



## Module 2: Deep Dive Policy Instruments

### Lesson 3 – Emissions Trading Systems



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## About this Lesson



### **In this lesson, you will explore:**

- Principles of emissions trading
- Key issues for design and implementation
- A review of existing emissions trading schemes
- References and resources

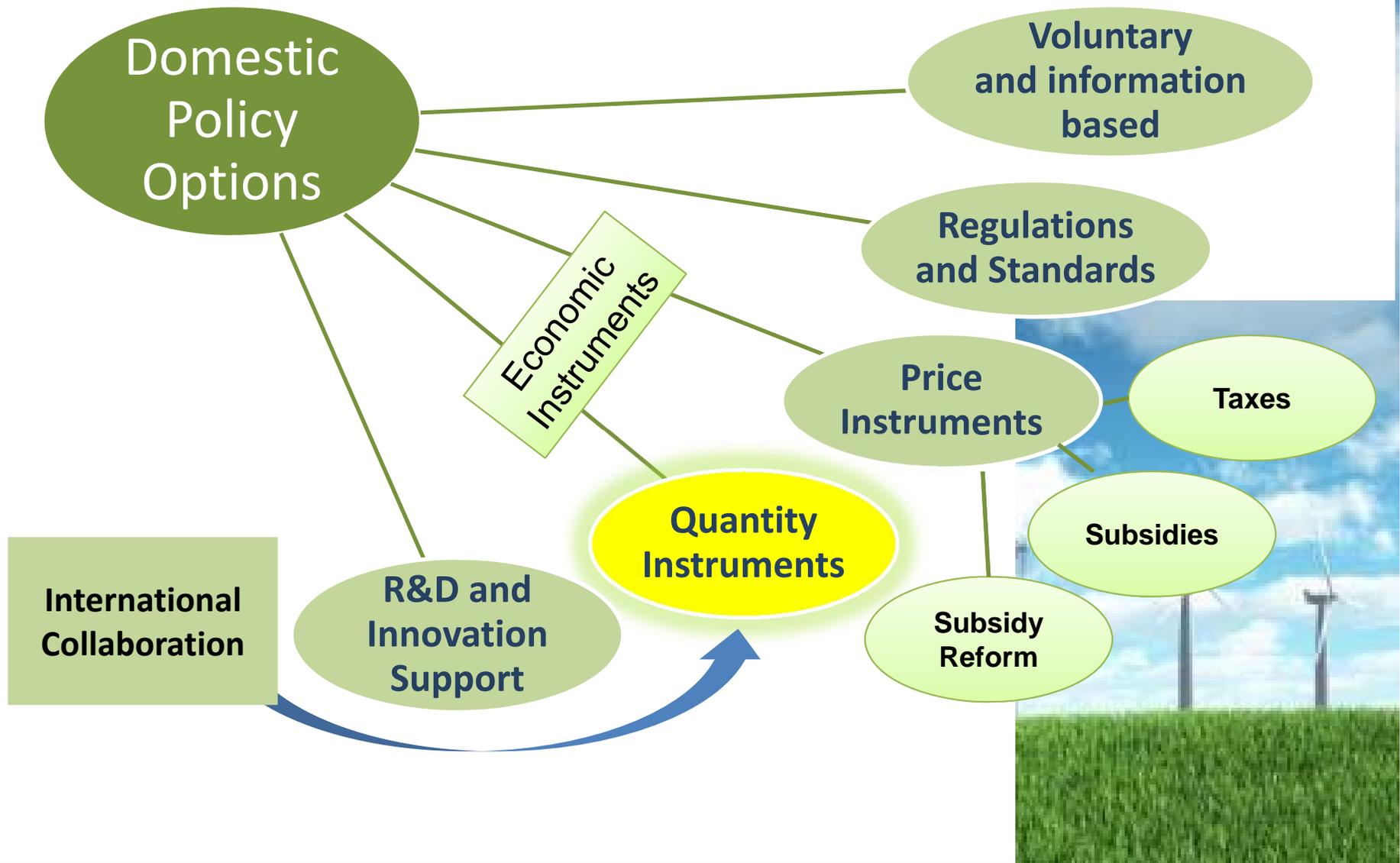


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# Policy Options for Low Emissions Development



