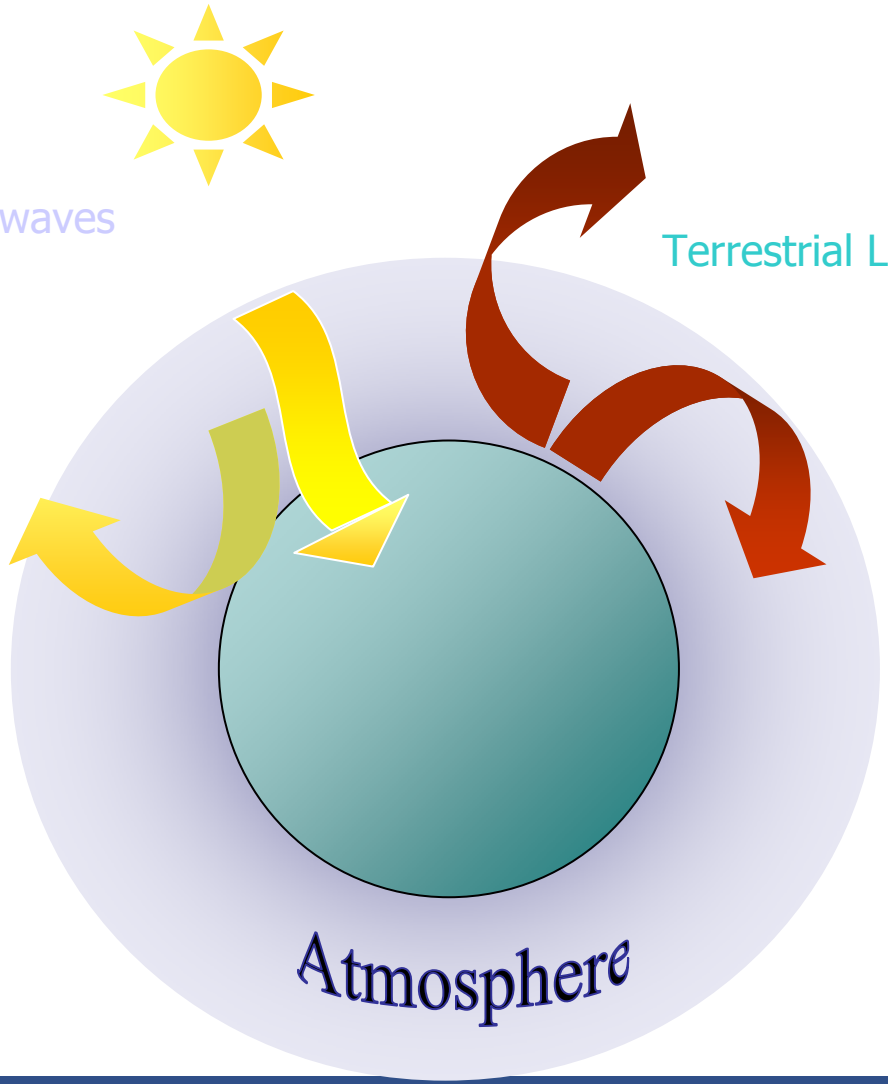
CDM & Energy Efficiency

- Welcome to deliberations in carbon constrained economy !!
- How to harness opportunities??? Are there threats????

