Innovative Policy Interventions for Pollution Prevention And Climate Change Mitigation


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GLOBAL WARMING
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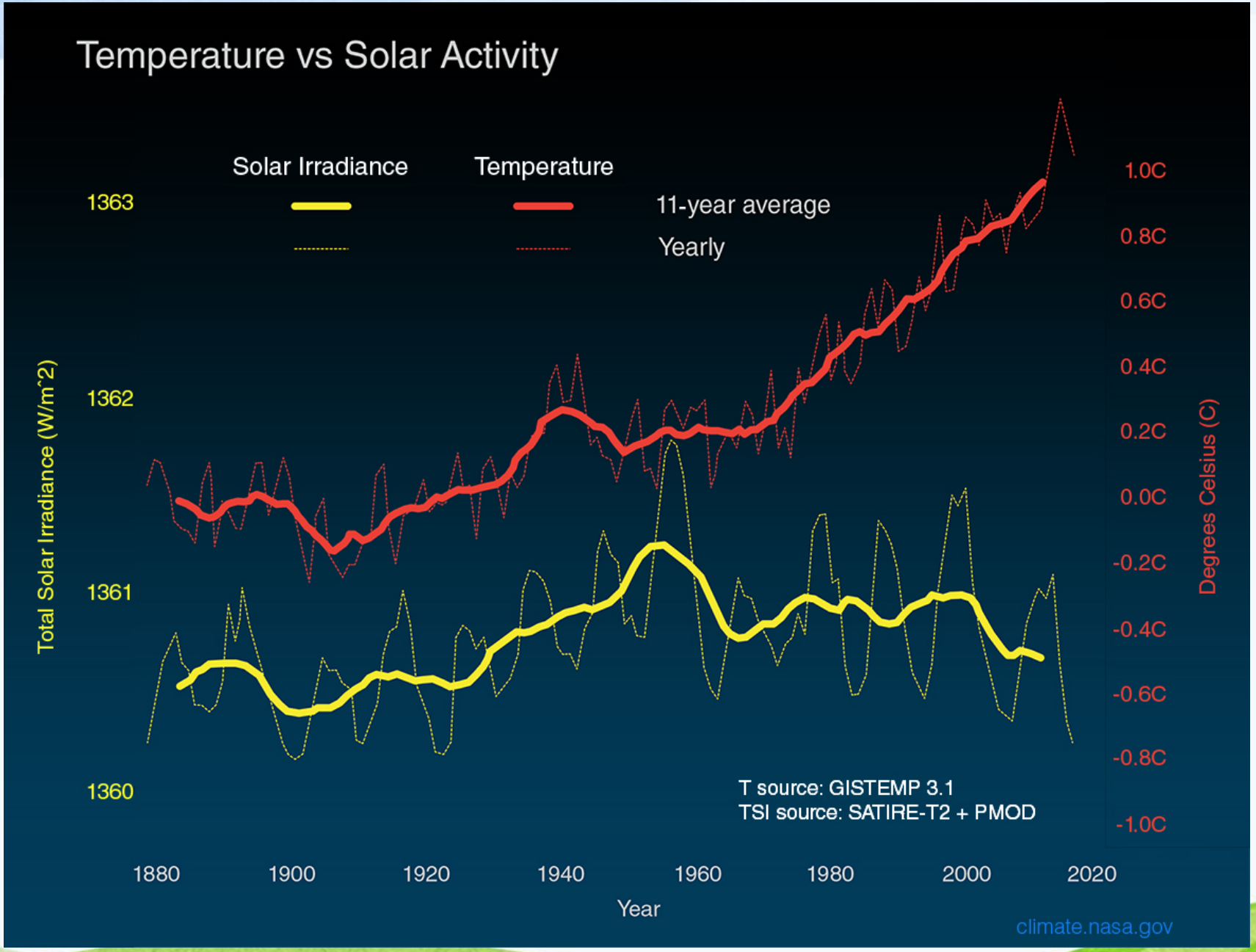
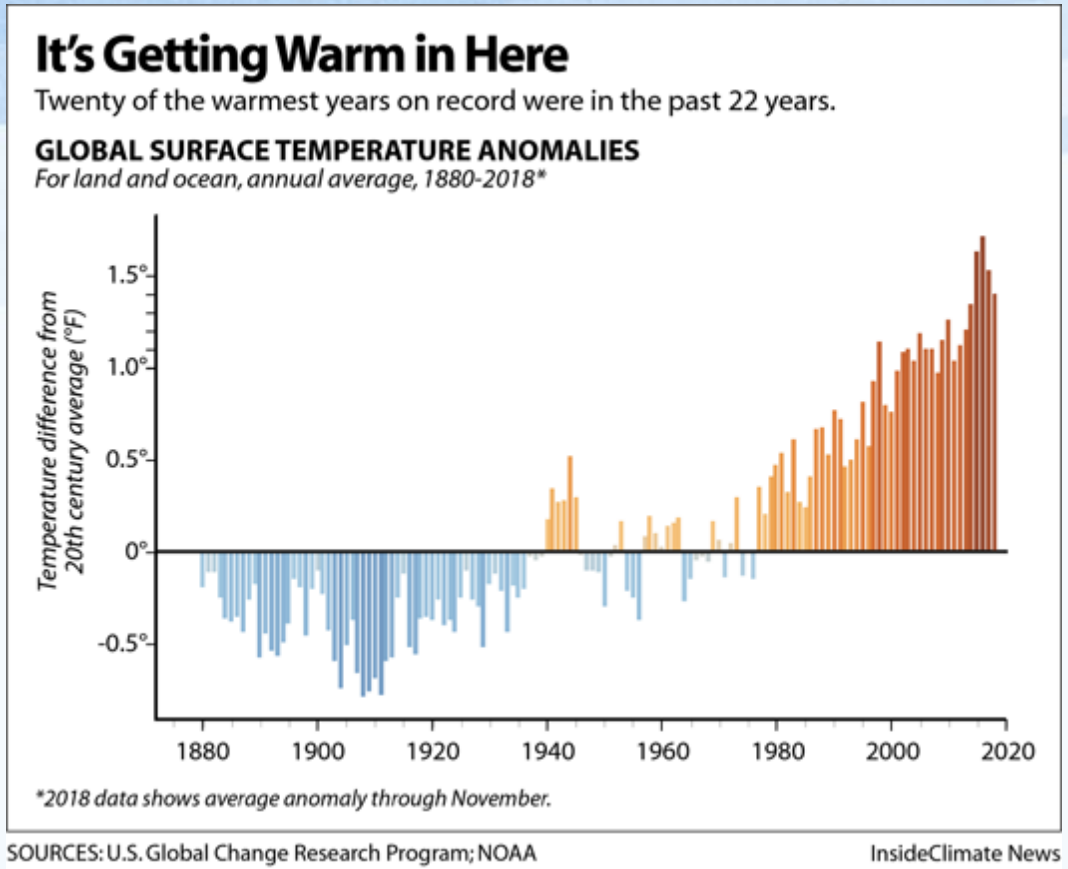
CHARTER