### Why Consider Emissions Trading?

**Environmental  
externality**

**Reduce GHG emissions  
at least cost**

Establishing a price on carbon by  
creating markets for emissions  
reductions



## Principles of Emissions Trading Schemes

**“Cap” on GHG emissions for facilities included under program**

The cap may decline over time

**Each facility receives (or purchases) tradable emission allowances.**

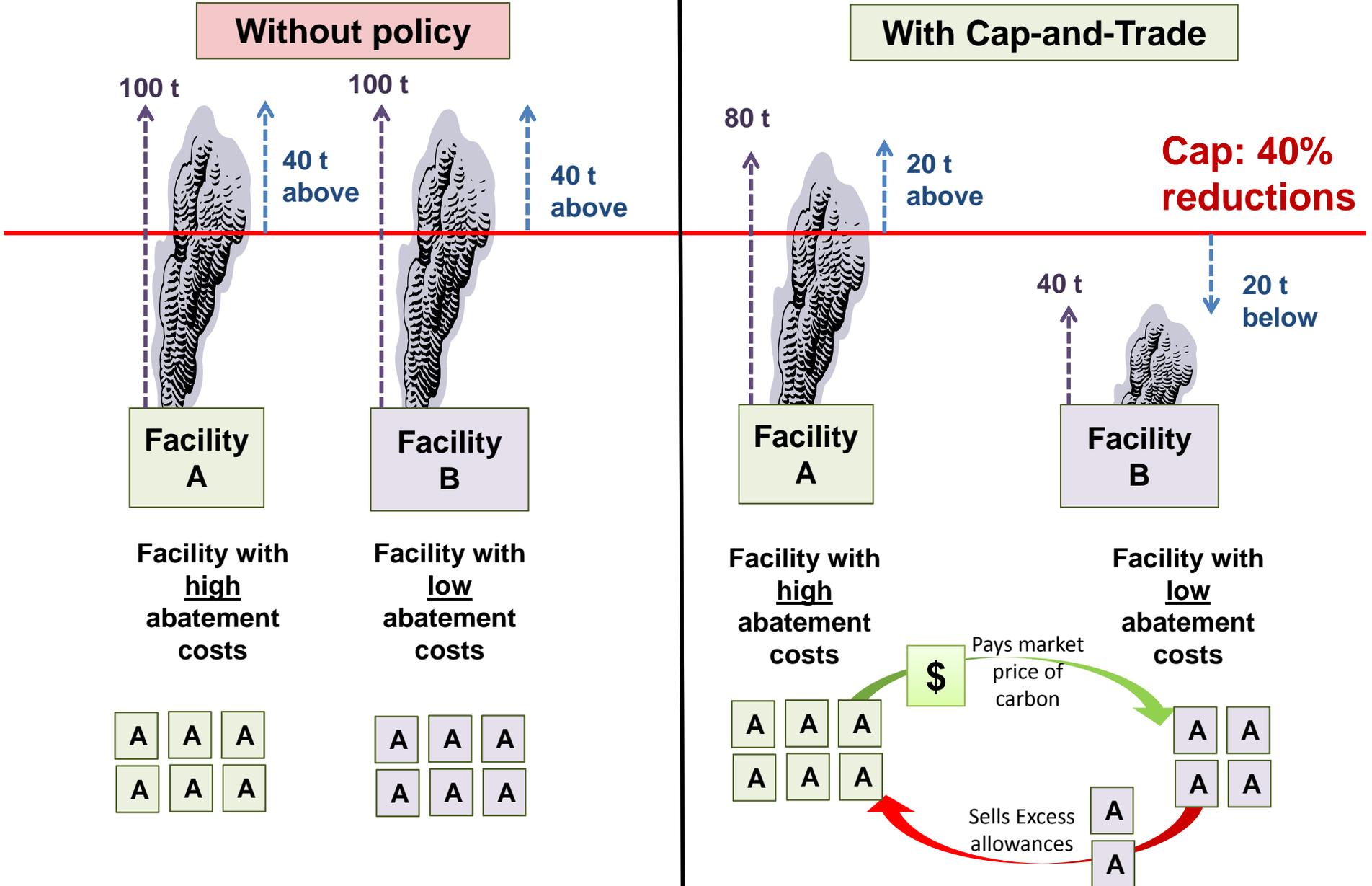
Each allowance represents the right to emit one tonne of CO<sub>2</sub>e

**Each facility must obtain a sufficient number of allowances to cover their emissions.**

To do so, they can either reduce emissions or buy allowances from another firm (that has reduced more than its required “cap”)



