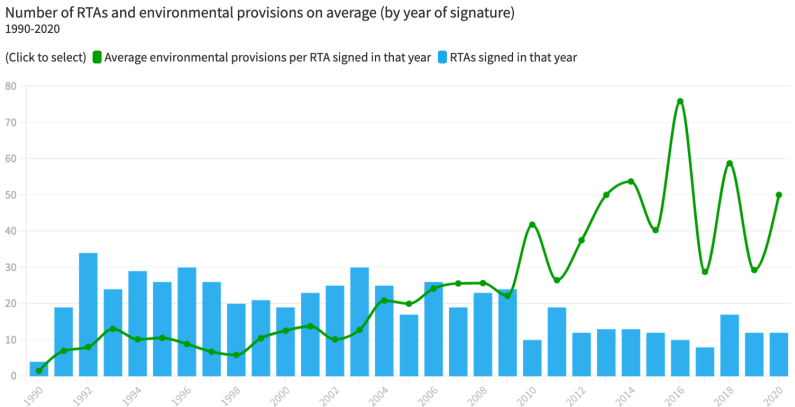
- Defenders of trade agreements state that it can be used for the diffusion of environmental norms.
- The EU pushes for this vision of trade agreements, *e.g.*, for the EU-Mercosur agreement. But is it enough, or is it greenwashing?
  - Introduce a dispute settlement mechanism to enforce workers' right and environmental provisions.
- Environmental provisions in PTA seem to work by reducing dirty exports and increasing green exports.
- Questions remain unanswered:
  - Is it working?
  - Does it spill-over to domestic production?
  - Are there leakage effects?

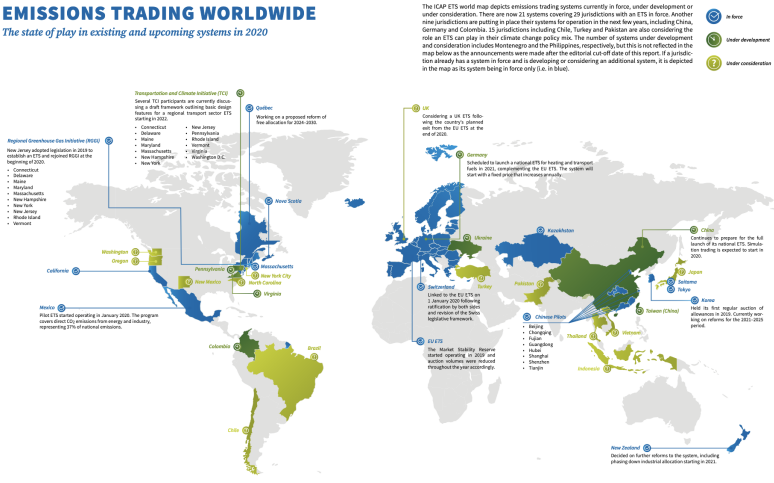
# Trade and investment policy

## Using trade policy




Source: OECD work on Regional Trade Agreements and the environment: Policy Perspectives (2023)

# Emissions Trading Schemes



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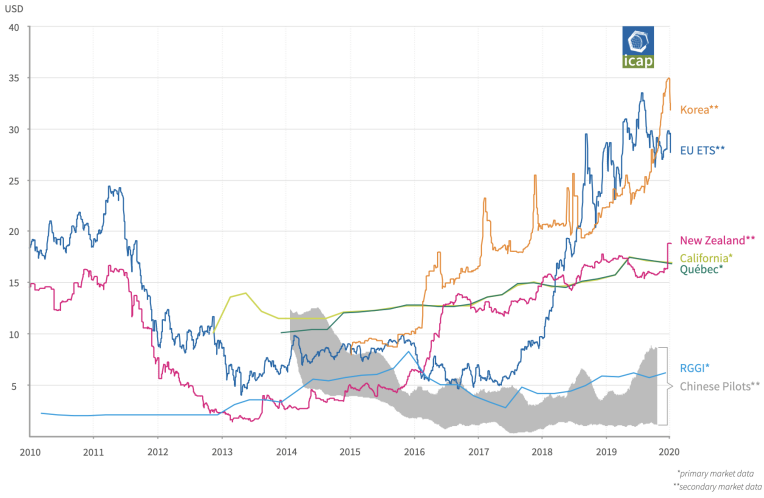
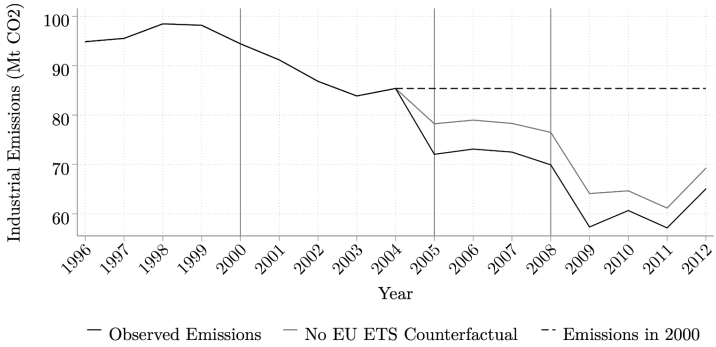


# Emissions Trading Schemes

Figure 4: The Effect of the EU ETS on Aggregate Emissions Reductions




*Notes:* The black line presents the aggregate time series for industrial emissions in France, measured in millions of tonnes of $CO_2$. The dark gray line represents counterfactual emissions in the absence of the EU ETS, using our difference-in-differences estimates and assuming that 75% of industrial emissions are regulated. The dashed black line represents the level of emissions in 2000 as a benchmark.Source: Authors calculations based on French microdata and Eurostat data.

