Emission Trading Scheme For Particulate Matter in India

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The UNFCCC

- The United Nations Framework Convention on Climate Change (UNFCCC)
  - International treaty introduced in 1992 and entered into force in 1994
  - First international attempt to address climate change
  - Aims to reduce greenhouse gas emissions to combat global warming
- It has been ratified by 192 countries

The Kyoto Protocol

- At the UNFCCC's 3rd Conference in 1997, the Kyoto Protocol (KP) was introduced and has been ratified by 176 countries and one regional economic integration organization to date
- Entered into force in February 2005
- Conditions for entry into force: ratified by 55 parties agreeing to mandatory emissions reduction targets and the ratifying parties represent 55% of 1990 GHG emissions
- Expired in 2012

The Kyoto Protocol

- Signatory countries fall into 2 categories with different responsibilities:
  - Annex I countries – developed countries that agreed to reduce emissions (EU)
  - Non-Annex I countries – developing countries responsible for only monitoring and reporting emissions (China, Brazil, India)

The Kyoto Protocol

- Annex I countries agreed to reduce aggregate anthropogenic CO2 equivalent emissions of the listed GHGs to target levels with an overall reduction between 2008-2012 of 5% below 1990 levels
  - Reduction commitments vary by nation
  - Each nation is assigned a quota of emissions allowances called Assigned Amount Units (AAUs)

The Kyoto Protocol

- Annex I countries can either reduce emissions or use any of three flexible mechanisms to meet AAUs
  - Emissions trading system
  - Joint Implementation (JI)
    - Annex I countries receive emission credits for investing in a greenhouse gas reducing effort in another Annex I country
  - Clean Development Mechanism (CDM)
  - Annex I countries may receive Certified Emission Credits (CERs) for investing in a greenhouse gas reducing effort in a non-Annex I country

Why Emissions Trading?

- ✓ An emissions trading scheme is a regulatory tool used to reduce pollution emissions at a low overall cost.
- ✓ In such a scheme, the regulator sets the overall amount of emissions but does not decide what any particular source will emit.
- ✓ Industrial plants and other polluters, face a price for their emissions and choose how much to emit, within reasonable limits, taking this price into account rather than being allowed a fixed emissions limit,
- ✓ The price of emissions makes pollution costly and gives polluters an incentive to cut back.

Why Emissions Trading?

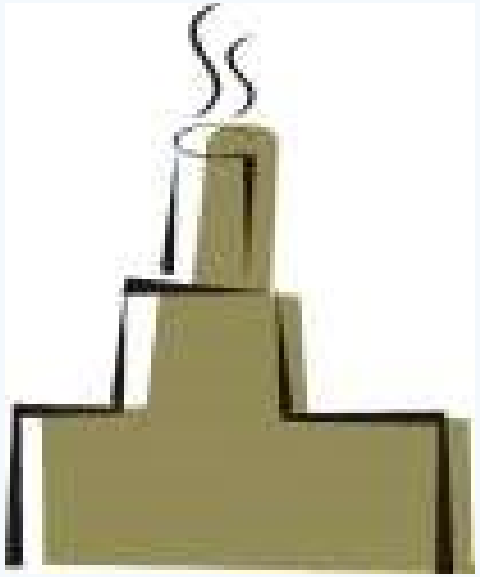
- ✓ Emissions trading schemes have great potential to lower pollution while minimizing costs for industries. The benefits of such schemes come from two sources.
- ✓ On the industry side, units are able to choose for themselves the cheapest way to reduce pollution. In comparision, traditional command and control regulations do not allow for differences across industries. Mandating the same standard everywhere will generally miss the best opportunities for abatement.
- ✓ On the regulatory side, an emissions trading scheme, once established, will provide a self regulating system that that makes pollution control more efficient. In the longer run, the reduced costs of compliance can also make it easier to introduce new regulations that increase environmental quality.

What Is Emissions Trading?

What options are most cost-effective?