# How Cap-and-Trade works (general case)

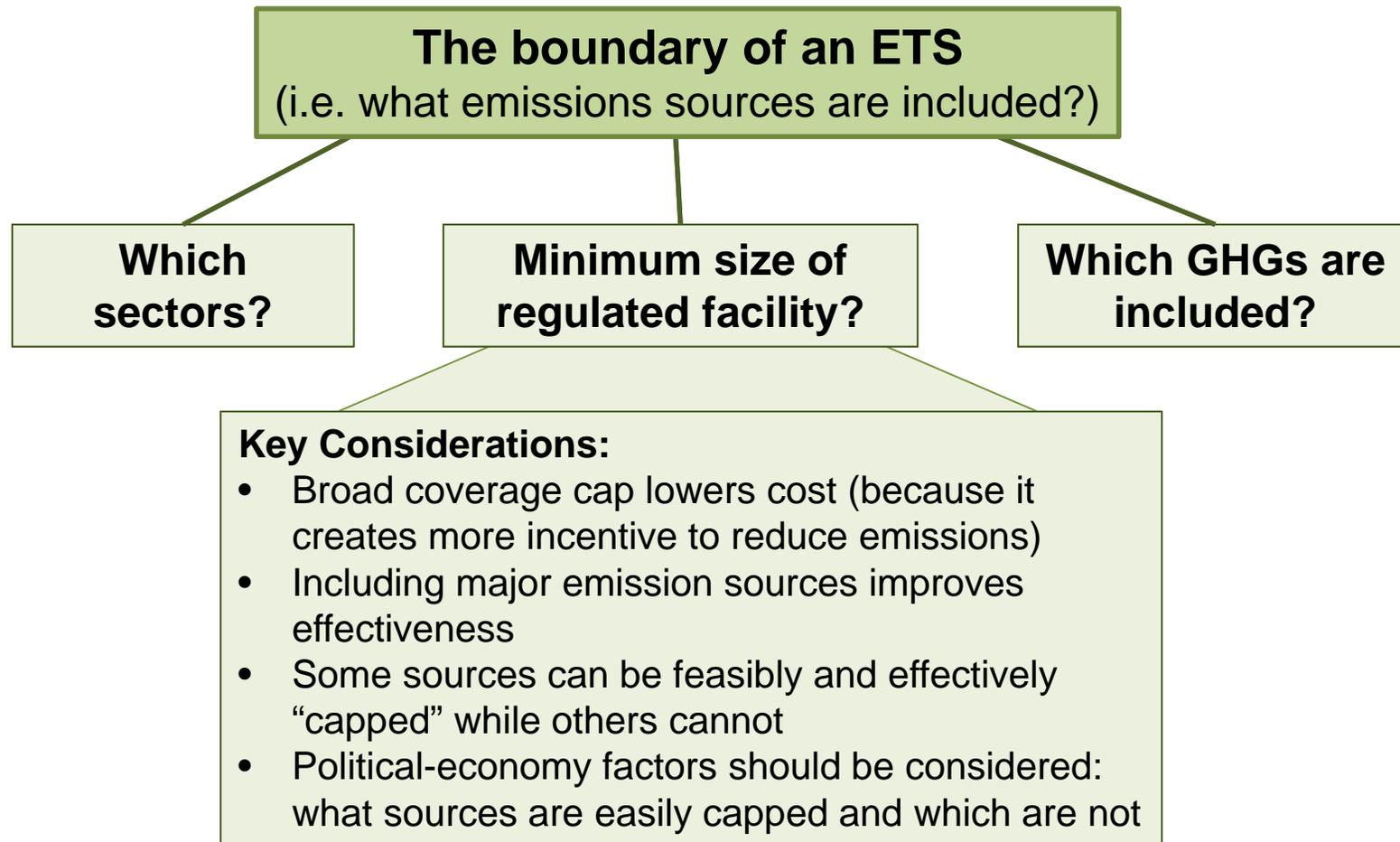


## Key Issues for ETS Design and Implementation

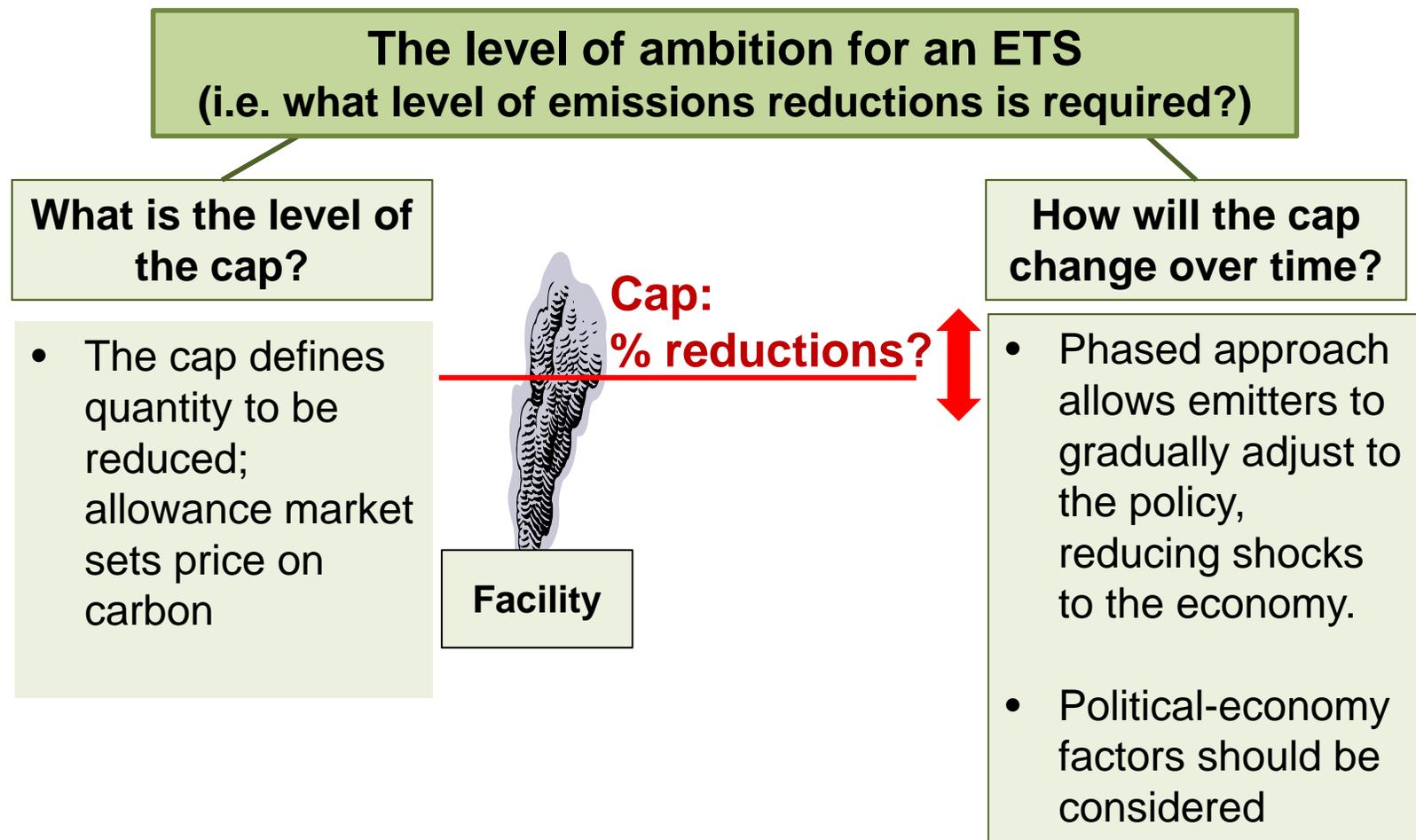
1. Coverage and Scope
2. Setting the Cap
3. Point of Obligation
4. Allocation of Allowances
5. Offsets
6. Linking
7. Inter-temporal Flexibility
8. Compliance, MRV and Registries
9. Institutional Arrangements
10. Registries



## Key Issue #1: Coverage and Scope

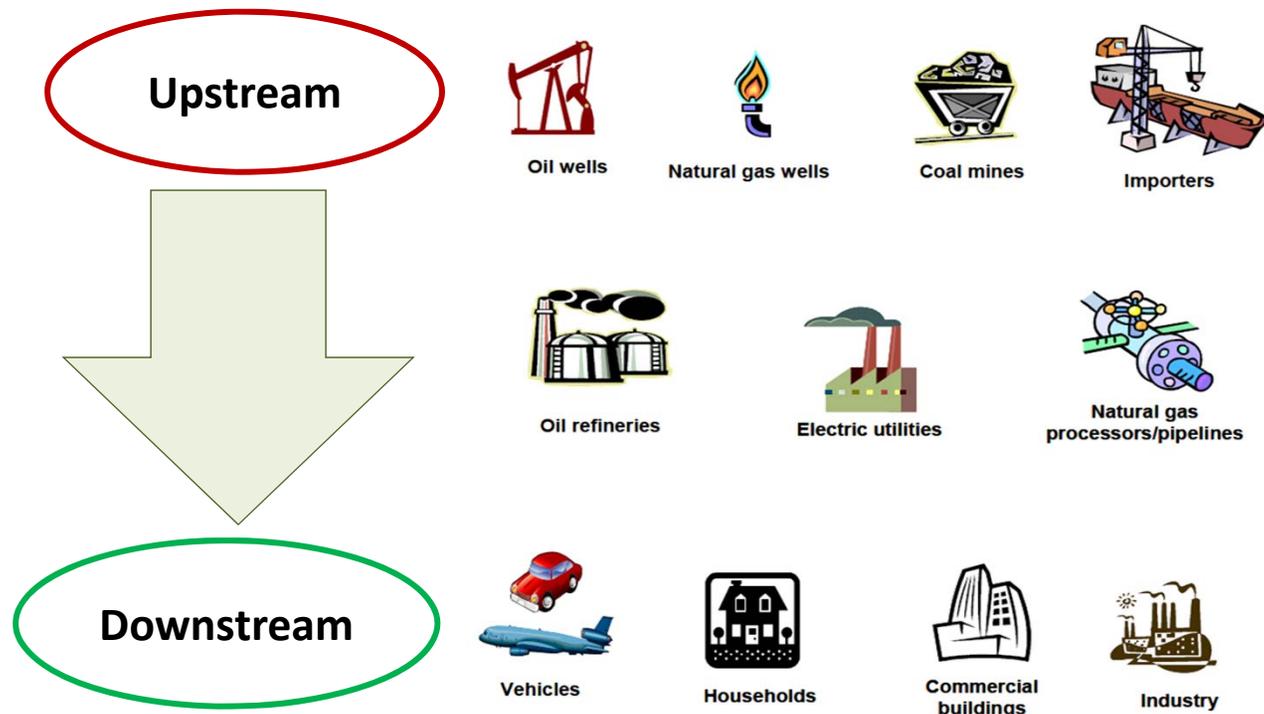


## Key Issue #2: Setting the Cap



## Design Issue #3: Point of Obligation

Defining which entities have legal requirements to surrender allowances under the emissions trading scheme.