Global Warming

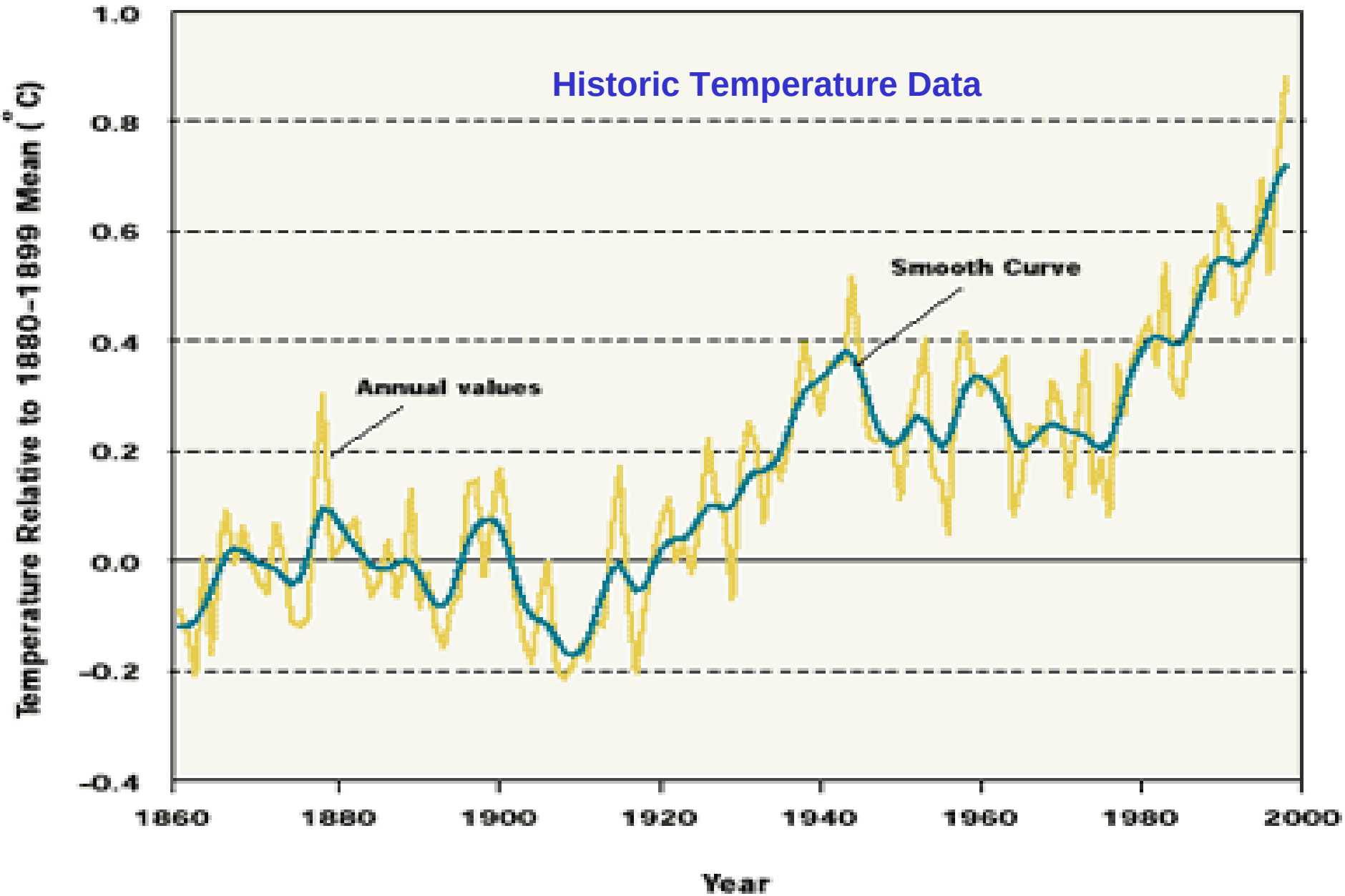
THE GREENHOUSE EFFECT

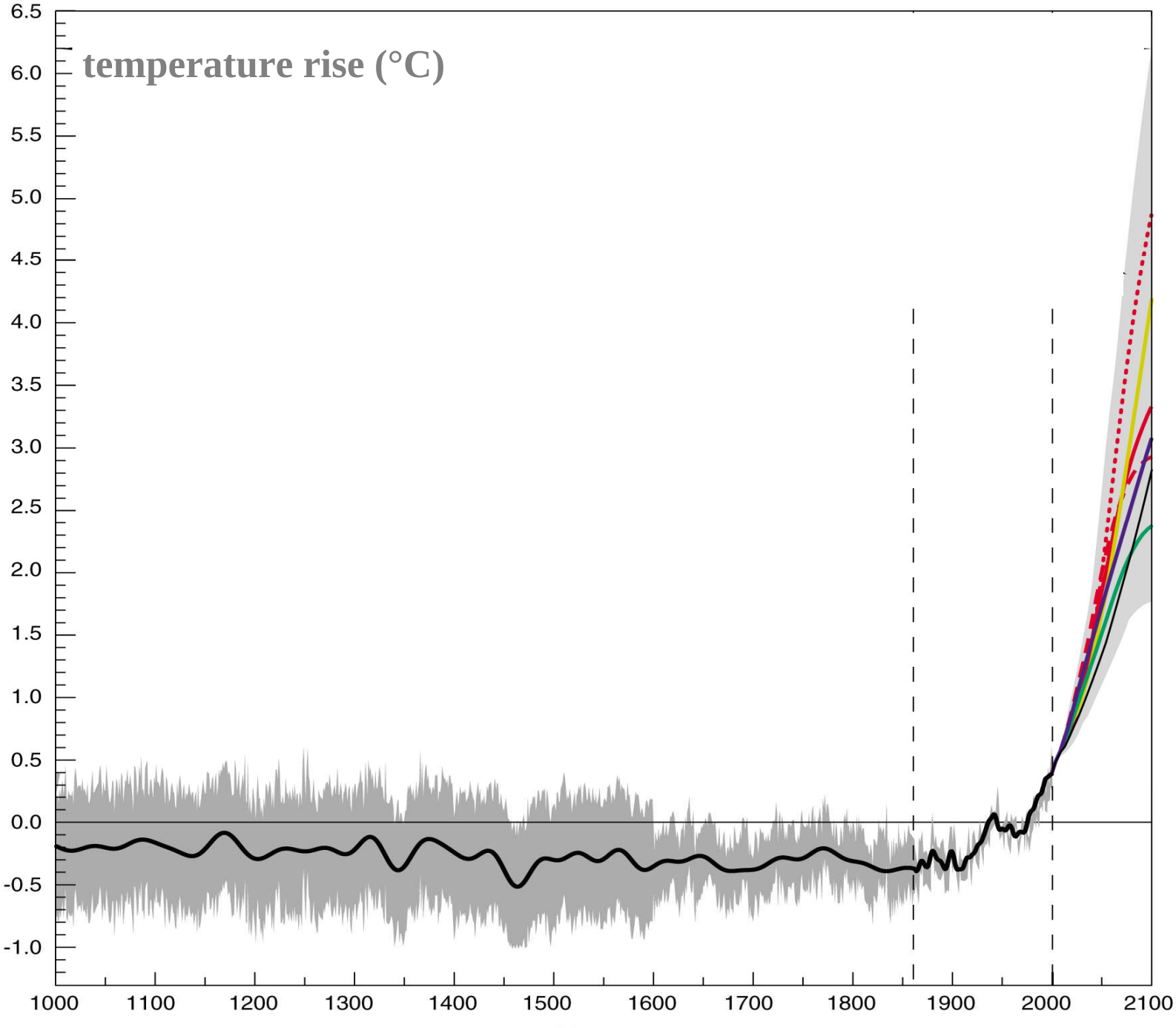


H_2O

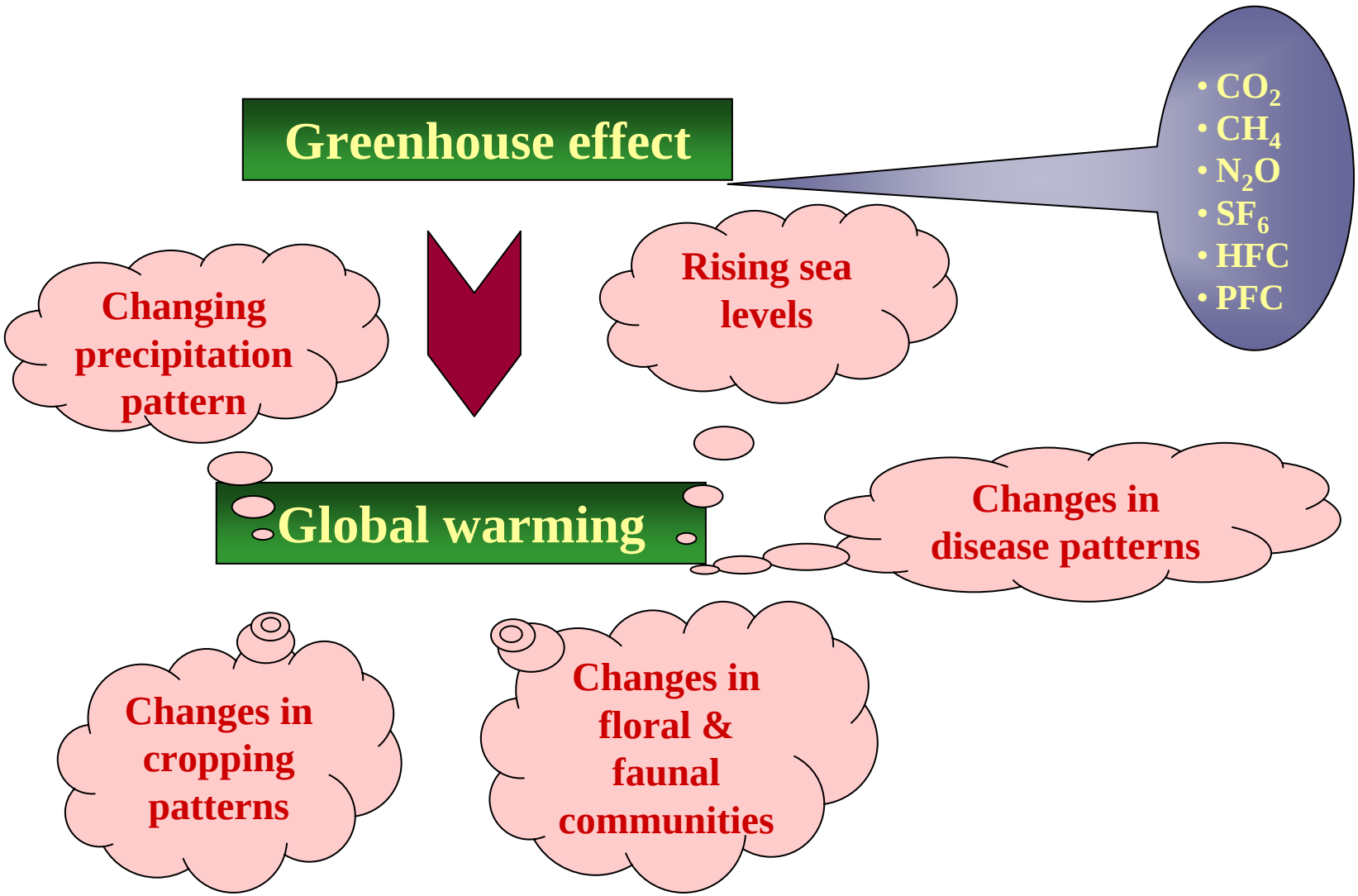
CO_2
CH_4
N_2O
HFCs
PFCs
SF_6

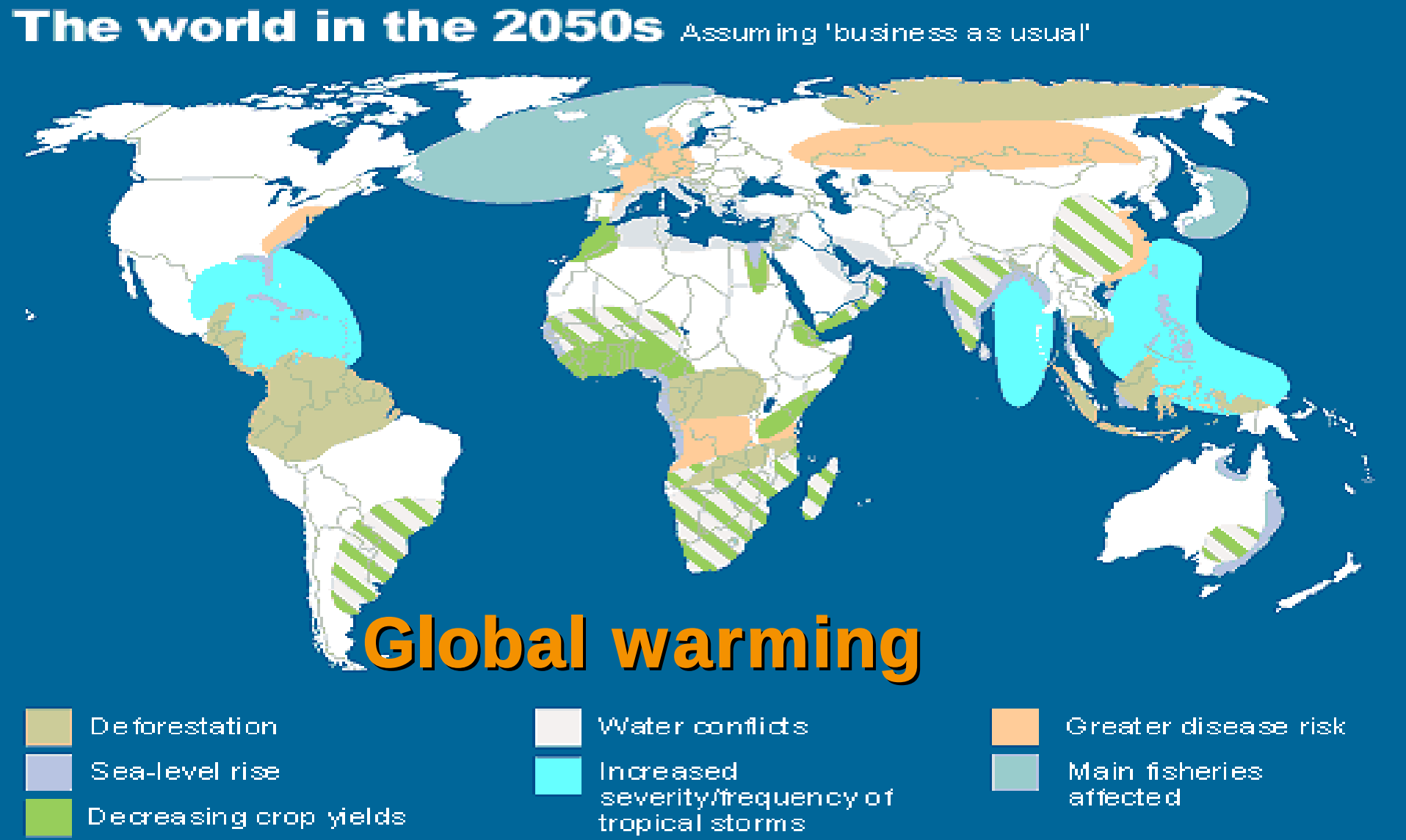
Global-Mean Temperatures




temperature rise (°C)
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
-1.0
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100

!! Climate Change !!





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Efforts to mitigate