Company A can reduce 10 tons SPM_E at Rs.200/ton = Rs. 2000

Company B can reduce 10 tons SPM_E at Rs.600/ton = Rs.6000



Company A – Seller

SELL

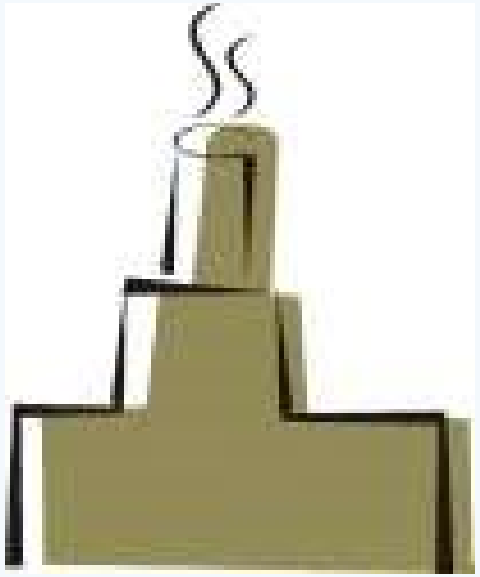
BUY

10 tons SPM_E

at Rs.400/ton = Rs.4000

Rs.2000 Profit

Rs.2000 Savings



Company B – Buyer

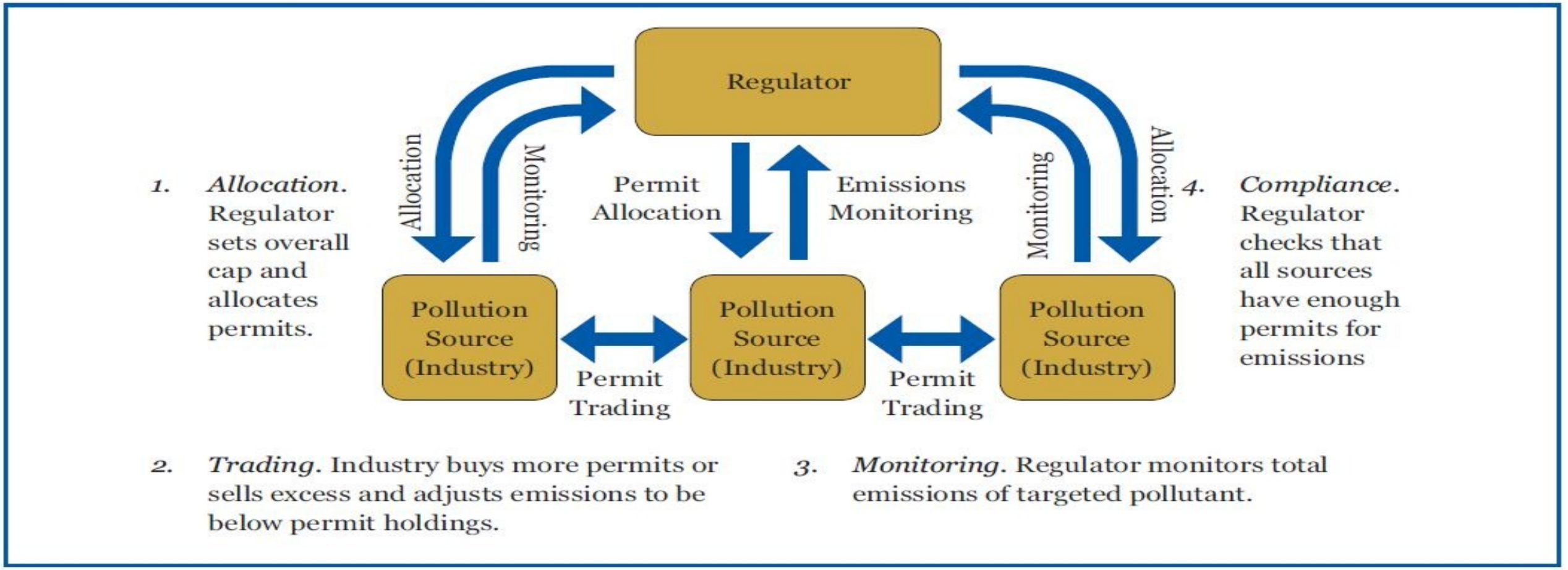
Important points for ETS

Four areas important for successful implementation of an ETS are :

The Mechanics of an ETS

Figure : Mechanics of an Emissions Trading Scheme

Regulator ensures compliance but does not fix emissions for each source



1. *Allocation*. Regulator sets overall cap and allocates permits.