### Key Considerations:

- A larger number of regulated entities increases market liquidity (and stability)
- A larger number of regulated entities increases administrative complexity
- Upstream point of obligation can broaden coverage

Adapted from CRS 2009



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## Key Issue # 4: Allowance Allocation

The method by which permits for emitting 1 tonne of CO<sub>2</sub>e (*allowances*) are distributed to emitters

### Freely distributed

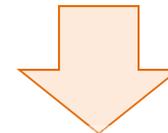
Emitters receive allowances for free

**Grandfathering:** Gratis allocation of allowances, based on historical emissions

**Benchmarking:** Distributed on the basis of an average or expected performance benchmark (e.g., output, emissions intensity)

### Auctioning

Emitters must purchase all allowances



**Revenue recycling:** tax reductions, investments in clean energy, research and development

### Hybrid

#### Key considerations:

- A combination of free and auctioned allowances can be considered
- Free and auctioned permits both have advantages, depending on how the system is designed  
([More information](#)>)



## Key Issue # 4: Allowance Allocation

The method by which permits for emitting 1 tonne of CO<sub>2</sub>e (*allowances*) are distributed to emitters

### Considerations when choosing free distribution or auctioning

#### Benefits of Freely distributed allowances

- Allows firms with limited cash reserves to obtain allowances
- Value of allowances adjusts when allowance prices change
- Minimizes risk of carbon leakage since some companies are forced to comply through the distributed allowance

#### Yet there are some potential disadvantages

- It is a costly procedure for the government
- It risks having some companies maintain emissions to receive future allowances
- Lobbying of powerful producer groups may put pressure on government on how to distribute

#### When it comes to Auctioning

- It can be beneficial because the revenue brought in from the auction can help reduce the cost of the policy
- It can be more administratively simple
- It puts upfront costs on polluters, since they have to pay up front in the auction
- Impedes companies from seeking a more generous future allocation

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## Key Issue # 4: Allowance Allocation

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Benchmarkin

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**Government auctions** a certain number of emission allowances. Utilities (and sometimes others who are interested in purchasing allowances) can participate.

The auctions can either be a **single round** of auctioning where there is a uniform price or it can be a **multiple round** where sellers and buyer bid and the allowances sold at the auctions will be sold to the highest bidder until no allowances remain

auctioned allowances can  
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- Free and auctioned permits both have advantages, depending on how the system is designed  
([More information](#)>)

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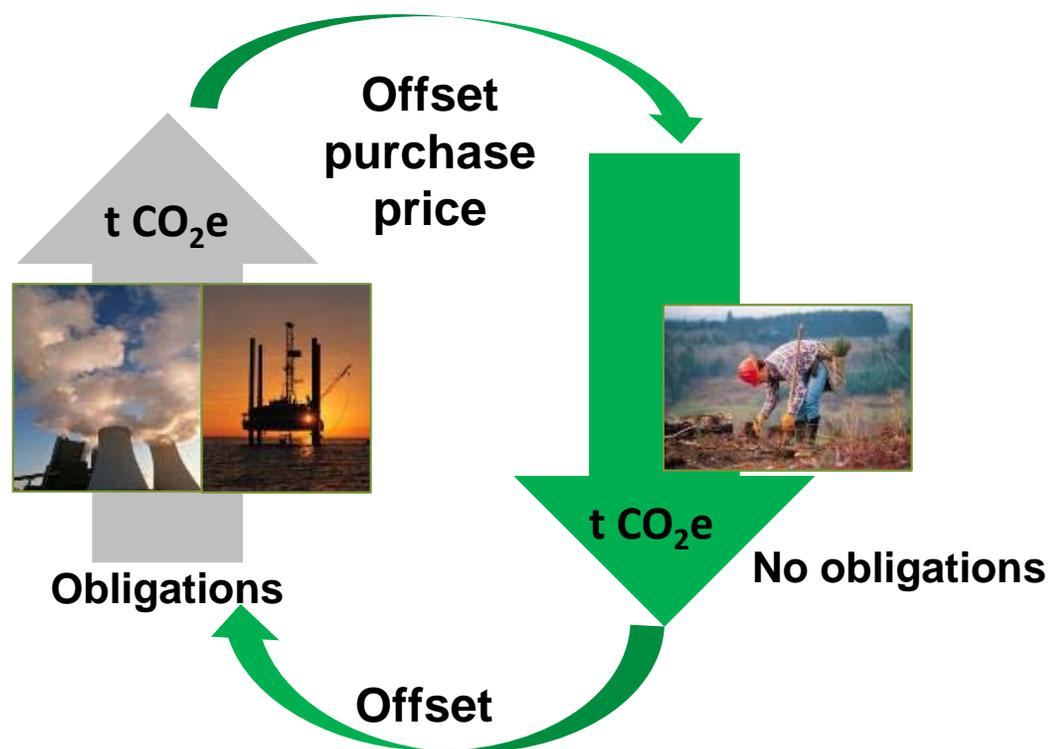


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## Key Issue #6: Domestic Offsets

Allowing emitters without compliance obligations to sell emissions reductions to emitters within the ETS



### Key Considerations:

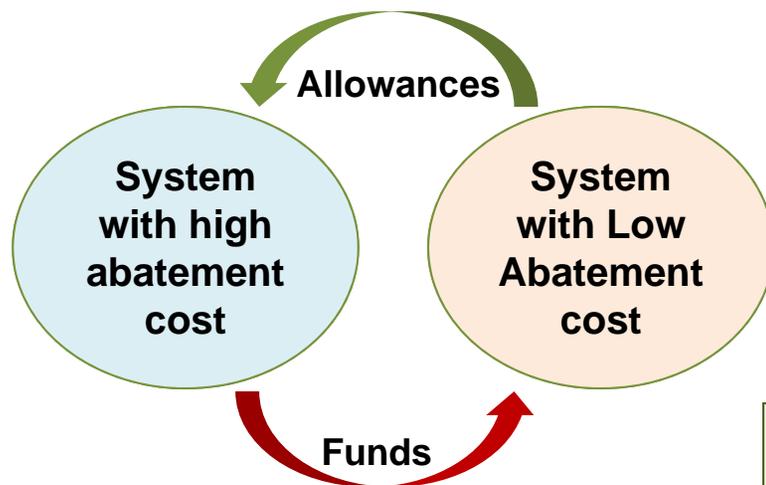
- Offsets can expand the available reduction options, decreasing costs
- They can include emissions from sectors that are hard to cap and monitor (agriculture, forestry, waste)



