

# Environmental policy instruments and market mechanisms

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Co-funded by the  
Erasmus+ Programme  
of the European Union



# Policy Instruments – Why do we need them?

Two main areas

## Use and protection of environmental resources

Different types of natural/environmental resources

- Land (Forests and Pastures), Irrigation (Water extraction), Fisheries

## Preventing and/or regulating emissions and pollutions

The amount of pollution depends on the characteristics of the environmental resources and the technologies involved. Whether the emitted substances pollute depends on the

1. form in which the matter is released,
2. its volume and
3. the characteristics of the environment.

# Main strategies in policy process

## Three main strategies:

1. More government
2. More market
3. More civil society and community:

(4. Hybrid solutions: )



# Main strategies in policy process

Three main strategies:

## 1. More government:

- **legal regulations** (e.g., prohibitions or prescriptions),
  - **economic incentives** (e.g., taxes and subsidies) or
  - **changes in infrastructures,**
- Legal regulation has historically been the dominant strategy.
  - Governmental action is criticized for being slow and delivering weak results



# Main strategies in policy process

Three main strategies:

## 2. More market:

- The idea here is to create **markets for environmental services and polluting substances**
- Trading allowances, permits
- The main argument is that individual preferences should decide (lower emission good = more expensive) and that is guaranteed through establishing markets.



# Main strategies in policy process

Three main strategies:

## 3. More civil society and community:

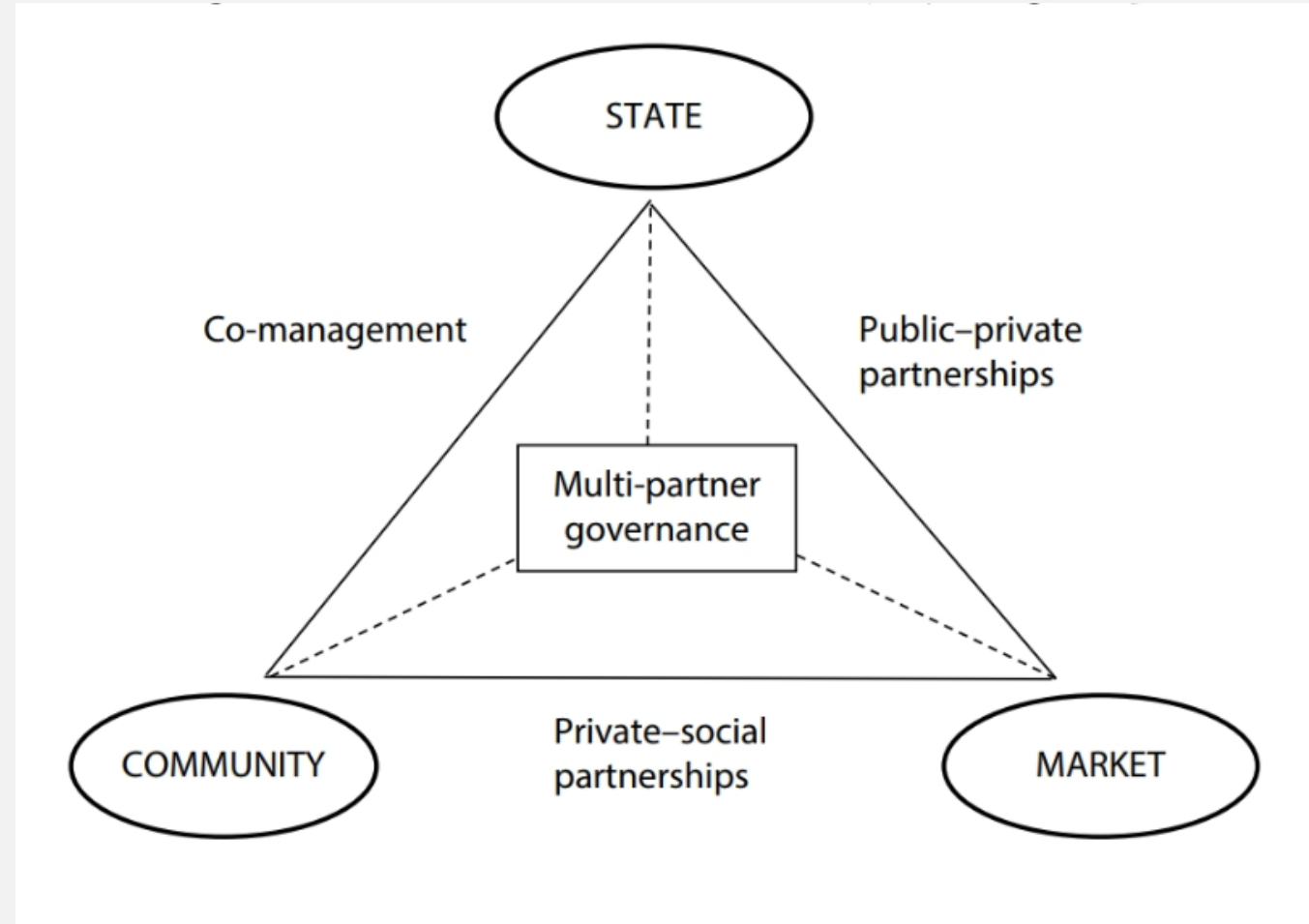
- The idea is based on **(self-)mobilization of citizen and civil society** organizations in cooperative action for environmental protection.
- Emphasis is on **participation and deliberation** – communication and cooperation – between multiple actors.