Agenda

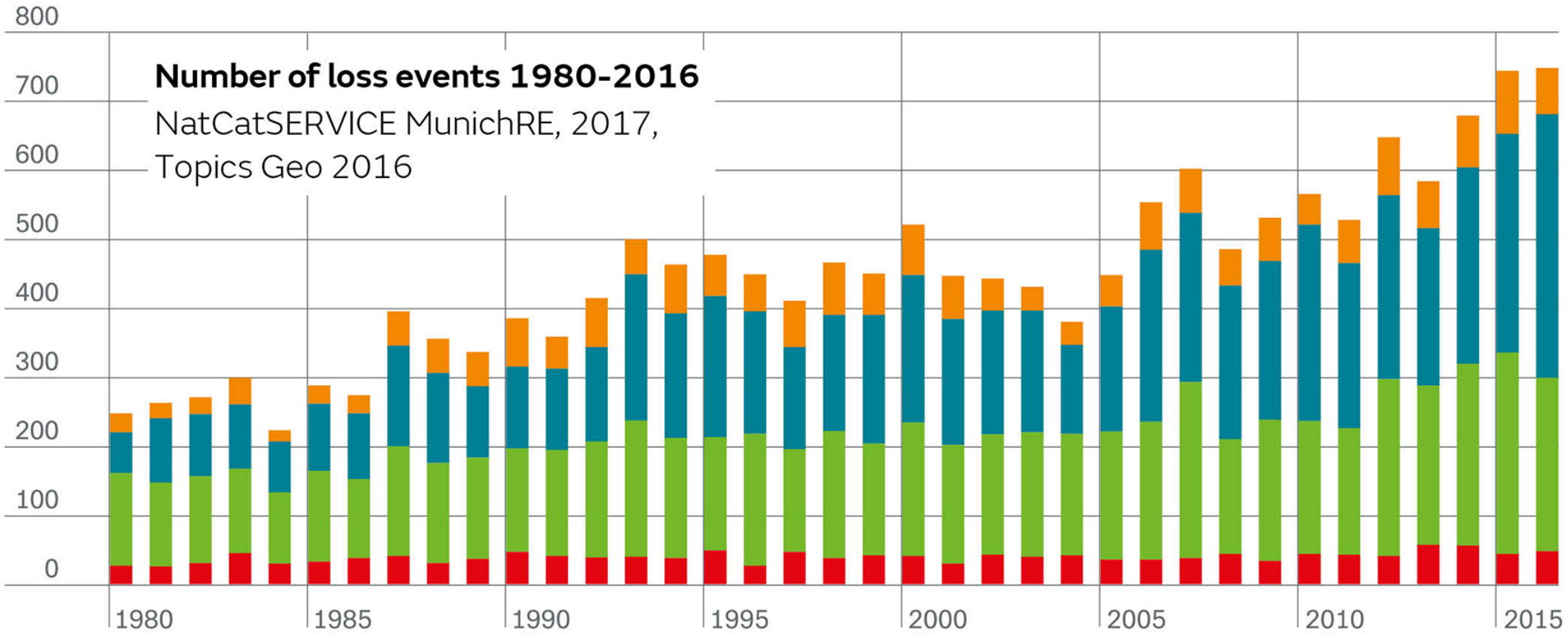
1. The Need
2. Possible Interventions
3. About Emissions Trading Scheme (ETS)
4. About Best Available Techniques (BAT)


Temperature vs Solar Activity
Solar Irradiance
Temperature
11-year average
Yearly
1363
1362
1361
1360
Total Solar Irradiance (W/m^2)
1.0C
0.8C
0.6C
0.4C
0.2C
0.0C
-0.2C
-0.4C
-0.6C
-0.8C
-1.0C
Degrees Celsius (C)
T source: GISTEMP 3.1
TSI source: SATIRE-T2 + PMOD
1880
1900
1920
1940
1960
1980
2000
2020
Year
climate.nasa.gov


It's Getting Warm in Here
Twenty of the warmest years on record were in the past 22 years.
GLOBAL SURFACE TEMPERATURE ANOMALIES
For land and ocean, annual average, 1880-2018*
Temperature difference from 20th century average (°F)
1.5°
1.0°
0.5°
0°
-0.5°
1880
1900
1920
1940
1960
1980
2000
2020
*2018 data shows average anomaly through November.
SOURCES: U.S. Global Change Research Program; NOAA
InsideClimate News


Deviation from average (days)
15
10
5
0
-5
-10
-15
Long-term average
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Year

Are extremes becoming more frequent?



Geophysical events
Earthquake, tsunami, volcanic activity

Meteorological events
Tropical storm, extratropical storm, convective storm, local storm

Hydrological events
Flood, mass movement

Climatological events
Extreme temperature, drought, wildfire

The Need

- Climate change is a fact of life.
- Need to act urgently if we are to avoid an irreversible build-up of greenhouse gases (GHGs) and global warming at a potentially huge cost to the economy and society worldwide.
- If we act now, we have reducing "breathing space" in terms of time during which action is possible at a relatively modest cost.
- But every year of delay reduces this breathing space, while requiring ever more stringent measures to make a difference.