International Response to Climate Change

Milestones

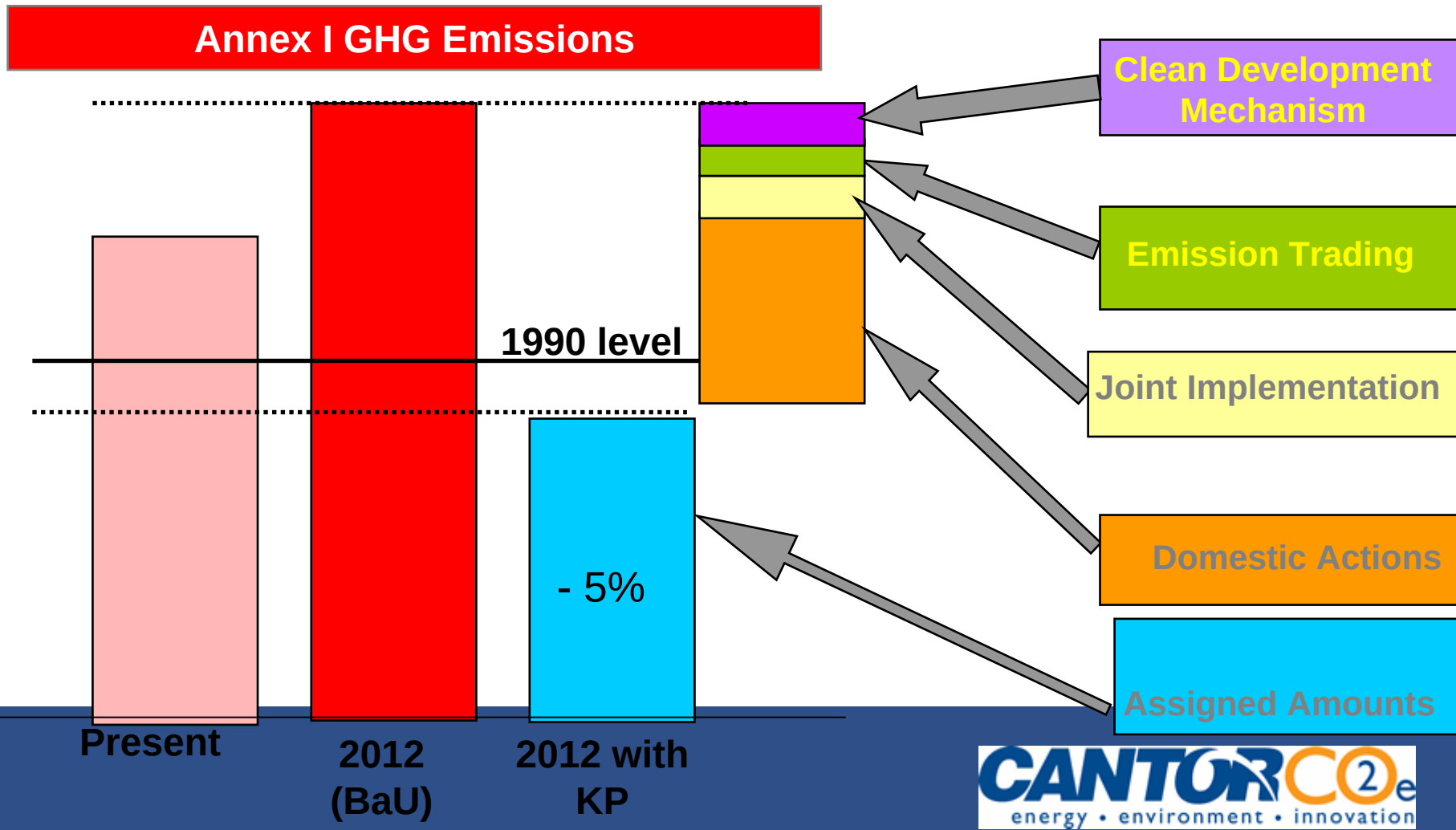
- 1979: First World Climate Conference
- 1988: Intergovernmental Panel on Climate Change
- 1990: IPCC and Second WCC call for global treaty for climate change
- 1992: UN Framework Convention on Climate Change adopted
- 1994: UNFCCC entered into force
- 1997: Kyoto Protocol adopted
- 2001: Marrakesh Accords
- 2005: Kyoto Protocol entered into force

Kyoto Protocol

- 11 December 1997 – Kyoto Protocol adopted in Kyoto, Japan
- The overall emission reduction target for Annex I Parties as a group is *at least 5 percent below 1990 levels,* to be achieved by the commitment period **2008 to 2012** (an average over the five years).
- 16 February 2005 – Kyoto Protocol enforced
  - Ratified by not less than 55 Parties to the Convention including Annex I Parties, accounting for at least 55% of the total carbon dioxide emissions in 1990

    (Art. 25, KP)