# Main strategies in policy process

Three main strategies:

## 4. (Hybrid solutions):



# More government vs more market

- Direct regulation (Command and control instruments)
- Market based instruments (MBIs)



# Command and Control Instruments

Command-and-control instruments (or '**direct regulation**') have been the dominant method of environmental regulation in the majority of countries.

They are mostly used for **pollution control** and the **management of common property resources** (such as ocean fisheries within territorial waters).

Direct regulation may

- either **ban substances or production techniques altogether** if they are deemed too dangerous for humans or the environment.
- or, the quantity of a pollutant that can be produced or the share of a resource stock that can be used will be **limited** or the technology or location **restricted**.



# Command and Control Instruments

Three most commonly used types of command and control instruments:

- 1- Non-transferable emissions licences
- 2- Minimum technology requirements (or best-available technology)
- 3- Regulation of location of polluting activities



# Command and Control Instruments

## Non-transferable emissions licenses

- In order to achieve a given overall emissions target for a particular kind of pollutant, the environmental regulatory authority creates **licences** (depending on the context, also called **permits** or **quota**), which **limit the amount of emissions permissible for each production unit**
- As the name indicates, **these licenses cannot be transferred or traded**
- For the license scheme to function well, levels of emissions need to be **monitored regularly** and penalties for non-compliance need to be in place (and **enforced**). If these conditions are fulfilled, emission licences will normally deliver the expected environmental improvement