The Need

- Current financial turmoil is not a reason to delay.
- Indeed, its macroeconomic consequences will be resolved in a relatively short time, after which growth will resume
- But the consequences of inaction on global warming will continue to grow more and more costly over time.

Possible Interventions

- POLICY INTERVENTION
  - ✓ BEST AVAILABLE TECHNIQUES (BAT)
  - ✓ EMISSIONS TRADING SCHEME (ETS)
- TECHNOLOGY INTERVENTION
  - ✓ CONTINUOUS EMISSIONS MONITORING SYSTEM
  - ✓ AUGMENTED TREATMENT SYSTEMS

1.
EMISSIONS TRADING SCHEME (ETS)

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 (ETS)
  - 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

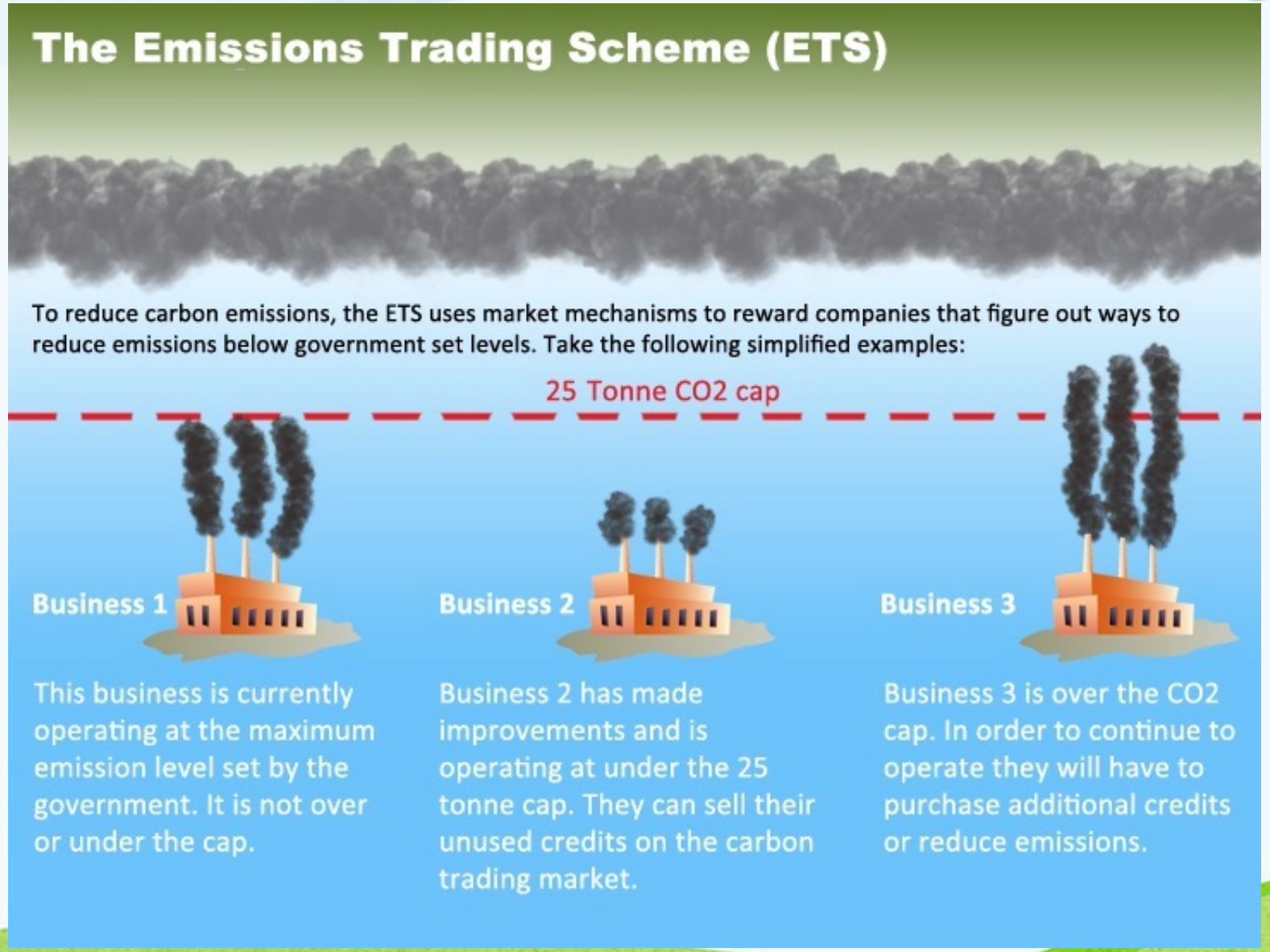
Why Emissions Trading?