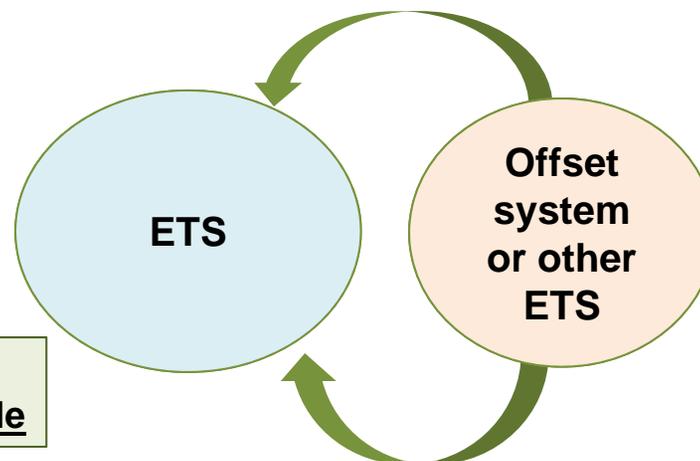
## Key Issue # 7: Linking

### Recognition of allocations from other ETSs for compliance (allowing trade between systems)

**Two-way linking:** two cap-and-trade systems choose to recognize each other's allowances



**One-way linking:** a cap-and-trade system recognizes *credits* from another trading system (either an offset regime or another cap-and-trade system)



[View Example](#)

#### Key Considerations

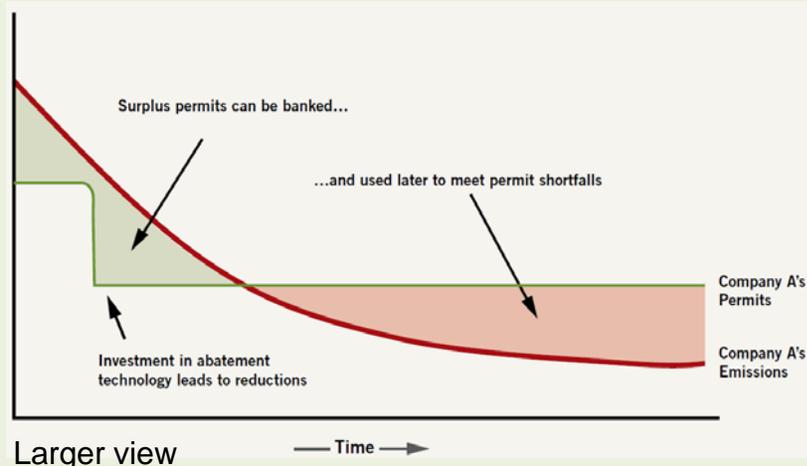
- Linking can lower aggregate costs of achieving emissions reductions
- Linking can increase market liquidity and price stability
- Linking may reduce national control over domestic climate change policies
- Offset systems without appropriate measurement and verification may have additionality issues



## Design Issue # 5: Inter-temporal Flexibility

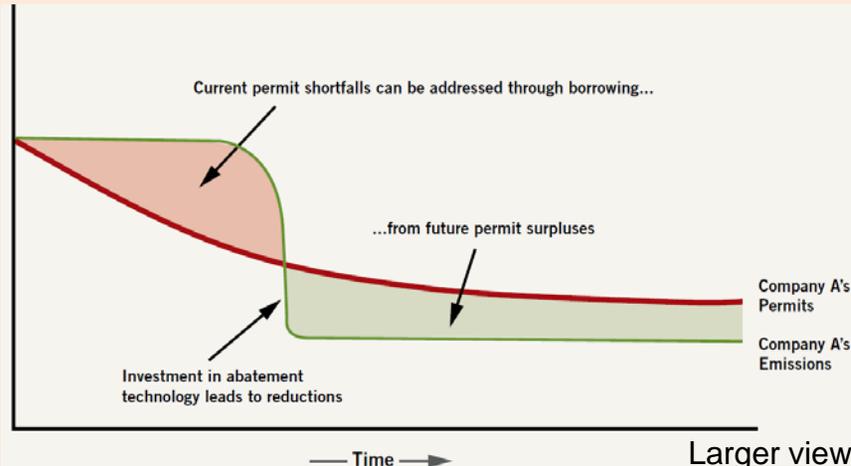
**Banking** allows emitters to reduce more emissions in current compliance period, but fewer in later periods.

### Banking of Emission permits



**Borrowing** allows emitters to reduce more emissions in later compliance periods and less emissions in the current period.

### Borrowing of emission permits



### Key Considerations:

- Inter-temporal flexibility can increase economic efficiency because it allows emitters to reduce emissions when it is most cost-effective to do so
- Borrowing can lead to political pressure to weaken caps in the future
- Banking can lead to fewer reductions if allowances are over-allocated