# Command and Control Instruments

## Minimum technology requirements

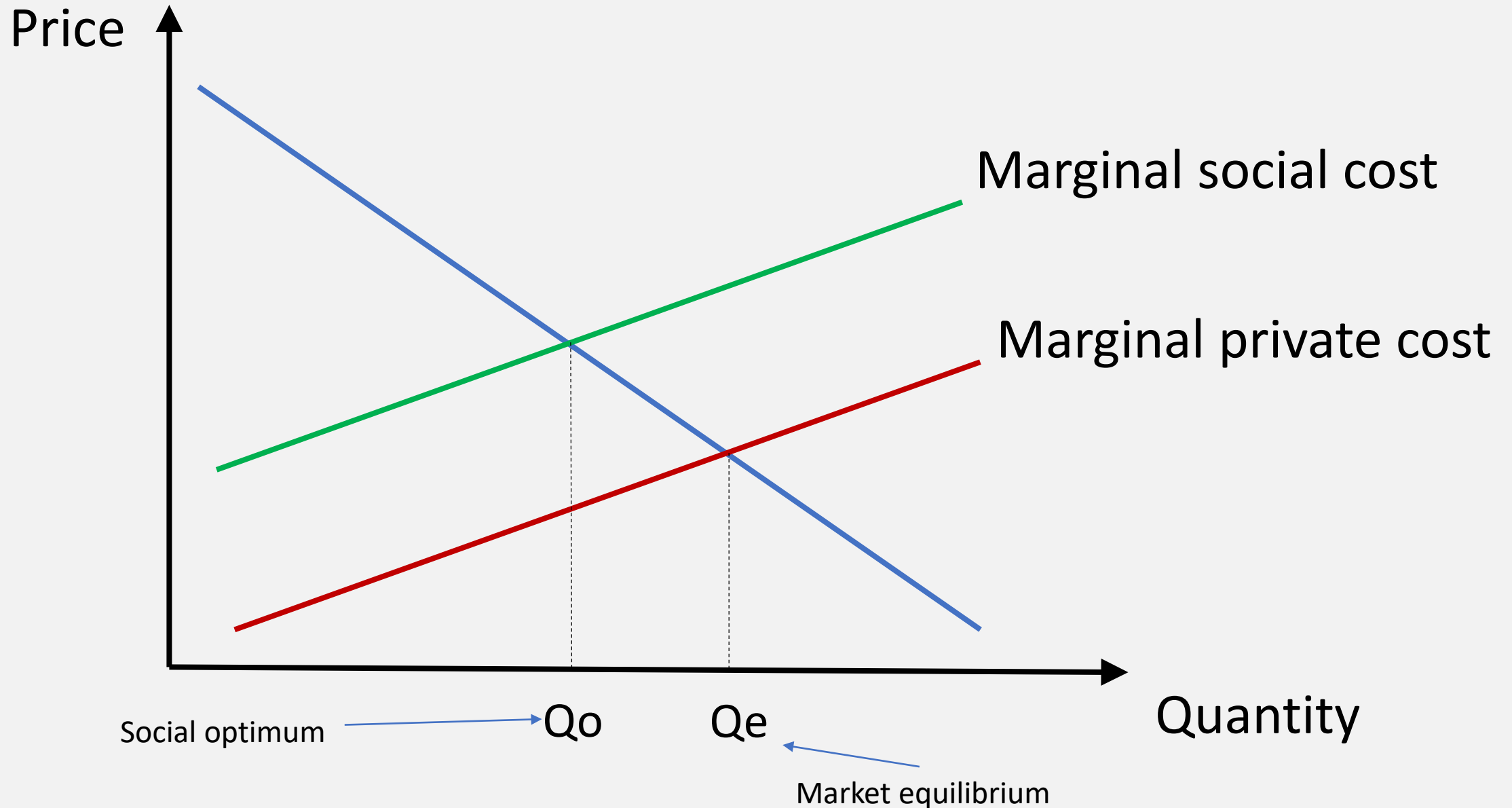
- This instrument regulates the technologies that firms (and/or households) can use.
- The aim of required technology standards is to control pollution by banning or phasing out technologies which are known for causing severe or unnecessary environmental damage.
- Required technology standards have been implemented as
  - ‘best practicable means’ (BPM),
  - ‘best available technology’ (BAT)
  - ‘best available control technology’ (BACT).