- ✓ 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?

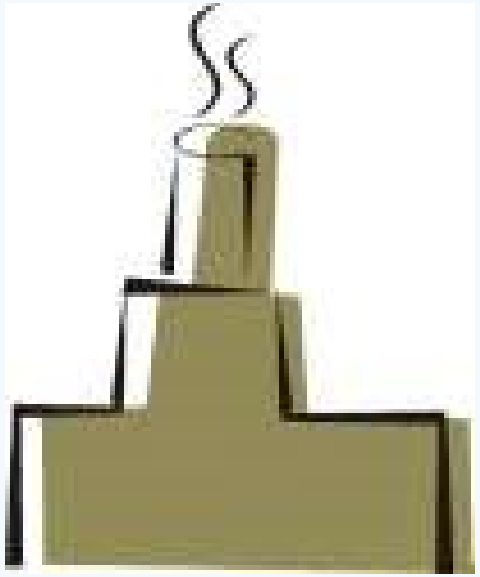


What Is Emissions Trading?

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

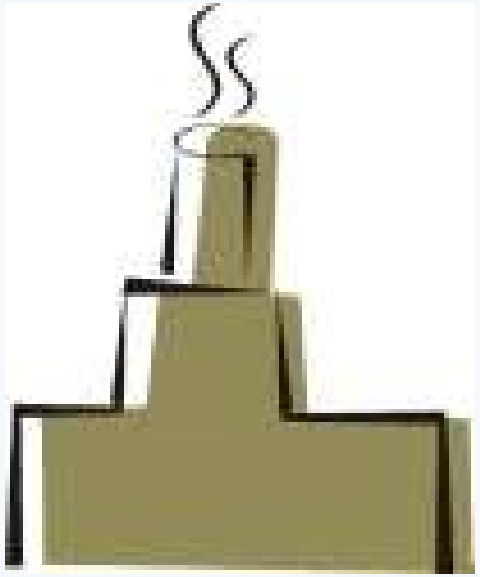


Company A – Seller

SELL → 10 tons SPM_E at Rs.400/ton = Rs.4000 ← BUY

Rs.2000 Profit