Learn more about banking and borrowing



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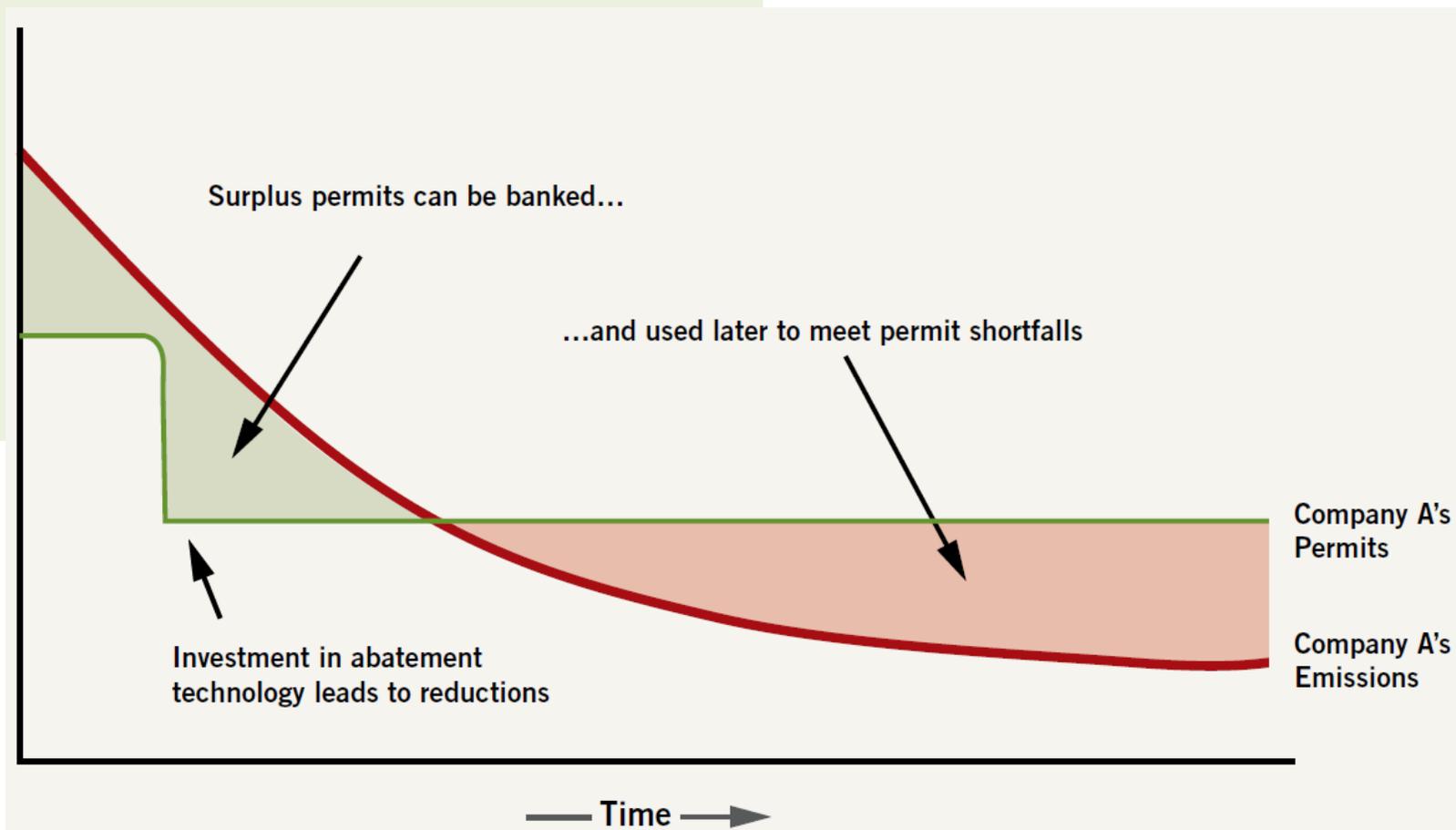
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## Design Issue # 5: Inter-temporal Flexibility