# Emissions Trading Schemes

## EU ETS Leakage effects.

- Competition channel: no evidence
- Energy channel: no leakage through this channel because the EU demand for fossil fuel has not yet significantly decreased (because of fuel intensive activities are out of scope).
- Innovation channel: limited impact on clean energy innovation.

$\longrightarrow$ Current estimations are based on the first phases of the implementation of EU ETS (low price, free allocations). More important effects are expected with higher carbon prices.

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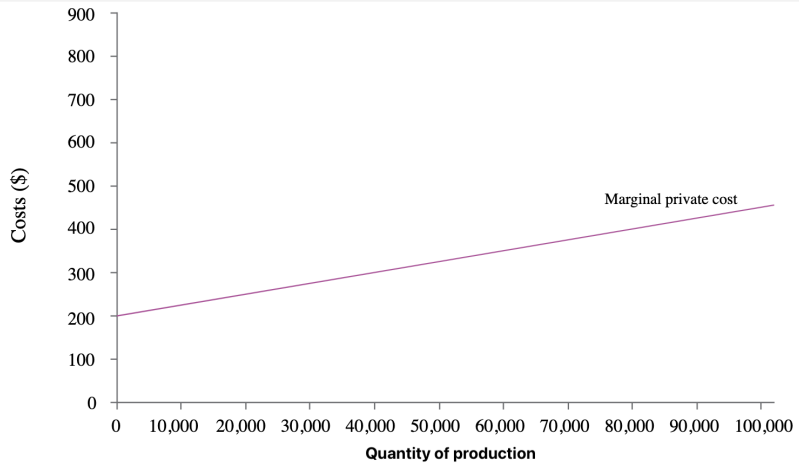
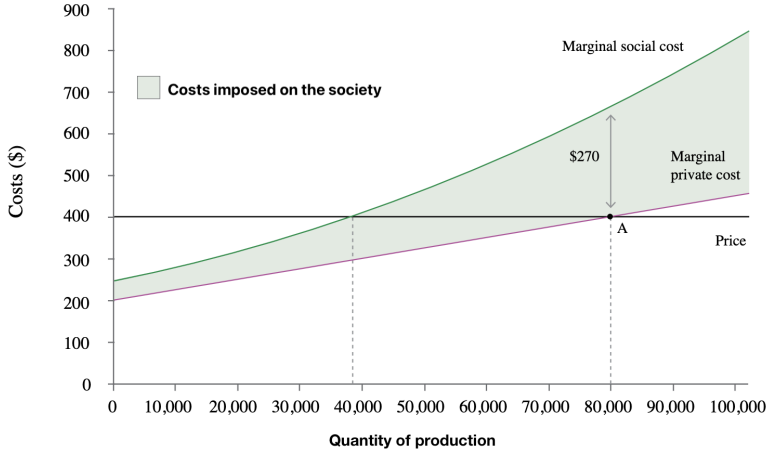
# Pigouvian Taxes




In a competitive environment, producers are price-takers and production is set at the point where the price is equal to the marginal private cost of production. Back

# Pigouvian Taxes

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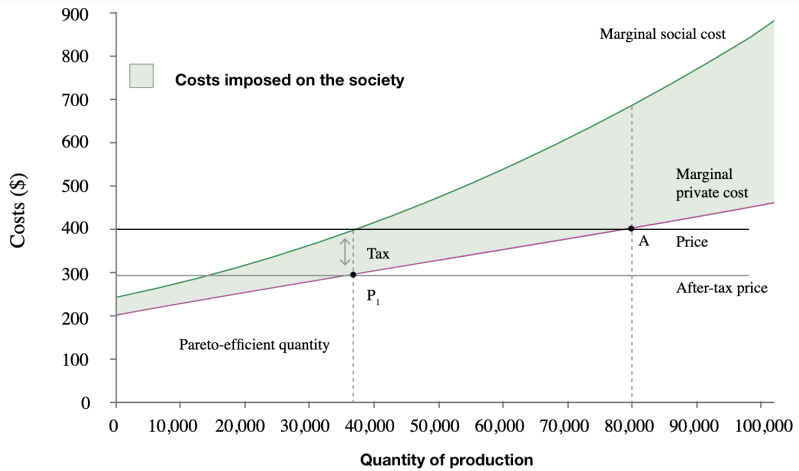
# Pigouvian Taxes

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