Rs.2000 Savings



Company B – Buyer

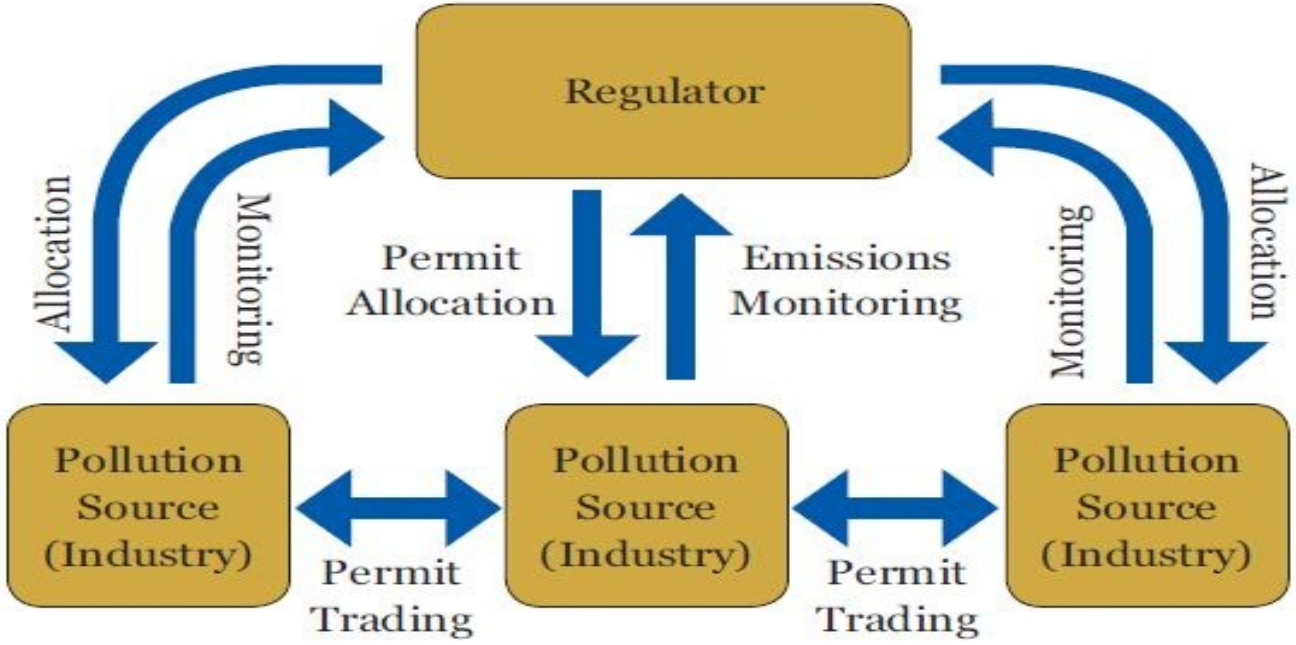
Important areas for ETS

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.

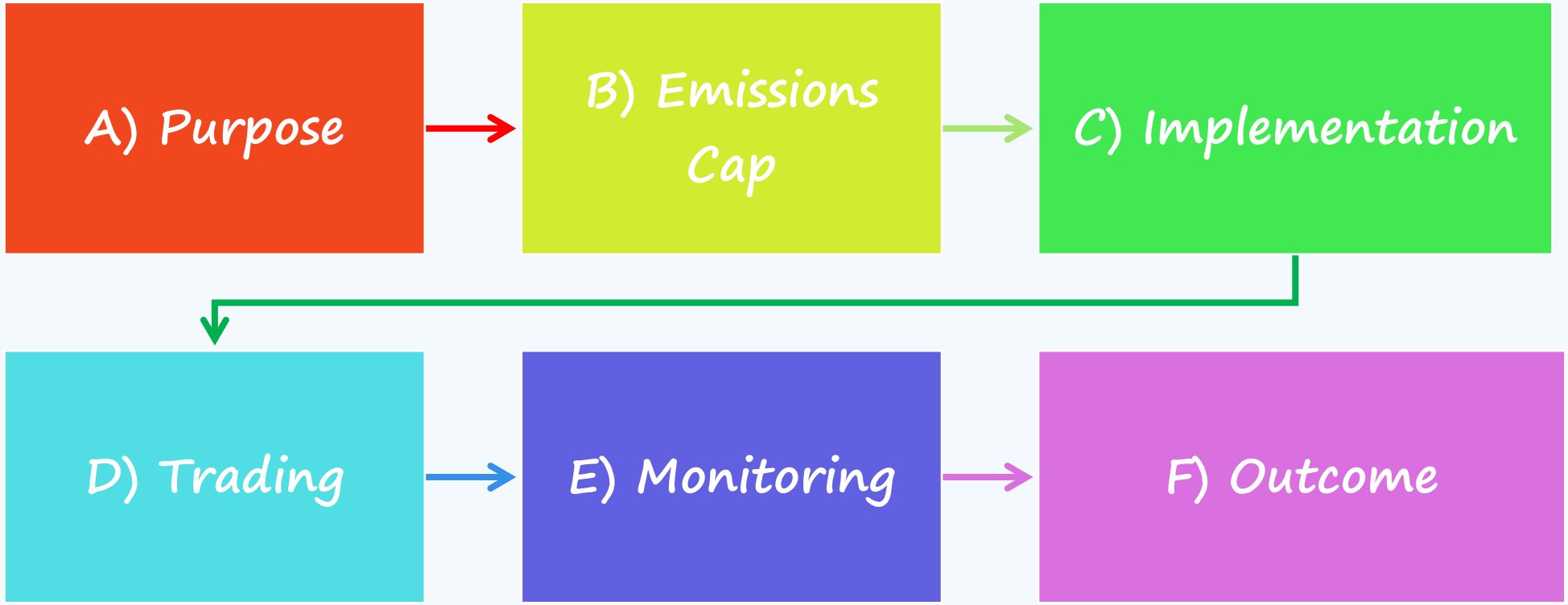
2. *Trading*. Industry buys more permits or sells excess and adjusts emissions to be below permit holdings.