**Banking** allows emitters to reduce more emissions in current compliance period, but fewer in later periods.

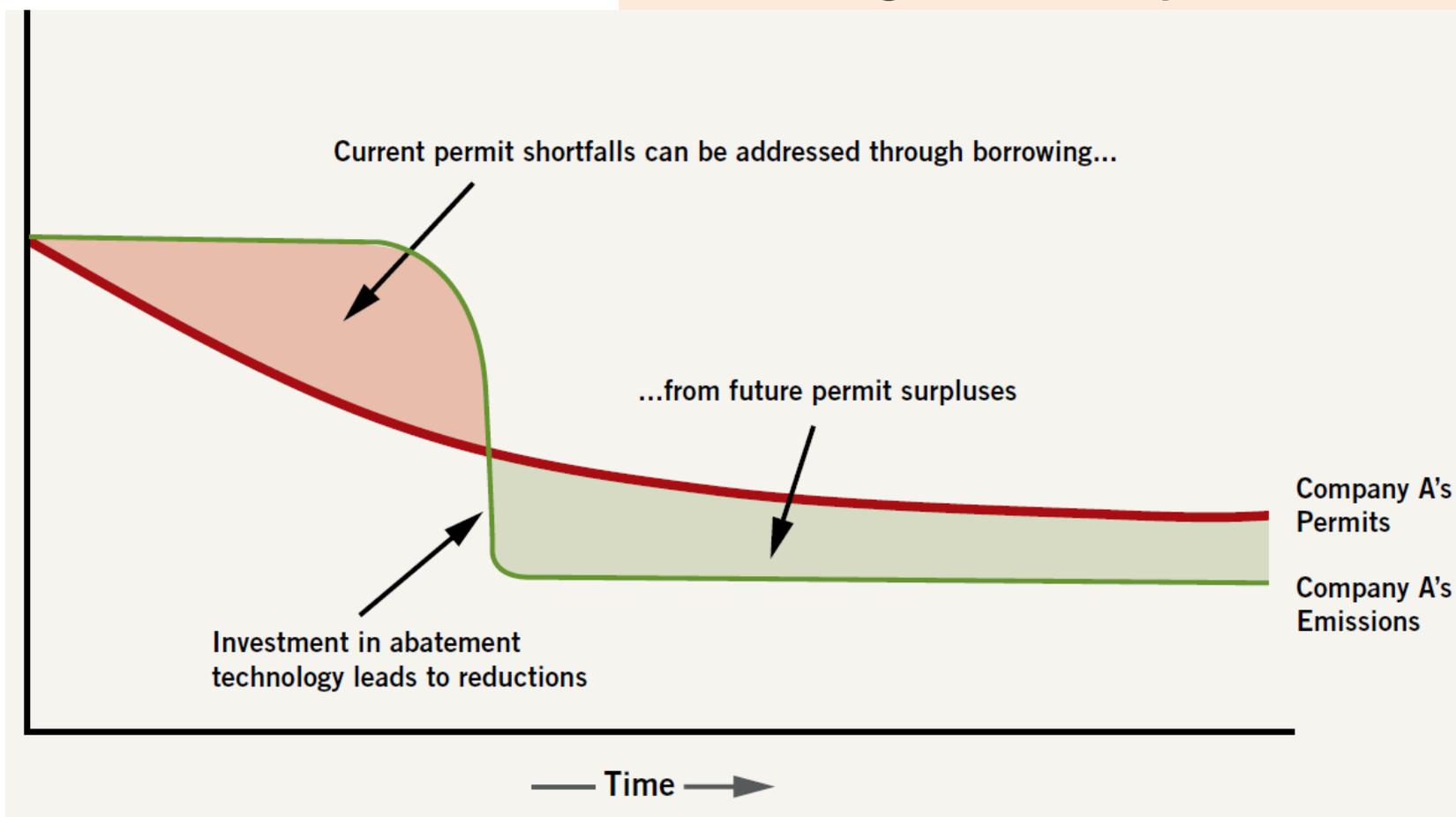
### Banking of Emission permits



## Design Issue # 5: Inter-temporal Flexibility

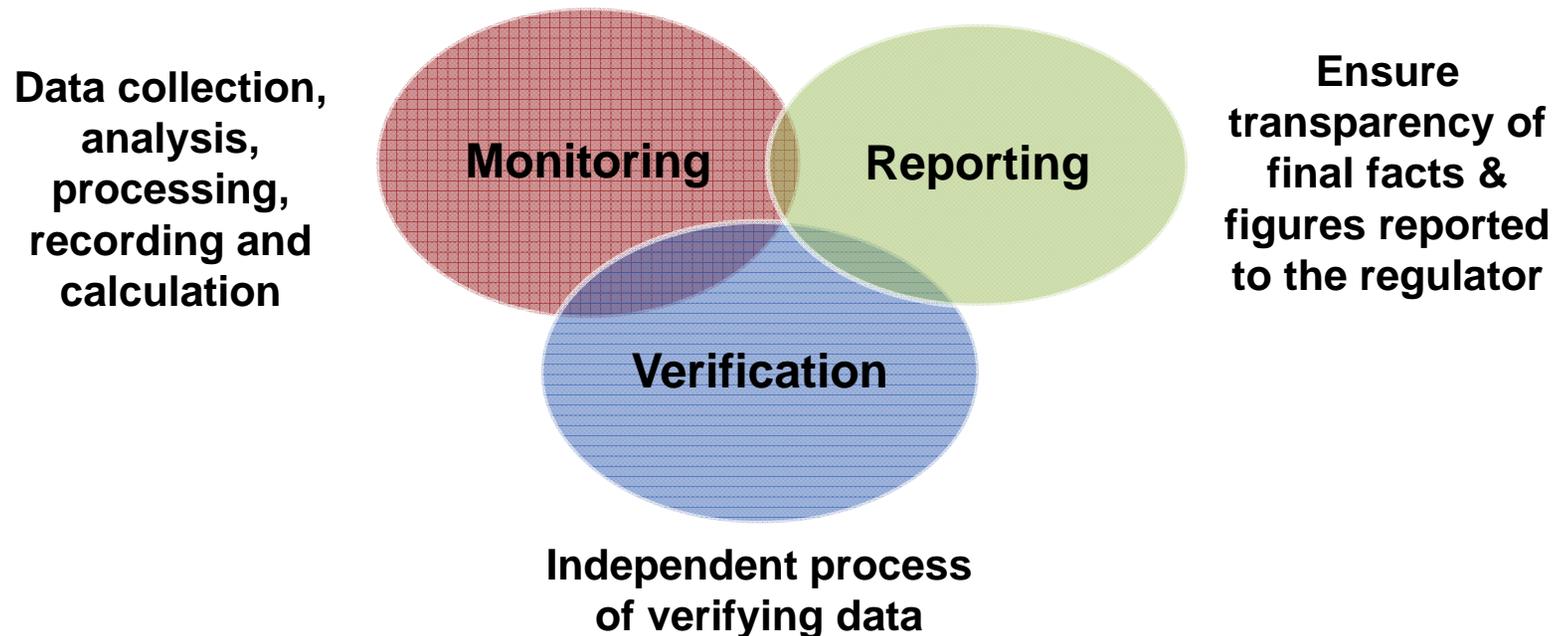
**Borrowing** allows emitters to reduce more emissions in later compliance periods and less emissions in the current period.

### Borrowing of emission permits



## Key Issue # 8: Compliance, Monitoring, Reporting and Verification (MRV)

### Protocols and processes to ensure integrity of emissions reductions



#### Key Considerations of MRV systems

- Critical for ensuring transparency, integrity, and credibility of the ETS
- Reliable historic data essential for determining caps at appropriate levels
- Stringent verification rules can enhance investors' trust in carbon markets
- Transparency and publicly available information on GHG emissions can make the market visibility of demand and supply and transaction prices. This makes it easier for entities to make judgments when it is cheaper for them to mitigate and when it is cheaper to buy units

[Learn more](#)



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## Key Issue #9: Institutional Arrangements

**The legal and technical infrastructures are required to manage the cap and trade over time**

**Schemes need to be set in some form of legal framework.  
3 key issues to consider**

### **Policy setting**

Coverage, allowance allocation, MRV methods, etc.

### **Operational**

MRV methods with points of obligation, unit registries, enforcing compliance regime

### **Market oversight**

Provisions to avoid abuse of market power and fraud within the carbon market

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## Key Issue #9: Institutional Arrangements

**The legal and technical infrastructures are required to manage the cap and trade over time**

There should be a separation of institutions between the ones that set the **policy** and the ones that implement the **operation** of the policy. For example, policymakers set the cap while authorities are designated to take care of the allocation of allowances. In the EU ETS, there is even a third party that develops rules and guidelines in the sense that the European Commission has a policy making role, while operations are carried out at a national level. This requires (or encourages) the individual jurisdictions to follow rules and guidelines.

A new emission trading scheme may use some existing institutions, but it will also require that new entities are set up to take care of implementation. For example, the set up of registries is essential since they are critical institutional functions and central to the operational integrity of the scheme.

oversight  
to avoid  
market power  
within the  
market

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## Key Issue #10: Registries

### Databases for collecting, verifying, and tracking emissions data from emitters

#### Records the following information:

- CO<sub>2</sub> allowances and units allocated to and held in operator, person and government accounts
- Movement of allowances and units between accounts (including allocations, transfers, surrender and cancellations)
- Annual verified emissions of installations
- Annual compliance status of installations

Regulators and nominated authorities can **manage** the regulated industries and **monitor** national **compliance and performance** against international emissions reductions obligations.