# Command and Control Instruments

## Regulation of location of polluting activities

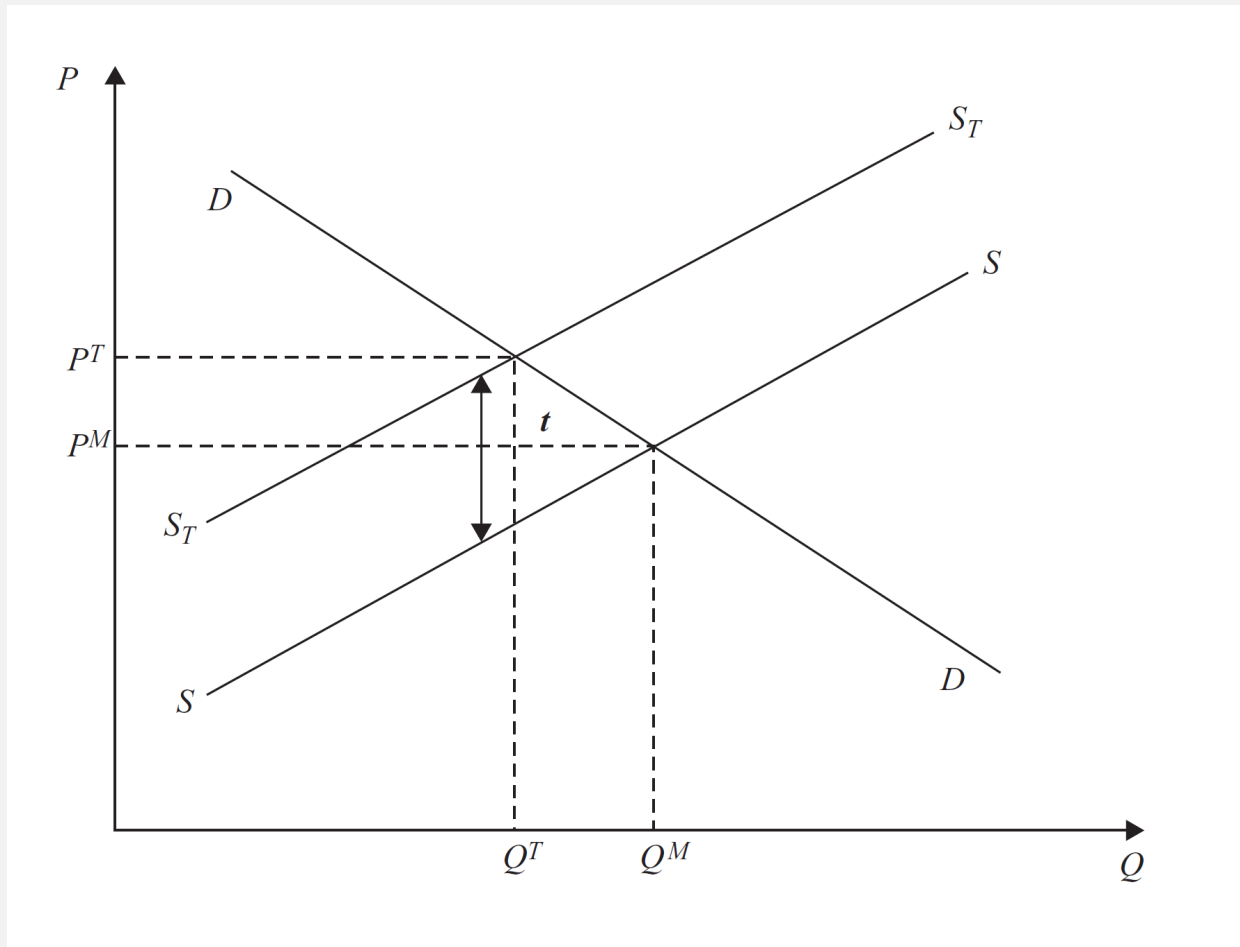
- Some pollutants are easily dispersed → *the location of the pollution source is not important. (E.g. CO<sub>2</sub>, GHG)*
- Other pollutants are, however, not easily dispersed. → *Location of the emission source matters*
- In such cases, **in order to reduce human exposure** it is common to regulate where sources or residences can be built.
  - For example, incinerators are usually located on the outskirts of cities or industrial zones are separated from residential ones.
- However, separating people from pollution sources does not reduce the impact on the non-human biophysical systems

# MBIs: Pollution as an externality to the market



# Market Based Instruments: Taxation

An emissions tax is levied on each unit discharged and this reduces the pollution level to the corresponding to allocative efficiency level.