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 criteria pollutant

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 SO_2, NO_X and Particulate Matter.
- Continuous monitoring of all participating 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 industrial 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

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

Pollutant selected for trading i.e. SPM is a localised pollutant so trading feasible only locally

2.
BEST AVAILABLE TECHNIQUES (BAT) REFERENCE DOCUMENT

Current Scenario

- India doesn't operate with a BAT concept like that of European Union
- Several rules, notifications and guidelines for the control and prevention of industrial pollution exists
- This includes legally binding emission standards or discharge limit values specific to each industrial sector
- Industrial facilities must comply in order to obtain permission from the State Pollution Control Boards
- The industry-specific emission standards or discharge limits are called Minimal National Standards (MINAS)

MINAS

- MINAS, by definition, are techno-economical norms achievable by the industry
- They constitute quantitative limit values for the emission of pollutants into the environment
- These include air pollutants emitted from stacks, fugitive emissions and water pollutants in wastewater
- Techniques for prevention and control of chemical pollution from industries are considered as part of the development of the MINAS

MINAS

- These are Best Techno-Economically Available Techniques (BTEAT) rather than BAT
- Exchange of information during the process between all stakeholders is absent and missing
- No improvement of competence in the applied industrial processes in the authorities
- Does not consider cross-media effect and fails to address environment as a whole
- Provides end of the pipe treatment options and solutions

Why BAT Ref. (BREF) Document

- MINAS is not BAT but BTEAT
- Core issues associated with environmental improvements are addressed beforehand in BREF
- Identifying actions needed for enabling improved performance in the sector taken into account
- Addresses issues of pollution control and mitigation and also includes resource conservation, performance efficiency etc.

Why BAT Ref. (BREF) Document

- ✓ All the key stakeholders like industrial units, experts from industries etc. are included in the process leading to successful implementation
- ✓ Meetings are held to draw important conclusions from the group giving a meaningful input to BREF
- ✓ Sector Specific and Product Specific standards are possible using BAT
- ✓ Addresses applicability issue and cross-media effects
- ✓ Focusses more on process integrated prevention of pollution instead of end of pipe treatment

Organisations Involved

German Federal Environment Agency (UBA)

Gujarat Pollution Control Board (GPCB)

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Gujarat Cleaner Production Centre (GCPC)