To learn more about EU ETS registries:

[http://ec.europa.eu/clima/policies/ets/registries/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/registries/index_en.htm)



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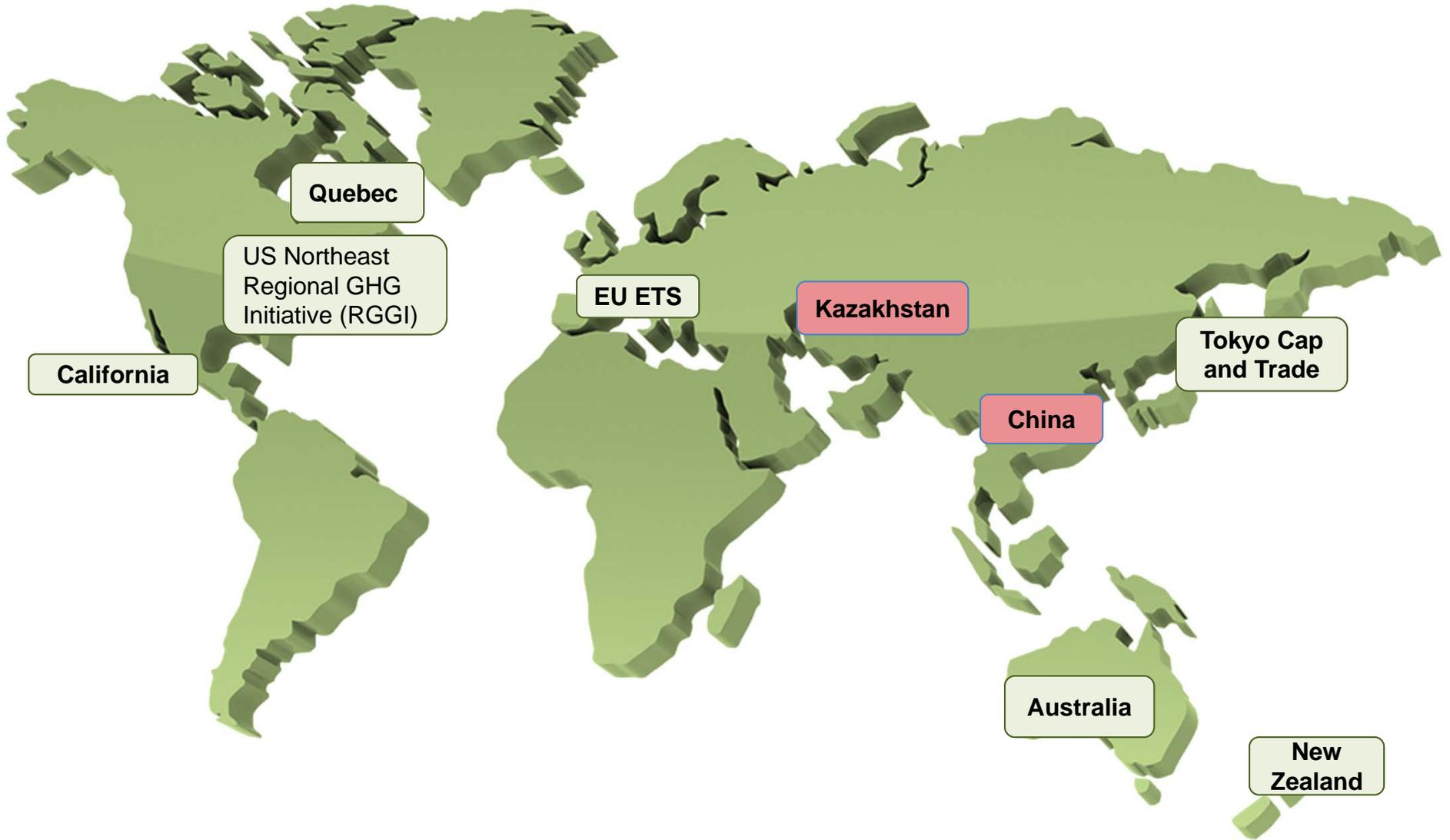
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## Key Issues for ETS Design and Implementation

- ✓ **Coverage and Scope**
- ✓ **Setting the Cap**
- ✓ **Point of obligation**
- ✓ **Allocation of Allowances**
- ✓ **Offsets**
- ✓ **Linking**
- ✓ **Inter-temporal flexibility**
- ✓ **Compliance, MRV and Registries**
- ✓ **Institutional Arrangements**
- ✓ **Registries**



# Overview of Existing ETS



 ETS in place       ETS under consideration

[Learn more from an Interactive map of ETS](#)

# European Union Emissions Trading Scheme (EU ETS)

- 27 EU Member States + Croatia, Iceland, Liechtenstein, & Norway
- **Mandatory** ETS with **absolute** emissions cap
- Currently in Phase III (Phase I 2005-7, Phase II 2008-12)
  - EU-wide cap ratcheted down 1.74% per year starting in 2013
  - Coverage expanded with each Phase

## Targets

2012

8% below 1990 GHG levels (EU 15)

2020

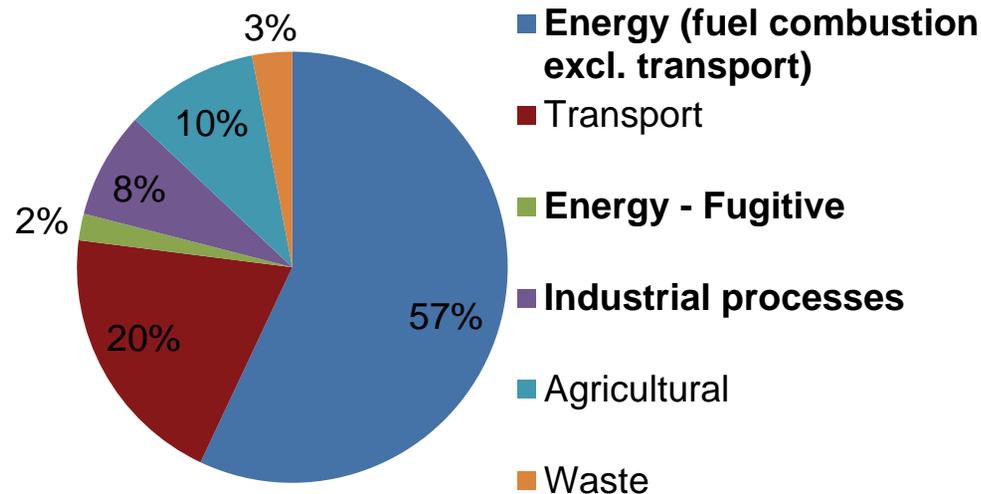
20% below 1990 GHG levels (EU 27)

2050

80% to 95% below 1990 GHG levels

- Not legally binding

## GHG Emissions by Sector – 4,808 MtCO<sub>2e</sub> (2010)



40% of total GHG emissions covered

- Entities in **covered sectors**
- Power plants >20 MW capacity
- Industry entities >10,000 tCO<sub>2e</sub>
  - <11,000 entities liable + international aviation

[EC's website on EU ETS](#)

Source: icap Carbon Action, [www.icapcarbonaction.com](http://www.icapcarbonaction.com)



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## References and Resources

**For more information, visit the following links:**

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