Impact of  
environmental tax  
on goods market.

# Market Based Instruments: Taxation

- Emissions taxes also generate income for the government.
- Revenues from environmental taxes may or may not be earmarked for funding environmental projects.
- An often used argument against the introduction of environmental taxes in a country has been the fear that doing so would make it less competitive in international trade.

Such taxes are also criticised by especially civil society since they can be perceived as a price to pollute

→ Polluters can pollute freely as long as they pay the price



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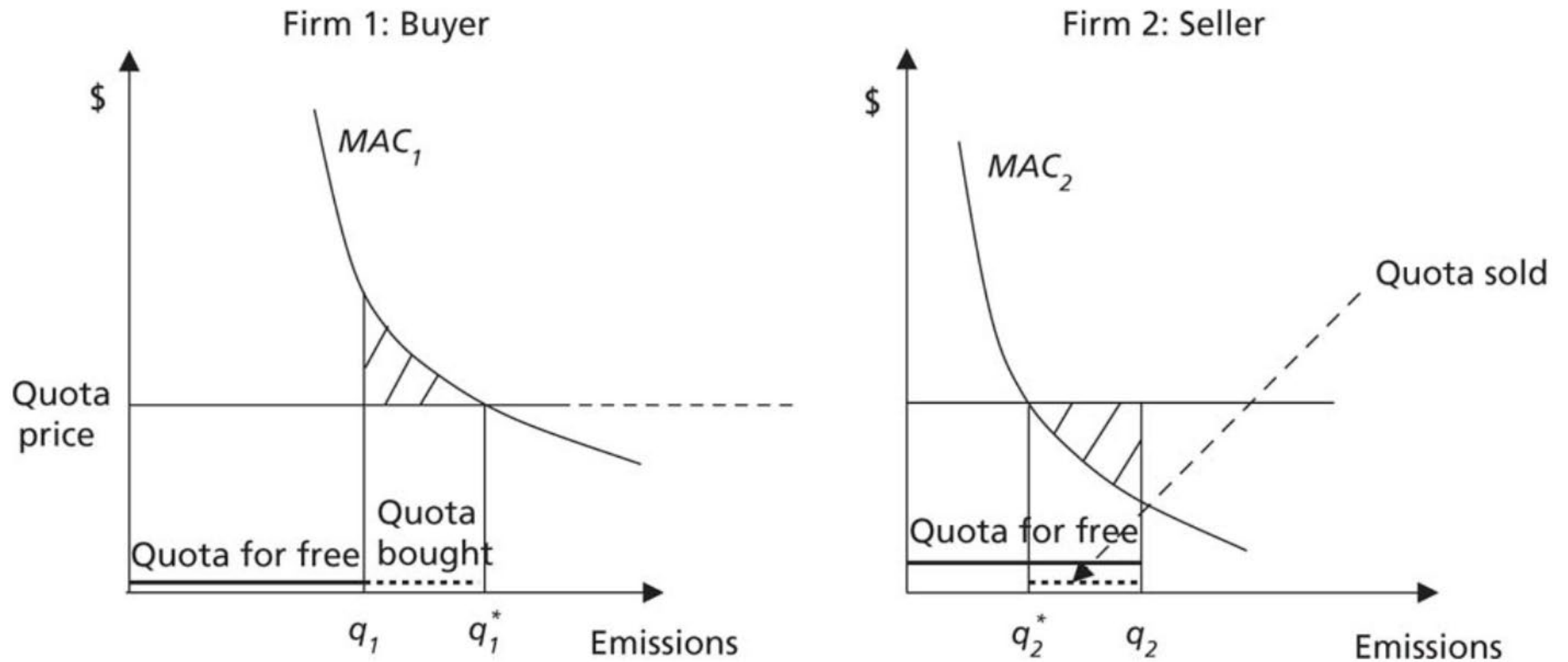