Sector Specific Experts

Textile Industries of Gujarat

Textile Machineries, Dyes, Chemicals & Auxiliaries Manufacturers

Environment Related NGOs

Academic Institutes

Textile Industries Associations

Methodology Adopted

Step 1
- Identifying textile cluster based on type of industry

Step 2
- Wish List from TWG

Step 3
- Information Collection at cluster level

Step 4
- Information Collection at Industry level

Step 5
- Check / verify the data / information submitted

Step 6
- Detailing of different techniques used

Step 7
- Scrutiny and analysis of data

Step 8
- Dissemination on BIS

Step 9
- Elaboration of the first & second formal draft

Step 10
- Review & Finalization by DFBARC

Step 11
- Submission of draft final BREF

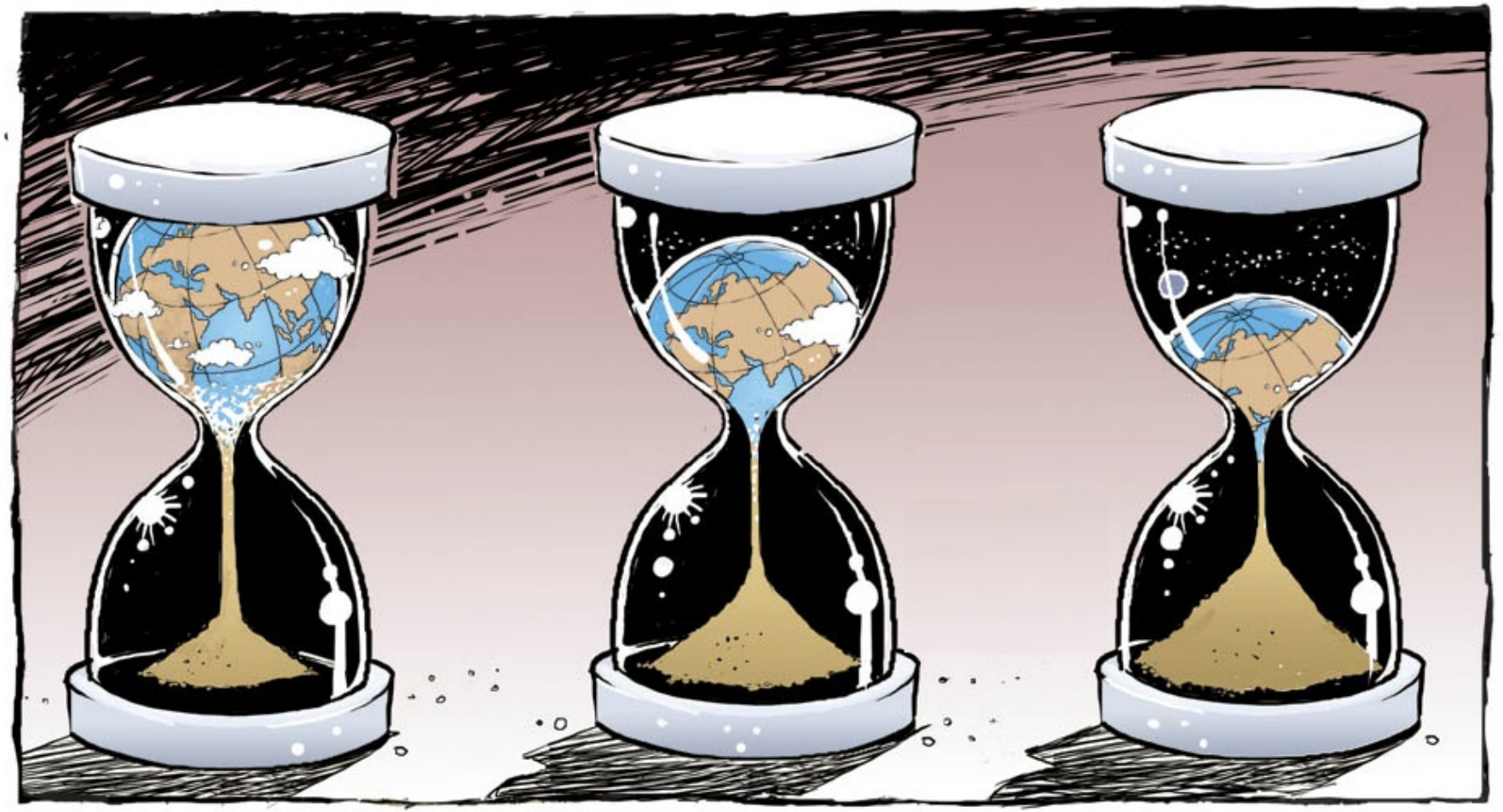
Step 12
- Draft BREF Recom. To Govt. For Publication

First Results

- ✓ Preparation of Guidance document for drawing up of BREF documents
- ✓ Questionnaires for data collection for BAT
- ✓ Identification of the key environmental issues for the Textile sector
- ✓ Primary identification of the best environmental performance levels, on the basis of the available data in the European Union and world-wide
- ✓ Examination of the conditions under which these performance levels were achieved
- ✓ Such as costs, cross-media effects, main driving forces involved in implementation of the techniques

Challenges

- New Process and Procedure
- New Concept – No previous precedence
- Industries never involved in policy making earlier
- Data Collection, its accuracy and authenticity
- Lack of knowledge – could not share details
- Data Compilation and addressing the data gaps
- Convincing and explaining the stakeholders – first of its kind effort in India
- Industries unsupportive due to novel idea and never before implemented



Thanks!

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