Kyoto Protocol: Flexibility Mechanisms



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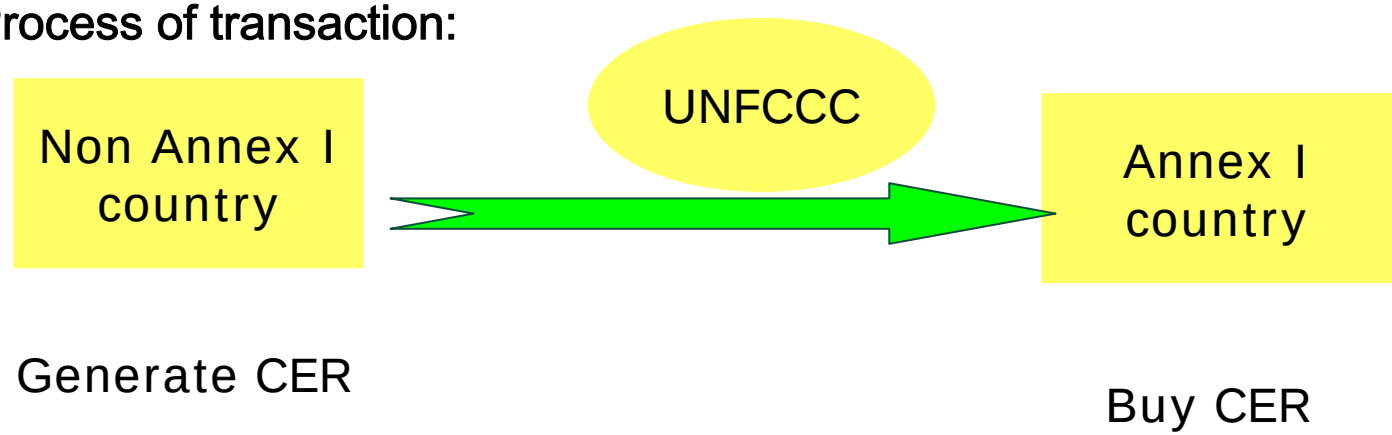
CDM structure

WHAT IS CARBON CREDIT?

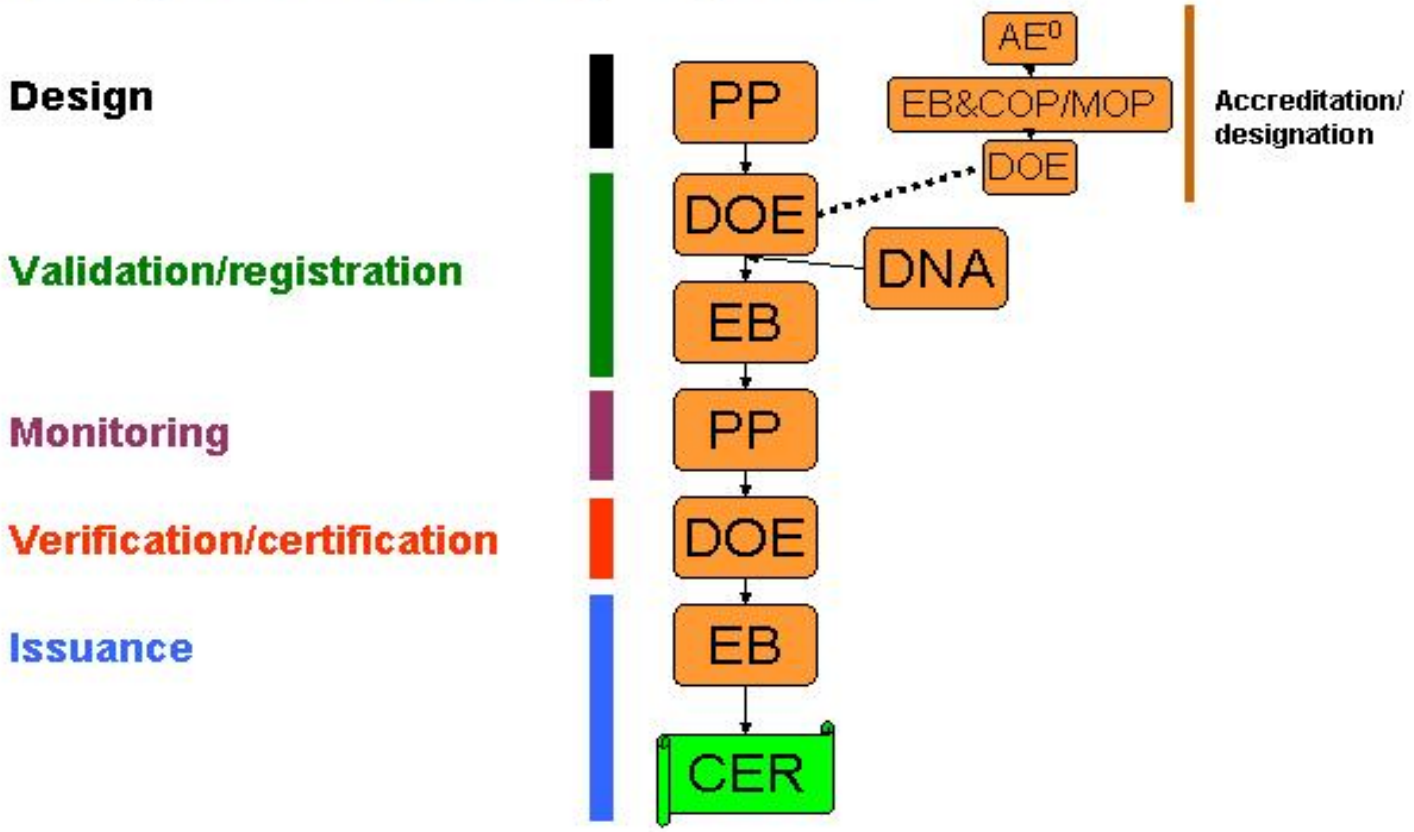
- Developed countries (Annex I countries of Kyoto Protocol) committed to reduce their CO_2 emission
- Developing countries (Non Annex I countries) can take up projects which generate reduction in Green House gases
- This reduction in GHG can be sold to Annex I countries to meet their commitment
- 1 CER (Certified emission Reduction) = 1 MT of CO_2 equivalent GHG reduction.
- Process of transaction:



WHO ARE ELIGIBLE?