# Market Based Instruments: Tradable permits

- Tradable permits are a market-based policy instrument, under which rights to discharge pollution or exploit resources can be exchanged through either a free or controlled permit-market.
- Like taxes they generate economic incentives to economic agents to move towards less environmentally harmful behaviour.
- With permits the agent faces a quantitative emissions target which is fixed by the amount of permits held, and the agent can vary her holding by buying or selling permits at a variable price.
- **Taxes fix the price** at which agents can emit but not the amount that they emit individually or collectively, whereas **permits fix the amount that agents can collectively emit** but not the price at which they do it or the amount they emit individually.

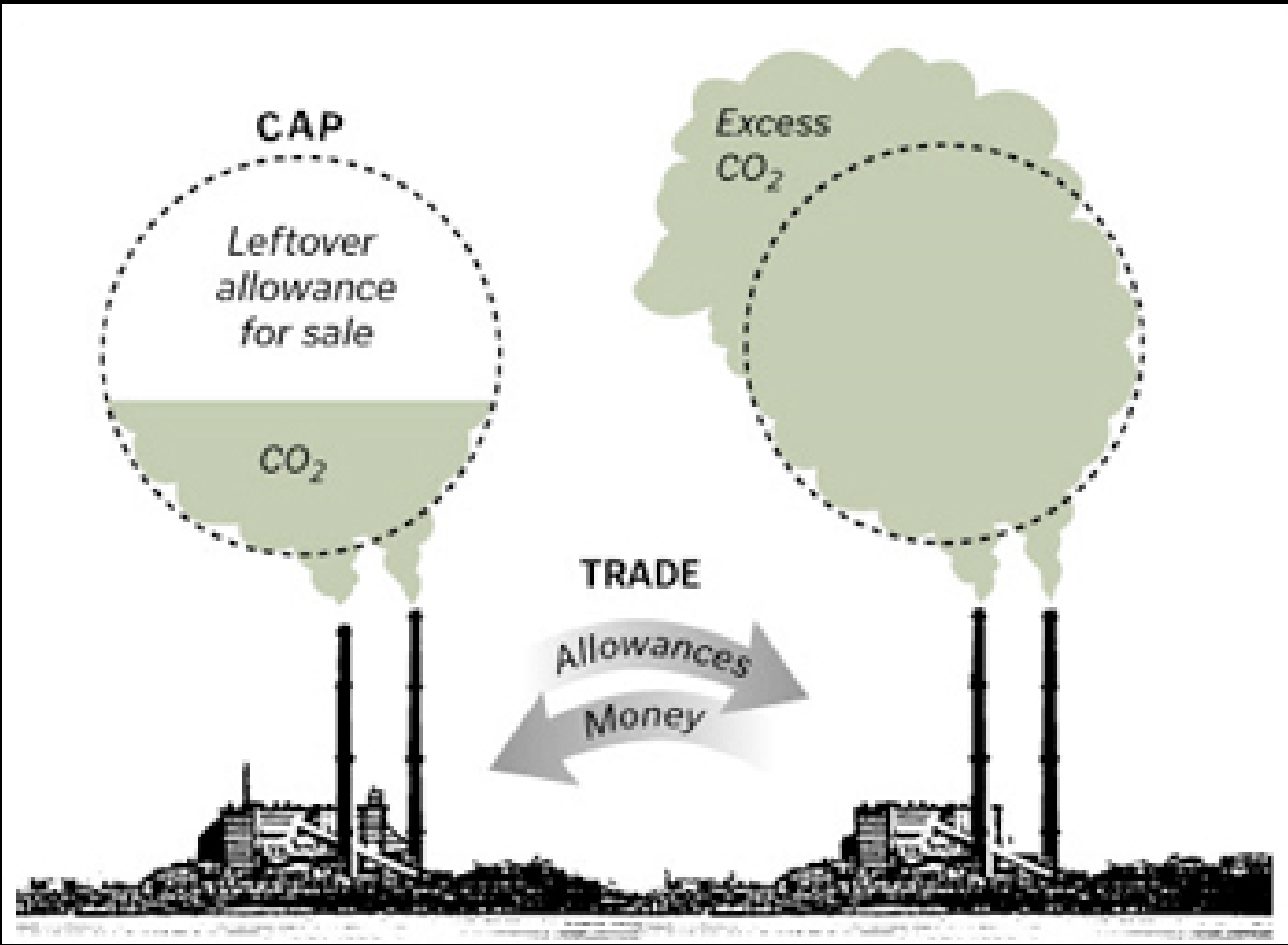
# Market Based Instruments: Tradable permits

