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Climate Change

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GHG EMISSIONS TRADING SYSTEMS
RATIONALE AND DESIGN ELEMENTS

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Emission trading systems: definition and rationale

Regulation where the government establishes a cap on GHG emissions from covered entities and allows them to exchange emission allowances.

Why emissions trading system?

- Economic efficiency: polluter pays principle
- Flexibility to affected entities: cost-effective allocation of emission reduction efforts
- Discovery of previously unknown, low cost emission reduction measures
- Compatible with market systems
- Leaves cash in industry (but potential revenues to the government through auctioning)

Key design elements of an ETS

- Coverage
- Scope
- Allocation of allowances
- Trading
- Institutional and administrative system
- Market stability and flexibility mechanisms

ETS coverage and scope: design criteria

- **Early key decisions**
  - coverage: sectors and gases to be regulated by an ETS
  - scope: entities to be regulated by a GHG ETS

- **Key criteria for assessment of coverage & scope options in the design phase of an GHG ETS**
  - Effectiveness: meeting the (environmental) objective with certainty
  - Efficiency: meeting the (environmental) objective at the least cost
  - Political acceptability
    - building on political opportunities
    - creating a smart policy mix
    - reflecting national/regional/market circumstances

ETS Coverage: Principles

- **Aligned with UNFCCC accounting**
  - Gases and sectors
- **Broad coverage**
  - Increases flexibility = reduces cost of abatement
  - Reduces intra-, and inter-sectoral distortions
  - Share costs of emissions reductions fairly
- **Practicable**
  - Low cost of reliable monitoring and reporting
  - Unbiased measurement: available data, parameters & methodologies!

ETS coverage: options

- **Sectors dominated by large point sources**
  - Power generation;
  - Industry (including process emissions;
  - other large combustion plants;
- **Sectors dominated by diffuse CO2 sources**
  - Transport;
  - Residential;
  - Tertiary sectors;
- **Sectors dominated by diffuse and non-CO2 sources**
  - Agriculture
  - Waste management
- **Land use, land use change and forestry (including sinks)**

ETS Coverage: Choice of sectors checklist

- **Heterogeneity of abatement options**
  - A wide range of competing mature technical options available?
  - Do long living capital stocks play a major role?
  - Are changes in consumption patterns or product substitutions relevant options?
- **Potential for price discovery**
  - Are there incentives for innovation?
- **Market design, market structure and power**
  - How many entities covered?
  - Are underlying markets competitive (including barriers to entry for new firms and demand side)
  - Are there barriers to cost pass-through?
  - What existing contractual or other legal/regulatory liabilities may interact?
  - Is competition agency strong enough

ETS coverage: Are quantity-based instruments suitable?

- Do emissions target need to be met with certainty?
  - Absolute (Implicit or explicit) targets - economy-wide or for certain sectors
  - Long-term objectives

- What other policies are present and available and how interactions are managed?
  - Direct regulations (e.g. emission standards) with the same coverage reduce flexibility and cost saving potential of ETS
  - Other climate related policies, such as renewable support or energy efficiency will affect ETS directly or indirectly:
  - Are complementary market policies and services available (e.g. access to finance, information, technologies)

ETS Scope: design criteria

- **Point of regulation: entities, which implement abatement measures**
- **Legal options for regulated entities**
  - Firms as legal entities
  - Installations within firms (EUETS)
- **Covering upstream suppliers of fuels or electricity possible (CA ETS, NZ ETS)**

Allocation of allowances

- **Principles**
  - Cost-effectiveness
  - Fairness
  - Environmental integrity
  - Simplicity
  - Predictability and transparency
  - Long term visibility of cap (ensures investment signal and price stability)
- **Free entrants reserve to facilitate competition**
- **Free or auctioned allowances (gradual transition to auction)**
  - Free allocation to industrial producers reduces risk of leakage
  - Free allocation to electric utilities (not to generators) benefits electricity consumers (ETS California)

Options for free allocation of allowances

		Does allocation vary in proportion to a firm's output?	
		Yes: Output-based allocation	**No: Fixed allocation based on a firm's historical output with periodic updating**
Is allocation linked to emissions of individual firms?	Yes, allocation directly Proportional to a firm's emission intensity	Would effectively eliminate carbon price: not adopted	**Grandfathering** Allocations directly linked to a firm's historical emissions. (EU ETS Phases I and II, Korea ETS (for all but three sectors), Kazakhstan's ETS (I&II) most sectors in ETSs of Beijing, Chongqing, Guangdong, Hubei, Shanghai and Tianjin)
	No, allocation Benchmarked to the emission intensity of the sector in question	**Output-Based Allocation:** Allocations are proportional to sector-wide product benchmarks and a firm's current output levels. (California ETS, New Zealand ETS, Korea ETS (three sectors), and the Shenzhen ETS)	**Fixed sector benchmarks:** Allocations are proportional to sector-wide product benchmarks and firm-specific, historical activity levels. Output adjustments take place between phases. (Phase III of the EU ETS)

Auctioning of allowances

- To sectors, which are not exposed to leakage (not trade exposed or not emission intensive)
- Auction platform
- Financial services provider
- How often, what method?
- Decision how to use revenues (general budget or earmarking)

Trading of allowances: what can be traded, who can trade and where

- **What? Legal definition of allowances** (Commodities or securities)
- **Where to trade:**
  - Purchase at auction
  - Via energy and/or stock exchanges
  - OTC via brokers
  - Direct bilateral trades
- **Market supervision and monitoring** (financial sector regulator, competition authority)
- **Facilitate innovation in contract and financial products to help participants manage risk** (spot and future trades, derivative products – forwards, futures, options, swaps)
- **Who can trade:** encourage but regulate brokers, financial intermediaries

Market integrity and transparency

- Registry of installations, allowances and emissions: reliable and strong registry operator
- Data and transaction transparency improve market efficiency (exchanges, market analysts, financial news agencies)
- Prevention of market abuse, such as insider trading, market manipulation, fraud, hackers protection and allowance thefts
- Accounting standards for emission allowances

Institutional and administrative system

- **Building on existing institutions and regulations makes it easier**
- **Pilot phase helpful to identify and fill institutional gaps**
- **Monitoring verification and reporting (MRV):**
  - Central emissions trading authority or clearly identified agencies for regulation, allocation, monitoring, registry, enforcement, sanctions, appeal)
  - Accredited independent third party verifiers
- **Sanctions for failure to surrender of allowances and for market abuse**
- **Electronic platform to communicate between all elements of a system**
- **Keep it simple, minimize scope for discretion, politicisation and facilitate predictability**
- **Policy reviews**

Market stability and flexibility mechanisms

- **Price ceilings to prevent excessive costs to participants**
- **Price floors (similar to tax): increase costs to participants but strengthens investment signal**
- **Market stability reserves**
  - Reduce price fluctuations caused by unpredictable events.
  - Competent authority withdraws allowances from the market to the reserve or from the reserve to the market
  - Two major types:
    - Interventions triggered by price (NZ, California, Quebec)
    - Interventions triggered by volume of surplus allowances (EU ETS since 2019) –> lower political risk
  - Work best if it is rules-based with minimum discretion left for authorities
- **Use of offsets for compliance increases flexibility and reduces costs**
- **Banking and/or borrowing of allowances by participants**
- **Linking with other systems**

Systems evolve and learn from mistakes

- Start with a pilot
- Gradual increase coverage and scope
- Gradually move from free allowances to auctioning
- Tighten cap over time and manage long term expectations
- Reduce discretion
- Ensure predictable policy and market framework: market trust is easy to loose and difficult to build