- PROJECTS IN NON ANNEX I COUNTRIES.
- PROJECTS WHICH
  - Reduce/eliminate GHG emission than the usual measures taken to achieve the same objective (e.g. Use of biomass / windmill in place of coal to generate electricity)
  - Satisfy the additionality criteria:
    - Started after 2000
    - Not the only alternative consistent with current laws & legislations
    - Not the most lucrative investment option
    - Had to overcome barriers (Technical, financial, administrative etc.)
    - Is not a common practice
    - Has an impact of CDM registration

CDM project activity cycle



Energy Efficiency Opportunities For Industries

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Energy efficiency definitions in CDM pipeline

- Energy efficiency covers industries, supply side, households and service (distribution & transportation)

- Energy efficiency covers both demand side efficiency and generation projects at industrial facilities (e.g. Cogeneration)

Avenues of energy efficiency in industries.

The various avenues for harnessing carbon credits in an industry are:

- Raw materials
- Reducing power consumption
- Fuel switching
- Efficient appliances
- Efficient technology
- Power generation

Approved methodologies (Small-Scale)

- A.M.S II A: Supply side energy efficiency improvements: transmission & distribution
- A.M.S II D: Supply side energy efficiency improvements: generation
- A.M.S II C: Demand side energy efficiency programme for specific technologies
- A.M.S II D: Energy efficiency and fuel switching measures for industrial technologies
- A.M.S II E: Energy efficiency and fuel switching measures for buildings
- A.M.S II F: Energy efficiency and fuel switching measures for agricultural facilities and activities

Approved methodologies (Large)

- AM0017: Steam system efficiency improvements by replacing steam traps and returning condensate
- AM0018: Steam optimization systems
- AM0022: Avoided Wastewater and On-site Energy Use Emissions in the Industrial Sector (For industries with lagoon based waste water treatment facilities.
- AM0032:Methodology for waste gas or waste heat based cogeneration system
- AM0038:Methodology for improved electrical energy efficiency of an existing submerged electric arc furnace used for the production of SiMn

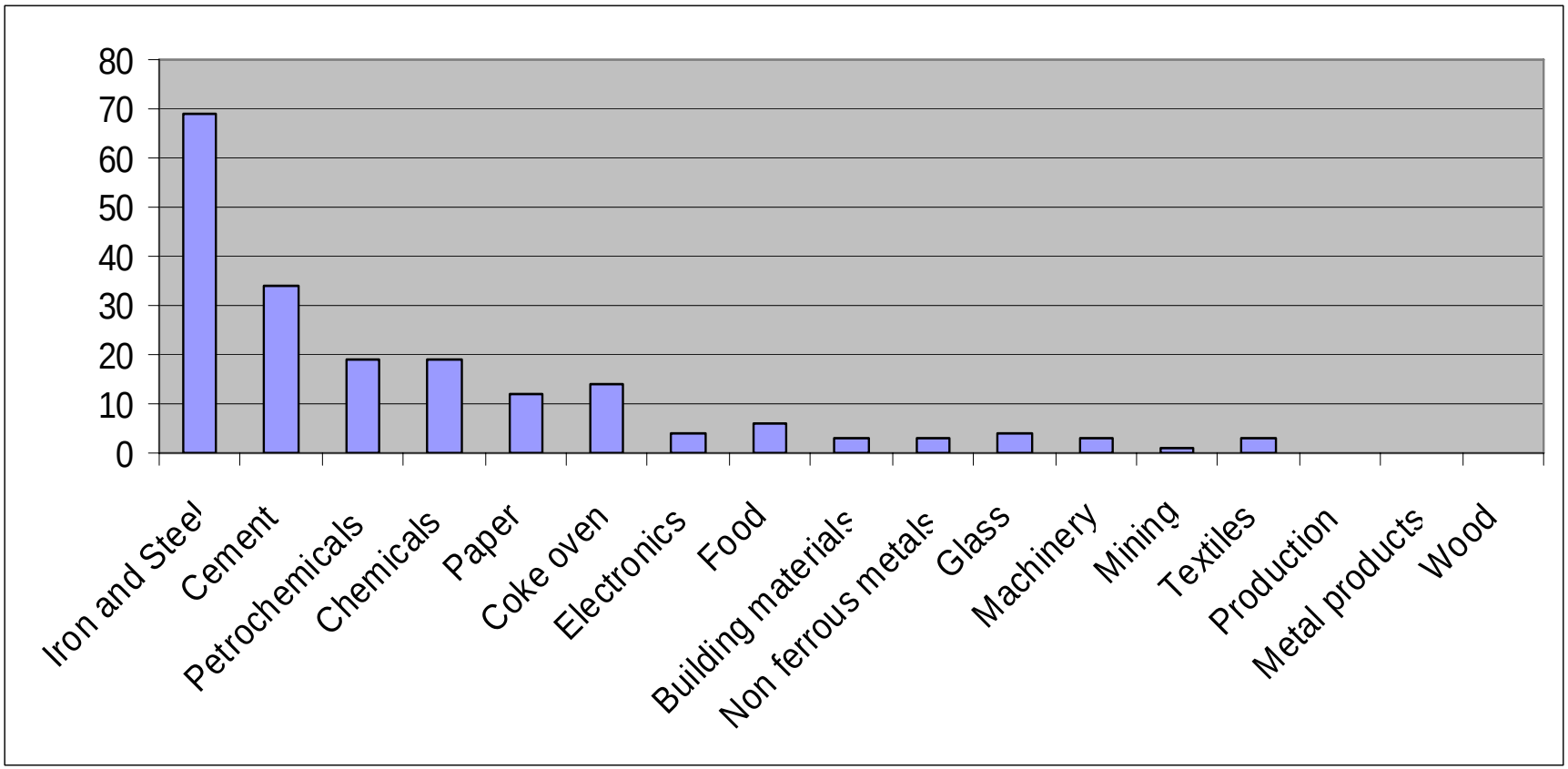
Approved methodologies

- AM0044: Energy efficiency improvement projects: boiler rehabilitation or replacement in industrial and district heating sectors
- AM0046: Distribution of efficient light bulbs to house holds
- ACM0003:Emissions reduction through partial substitution of fossil fuels with alternative fuels in cement manufacture
- ACM0004:Consolidated methodology for waste gas and/or heat for power generation