- **‘cap-and-trade’ scheme:** scheme involves a decision by the regulatory authority about the total quantity of emissions (or natural-resource use) that is to be allowed -- **the ‘cap’** -- and shares the total among the participating agents. This scheme establishes a **quantified ceiling** assigned to each participant for a given period. No one is allowed to emit (or use) more than the amount for which it possesses emission (or natural-resource use) permits. As with the emissions reduction scheme, the participants can buy and sell permits from and to one another.
- **‘emission reduction credit’ scheme:** A baseline is agreed for every participant source before the start of the operation of the system. A participant is credited with any over-achievement, and is allowed to sell the credits arising.



**Figure 12.8** Tradable quotas – grandfathered

# Tradable Permits – Cap and trade



# Tradable Permits – initial allocation

Allocating permits is equivalent to attributing polluters a property right

- **Free of charge** - *Grandfathering*: Permits allocated according to the past emissions.
- **Auction** - The firms have to pay the price of the permits.

	Advantages	Disadvantages
Grandfathering	<ul style="list-style-type: none"><li>• The firms who are reluctant to enter the system could be encouraged.</li></ul>	<ul style="list-style-type: none"><li>• The company who reduces its emissions in the past is punished.</li><li>• If the company predicts that this kind of system will be introduced, it could increase its emissions strategically in order to get higher quantities of permit.</li></ul>
Auctioning	<ul style="list-style-type: none"><li>• The permit sales can provide a revenue for government which could be used in the financing of the environmental projects.</li></ul>	<ul style="list-style-type: none"><li>• The additional cost leads to the increase of the fuel price so this looks some sort of carbon tax for consumers.</li></ul>

# Tradable Permits – Advantages and disadvantages

Advantages	Disadvantages
<p><b><u>Certainty about quantity</u></b>: There is certainty about the level of carbon pollution for the period of time over which scheme caps are set.</p> <p><b><u>Revenue</u></b>: if emissions permits are auctioned, this creates a source of Government revenue.</p> <p><b><u>Minimizing fiscal risk - Transparency</u></b></p> <p><b><u>Tradable permits adjust to inflation.</u></b></p>	<p><b><u>Carbon price uncertainty</u></b>: since the carbon price can vary over time, businesses face carbon price risk.</p> <p><b><u>Implementation need times</u></b></p> <p><b><u>It could increase the emissions of the company strategically</u></b> in order to get higher quantities of permit.</p> <p><b>Requires high efficiency.</b> Small firms can not survive</p> <p><b>“Right to pollute”</b> – How can pollution be a right? –Moral Issue</p>

# Tradable Permits in Real Life: EU ETS

## European Union Emission Trading System

- Launched in 2005, it is the world's first carbon market and among the largest ones globally;
- Helps bring overall EU emissions down while generating revenues to finance the green transition;
- Covers emissions from the **electricity and heat generation, industrial manufacturing and aviation sectors** - which account for roughly 40% of total GHG emissions in the EU;
  - started covering emissions from **maritime transport in 2024**;
- Operates in **all EU** countries plus **Iceland, Liechtenstein and Norway**, and is linked to the **Swiss ETS** (since 2020).