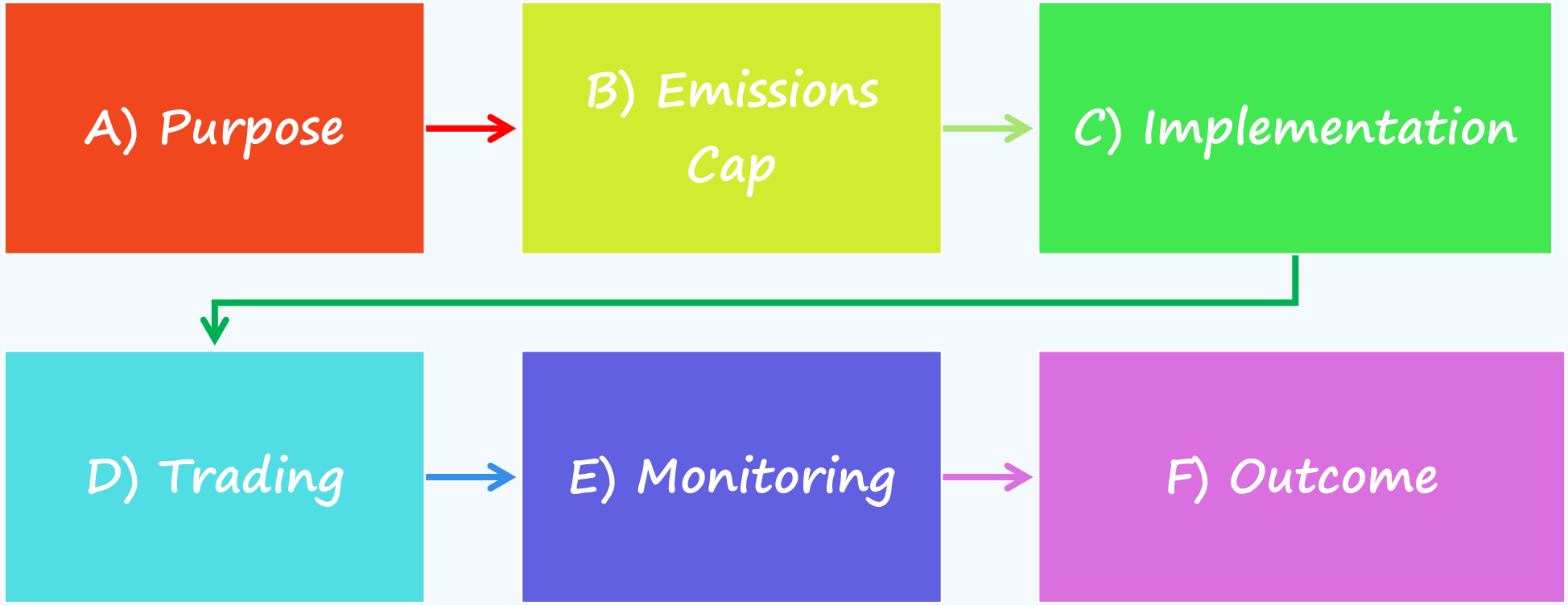
2. *Trading*. Industry buys more permits or sells excess and adjusts emissions to be below permit holdings.

3. *Monitoring*. Regulator monitors total emissions of targeted pollutant.

4. *Compliance*. Regulator checks that all sources have enough permits for emissions

Key Components of an ETS

The key components of an ETS can be enlisted as :



Key Components of an ETS

A. Purpose

- The reduction of emissions for the betterment of human health and the reduction of compliance costs.
- The pollutants to be regulated will be determined by a consideration of the goals and current problems, as well as market design considerations.
- Markets with many large sources and better monitoring will generally function more smoothly.

For the Pilot project SPM is the pollutant selected.

Key Components of an ETS

B. Emissions Cap

- It is a key decision in establishing a cap-and-trade system.
- The cap must be neither so high that the system does not achieve reductions nor so low as to be prohibitively costly to firms.
- There are two options:
  - Using baseline emissions to set the cap

OR

  - Using a targeted or desired level of level of ambient pollution.

Both ways require data on baseline emissions from the included units.

Key Components of an ETS

Baseline emissions :

Set emissions cap at the level of historical baseline emissions or at some arbitrary reduction (e.g. 15%) below this level.

Ambient targets :

Set emissions cap at the level projected to achieve a desired reduction in ambient pollutant concentrations.

Key Components of an ETS

C. Implementation

Free Allocation of Permits : Supply permits for free to units based on some fixed formula, usually in proportion to baseline emissions.

Auctioning permits : SPCB or other authority conducts an auction of the total volume of permits decided under the cap.

Key Components of an ETS

D. Trading

The main considerations to design a trading system will be what the nature of the permit itself will be and how the permit holdings of participants will be tracked.

Permit quantity and duration : Decide the unit of pollution that permits represent and the period of their validity.

Key Components of an ETS

E. Monitoring

Monitoring is the foundation for any trading system.