Sub sectors	Number of projects
Iron and Steel	69
Cement	34
Petrochemicals	19
Chemicals	19
Paper	12
Coke oven	14
Electronics	4
Food	6
Building materials	3
Non ferrous metals	3
Glass	4
Machinery	3
Mining	1
Textiles	3
Production	0
Metal products	0
Wood	0

Source: UNEP Risoe Center

Energy Efficiency distributed in 17 sectors



Source: UNEP Risoe Center

How will revenues flow –e.g

For a 10 MW coal based captive power plant replaced by waste gas based electricity, following may apply :

- Emission factor for captive power generation is 1.48 t CO2/MW-h
- Annual CER will approx= 36720 MWh *1.48 tCO2=54,345 tCO2

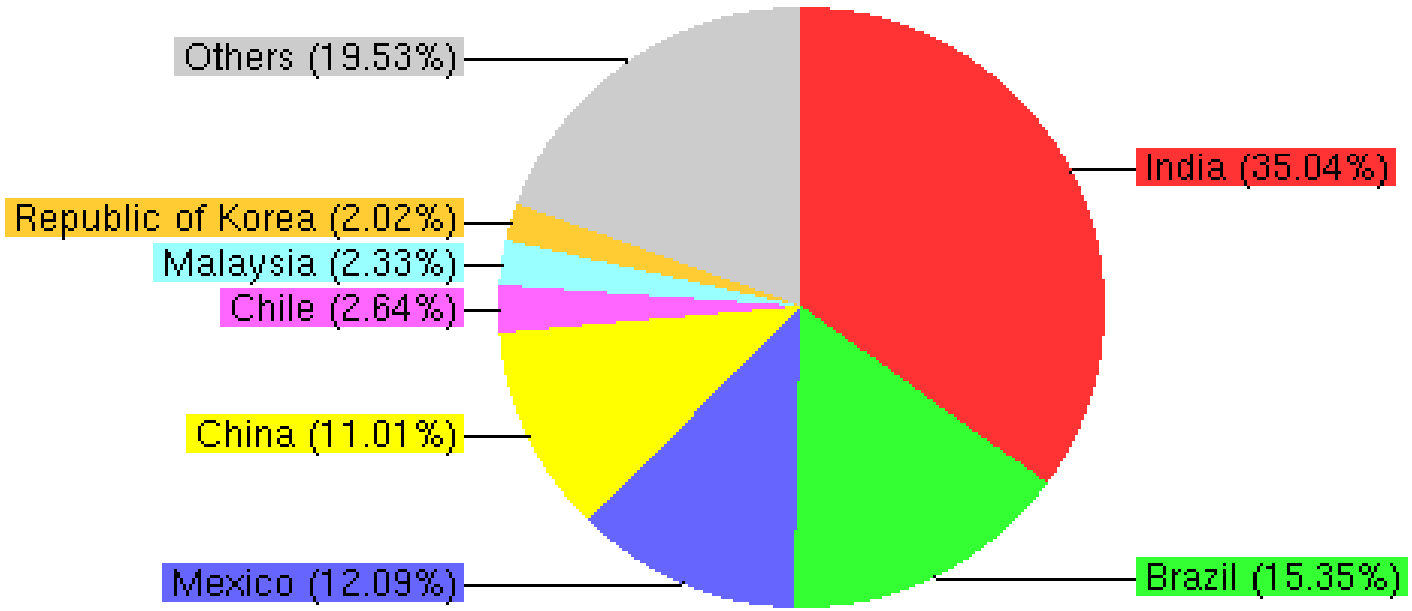
  10 *300*24*0.6 (plant load) =43200 MWh,
  considering auxiliary requirement to be 15%
  Net electricity generated will be 36720

- Considering 1 tCo2 will be priced at 10 Euros, annual revenue will be INR 29,889,750 for 10 years, every year

- We can consider various options of waste heat/waste gas recovery for Power generation to develop them as CDM project, this recovery may be in any sector e.g fertilizers, distilleries, industrial units etc.