# EU ETS

- The EU ETS is based on a “cap and trade” principle.
  - Cap: Total amount of GHG that can be emitted by installations and operators covered under the scope of the system – allowances to emit
- This cap is reduced annually in line with the EU’s climate target, ensuring that overall EU emissions decrease over time.
- As the cap decreases, so does the supply of allowances to the EU carbon market → price of emissions increase
- By 2023, the EU ETS has helped bring down emissions from European power and industry plants by approximately 47%, compared to 2005 levels.



# EU ETS

- Companies must report their emissions on a yearly basis and surrender enough allowances to fully account for their annual emissions.
- While allowances are predominantly sold in auctions, companies receive **some allowances for free**. Companies can then trade these among themselves
- The price of allowances is determined by the EU carbon market



# EU ETS - Scope

- The EU ETS covers the following greenhouse gases from specific activities
  - carbon dioxide (CO<sub>2</sub>) from
    - electricity and heat generation
    - energy-intensive industry sectors, including oil refineries, steel works, and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals
    - aviation within the European Economic Area and departing flights to Switzerland and the United Kingdom
    - maritime transport, specifically 50% of emissions from voyages starting or ending outside of the EU and 100% of emissions from voyages between two EU ports and when ships are within EU ports.
  - nitrous oxide (N<sub>2</sub>O) from production of nitric, adipic and glyoxylic acids and glyoxal
  - perfluorocarbons (PFCs) from the production of aluminium.

# EU ETS - Scope

- Participation in the EU ETS is mandatory for companies in these sectors, but:
  - in some sectors, only operators above a certain size are included
  - certain small installations may be excluded if governments put in alternative measures to cut their emissions
- From 2024, installations for the incineration of municipal waste above a certain threshold are also required to monitor and report their emissions in the EU ETS.



# EU ETS – Carbon Price



# EU ETS – Carbon Leakage and Competitiveness

Carbon leakage refers to the situation that may occur if, for reasons of costs related to climate policies, businesses were to transfer production to other countries with laxer emission constraints.

→ This could lead to an increase in their total global emissions.

The risk of carbon leakage may be higher in certain energy-intensive industries.

To safeguard the competitiveness of industries covered by the EU ETS, the production from sectors and sub-sectors deemed to be exposed to a significant risk of carbon leakage receives a **higher share of free allowances** compared to the other industrial installations.

# Carbon Leakage and Competitiveness - CBAM

## Carbon Border Adjustment Mechanism (CBAM)

- In May 2023, the EU adopted Regulation 2023/956 establishing a Carbon Border Adjustment Mechanism (the “EU CBAM”) to **put a price on greenhouse gas emissions from imports at the same level as products manufactured in the EU.**
- In adopting its CBAM, the EU became the first jurisdiction to extend its domestic carbon price to imported emissions generated outside its borders.



# CBAM

## Carbon Border Adjustment Mechanism (CBAM)

- Following sectors are affected:
  - Cement
  - Iron
  - Steel
  - Aluminium
  - Fertiliser
  - electricity
  - Hydrogen
- A carbon price will be applied to those imports equivalent to the price faced by domestic producers operating in those sectors under the EU ETS.

# EU ETS – CBAM

## CBAM definitive regime (from 2026)



EU importers of goods covered by CBAM will register with national authorities where they can also buy **CBAM certificates**. The price of the certificates will be calculated depending on the **weekly average auction price of EU ETS allowances** expressed in €/tonne of CO<sub>2</sub> emitted.



EU importers will **declare the emissions** embedded in their imports and **surrender** the corresponding number of certificates each year.



If importers can prove that a **carbon price has already been paid** during the production of the imported goods, the corresponding amount **can be deducted**.

# CBAM IMPACT ON EU'S TRADE PARTNERS IN THE MEDITERRANEAN

- Total exports
  - Exports to the EU
  - Exports from CBAM sectors to the EU
- Share of exports from X% CBAM sectors in total exports

Data: €, 2022 (Libya, 2019; Syria, 2020; Lebanon, 2021)