Establish a monitoring protocol that accurately and continuously monitors total pollutant emissions and provides clear procedures in case of data gaps.

Key Components of an ETS

E. Monitoring

- With current technology continuous monitoring is accurate for a range of pollutants, including SO2, NOX and Particulate Matter.
- Continuous monitoring of all affected units, in the State Pollution Control Board's Continuous Air Monitoring Centre, must be in place to support trading.
- This monitoring should cover not only pollutant concentrations but also the volume of gas flow, so that trading can be based on aggregate pollutant emissions rather than concentrations.

Key Components of an ETS

E. Monitoring

- Monitoring is not only a technology but also a system for filling gaps in that technology and recording emissions levels.
- The monitoring protocol should specify how frequently continuous emissions monitoring equipment will be inspected and what the consequences are in case of tampering or incomplete data.

Key Components of an ETS

F. Outcome

Evaluation :

Track the progress of the emissions trading system through emissions, permit market functioning, and the reduction in costs to firms themselves.

Key Components of an ETS

F. Outcome

- An important additional outcome will be the cost of compliance for participating firms.
- By conducting industry surveys during a monitoring-only stage and after the introduction of the permit market, which may be phased in over time, one can measure the cost of compliance and the total benefits to emissions trading more completely than has been done for any of the above schemes.
- These measurements will help to find Industrial sectors where emissions trading will have the greatest bang for the regulatory buck in the future.

Three Phase Design of Pilot ETS

1. Design Phase		
Approve seed funding and build team of experts	Research & design: Draft Notification, CEMS standards, workshops	Prepare Detailed Project Report

2. Baseline and CEMS Evaluation Phase		
Baseline Survey of all industries and associated research outputs	Mandate CEMS installation in industry and install CARE center in SPCBs and CPCB	Does continuous monitoring improve outcomes?

3. Emission Trading Implementation Phase		
Introduce PM trading under MoEF notification	Allocate permits (auction) and create transparent market	Evaluate environmental benefits and abatement cost savings

1. Design Phase

Activities Undertaken :

A. Approve seed funding and build team of experts

- Project to be funded by World Bank
- Team of experts from MoEF, CPCB, SPCB, NGO identified and other experts to be identified

B. Research & design: Draft Notification, CEMS standards, workshops

- Draft notification already under circulation
- CEMS standards preparation in draft stage
- Workshops to be organised

1. Design Phase

Activities Undertaken :

C. Prepare Detailed Project Report

- Draft DPR prepared and circulated

MOU signed between the participants of the Pilot project

2. Baseline & CEMS Evaluation Phase

Activities Undertaken :

A. Baseline Survey of all industries and associated research outputs

- Pilot Baseline Survey completed
- Baseline Survey of all participated industries to be started soon.

2. Baseline & CEMS Evaluation Phase

Activities Undertaken :

B. Mandate CEMS installation in industry and install CARE center in SPCBs and CPCB

- CEMS matrix prepared and circulated
- Workshop for sensitisation of participant industries to be organised
- CARE centre infrastructure to be decided and provided by CPCB and budget granted by MoEF

C. Does continuous monitoring improve outcomes?

3. ETS Implementation Phase

Activities To Be Undertaken :

A. Introduce PM trading under MoEF notification

- Notification regarding trading
- Create Trading Infrastructure

B. Allocate permits (auction) and create transparent market

- As per baseline data allocate emission permits
- Regulate market and permit prices

C. Evaluate environmental benefits & abatement cost savings

Benefits of ETS

- Real Time Data of Industrial Emissions available
- Better control over emissions

- Can link real time data of water pollution parameters to the system esp. of common infrastructure facility
- Can significantly reduce the cost of improving air quality

Benefits of ETS

- Lowers the cost to participants and gives business flexibility choose the form of compliance
- Provides with flexibility to determine the most economic means to reduce its emissions

- ETS offer significant advantages over other regulatory approaches, both in certainty of environmental outcome and the potential to minimise overall compliance cost.

Challenges for ETS in India

Legal – Amendment towards load based standards required from current concentration based norms

Permit Allocation – Grandfathering, Auctioning and Benchmarking

Baseline Emission Inventory

Challenges for ETS in India

CEMS Technology – select a device (or combination of devices) optimally suitable for the stack characteristics to be dealt with

Data Acquisition, Transmission and Validation

Reduction Goals – Amount or Percentage of Reduction

Emissions Trading Scheme (ETS)

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Class 2	76	88
Class 3	84	90

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