CDM Statistics

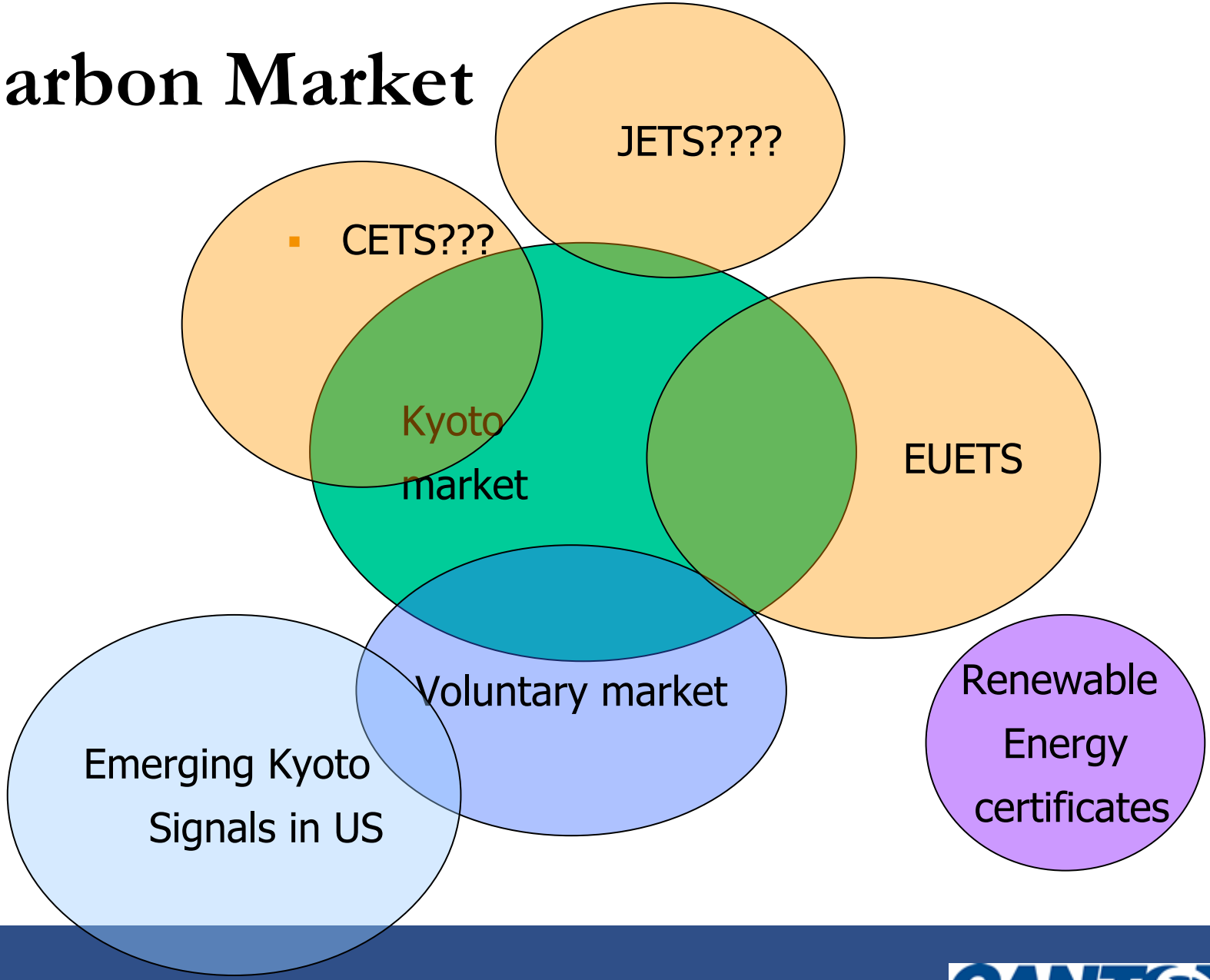
Registered project activities by host party. Total: 645



http://cdm.unfccc.int (c) 30.04.2007 12:24

CER Transaction

Carbon Market



Better Approach

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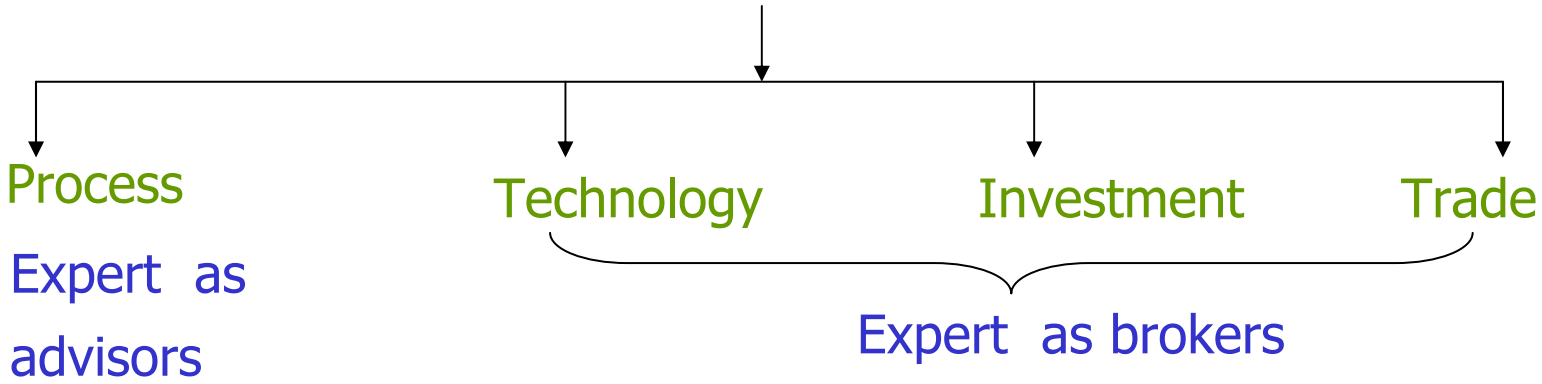
1. Services which covers entire project cycle of a CDM project:



2. Share risk but provide max return to seller:
   - Association for the entire crediting period
   - Accessing the market and selling in retails
   - Maximise the carbon asset value by proper timing of sale
3. Understand the world emission trade market, have access to all of them, can swap between the various markets

4. Approach in CER transaction which maximises CER value

- Operating in all markets –ability to swaps
- Safe keeping of CERs in Escrow – assurance to buyers & sellers, eliminate DNA approval process for buyers, reduce price risk
- Multiple trenches of sale:
  - Spot sale
  - Forward sale
  - Auction
- Using various methods:
  - Bidding
  - Auction
- Multiple transaction structures:
  - Fixed price
  - Market linked price
  - Securitisation of cash flow
  - Any combination of above

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CANTORCO2e

- Created as a merger of CO2e.com LLC (jointly owned by Cantor Fitzgerald and Mitsui), and Cantor Environmental brokerage (a wholly owned subsidy of Cantor Fitzgerald) on 12 March 2007.
- Is a subsidiary of Cantor Fitzgerald (major share holder) and Mitsui – two major financial houses of the world.
- Cantor Environmental Brokerage was formed in 1992 to implement the ground-breaking emissions trading markets introduced under the Clean Air Act and established a long list of firsts in emission trading .
- CANTORCO2e is responsible for many 'firsts' in the global market, including the first CERs into Europe and Canada, and the only CERs into Japan in 2004.
- It has been instrumental in building the innovative voluntary offset market

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Thank You

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