IN ENVIRONMENTAL LAWS, GREEN AUDIT & CARBON RELATED AREAS – Part I

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Professional Opportunities in Carbon Credit

1. Conceptualizing the Clean Development Mechanism (CDM) project
2. Quantification of greenhouse gases (GHG) Carbon Footprint
3. Selection of Cleaner technologies for New projects
4. Project risk analysis
5. Registration of project - both national and international level
6. Obtaining Host country approval
7. Preparation of Project Concept Note
8. Preparation of Project Design Document

Professional Opportunities in Carbon Credit

9. Selection of Methodologies and Baseline
10. Legal and regulatory advice during negotiations with host country Designated National Authority (DNA)
11. Advice on the appointment of independent validators
12. Assistance to achieve registration of the project by the CDM Executive Board
13. Assistance in getting verification done by Designated Operational Entity (DOE)
14. Ensure Compliances
15. Assisting various Ministries associated with National Action Plan on Climate Change (NAPCC)

Professional Opportunities in Carbon Credit

16. Carbon Finance
17. Energy Audit under The Energy Conservation Act 2001
18. Advise on investment in carbon credit
19. Accounting advisory services
20. Taxation advisory services

Professional Opportunities in Environmental Laws and Green Audit

- 1. As Environmental Consultants - give opinion on viability of various projects, technologies to prevent pollution and clean up polluted resources
- 2. Obtain consents for establishment of Unit
- 3. Submission of Gross Block investment certificate along with the consent application for establishment of a Unit.
- 4. Environmental clearance under the Environment Impact Assessment Notification.
- 5. Record keeping of various hazardous wastes, chemicals etc, as prescribed under the Hazardous Wastes (Management and Handling) Rules, 1989 and Manufacture, Storage, and Import of Hazardous Chemicals Rules, 1989.

Professional Opportunities in Environmental Laws and Green Audit

- 6. Status of compliance of Rules 5, 7, 10,11,12,13 and 18 under the Manufacture, Storage, and Import of Hazardous Chemicals Rules, 1989 need to be given in the application for consent to establish/operate/renewal of consent. This status of compliance can be given by Chartered Accountants in the form of a certificate of compliance.
- a. Rule 5 – Notification of major accident
- b. Rule 7 – Notification of sites
- c. Rule 10 – Preparation and submission of safety report
- d. Rule 11 – Updation of safety report

Professional Opportunities in Environmental Laws and Green Audit

- e. Rule 12 – Requirements of further information to given to the authority
- f. Rule 13 – Preparation of on-site emergency plan by the occupier
- g. Rule 18 – Import of hazardous chemicals
- 7. After consent to establish/operate is obtained under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981, CA can ensure on a monthly/quarterly/half-yearly basis that the conditions of the consent order are complied with by the industrial unit.

Professional Opportunities in Environmental Laws and Green Audit

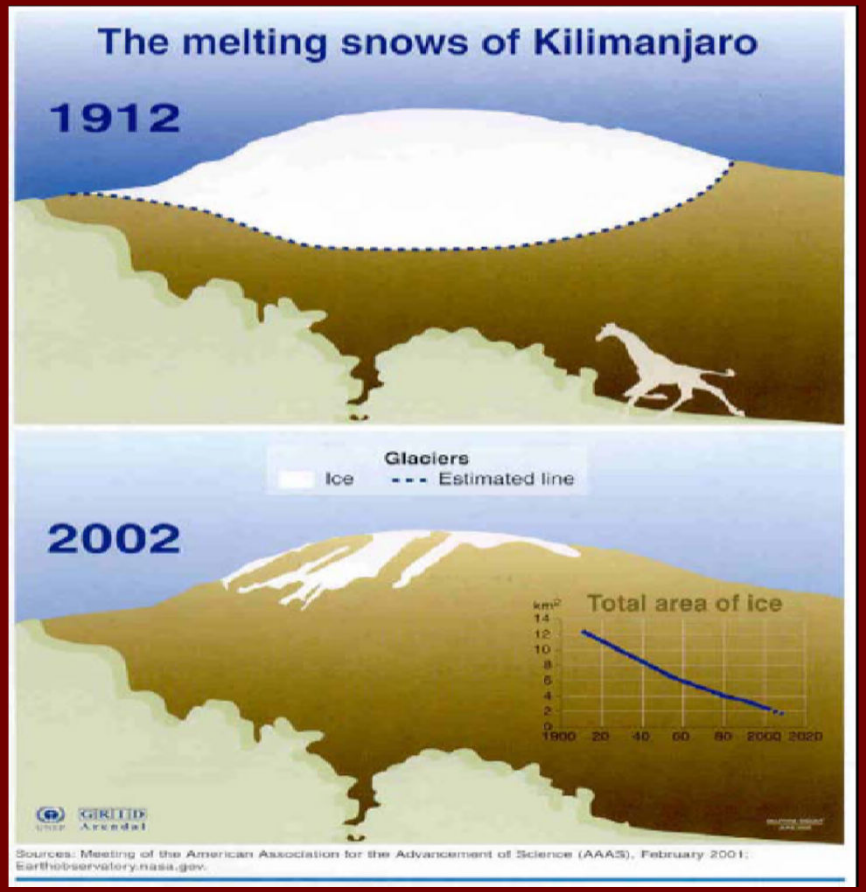
- 8. CA can also ensure on a monthly/ quarterly/ half-yearly basis that the conditions of the authorization are complied by the industrial units under the Hazardous Wastes (Management and Handling) Rules, 1989.
- 9. Give report or certificate with regard to capital investment under the Biomedical waste (Management and Handling) Rules, 1998. This is an important document to be submitted along with the application for authorization.
- 10. Environmental Audits

WHY CARBON CREDIT CAME INTO EXISTENCE

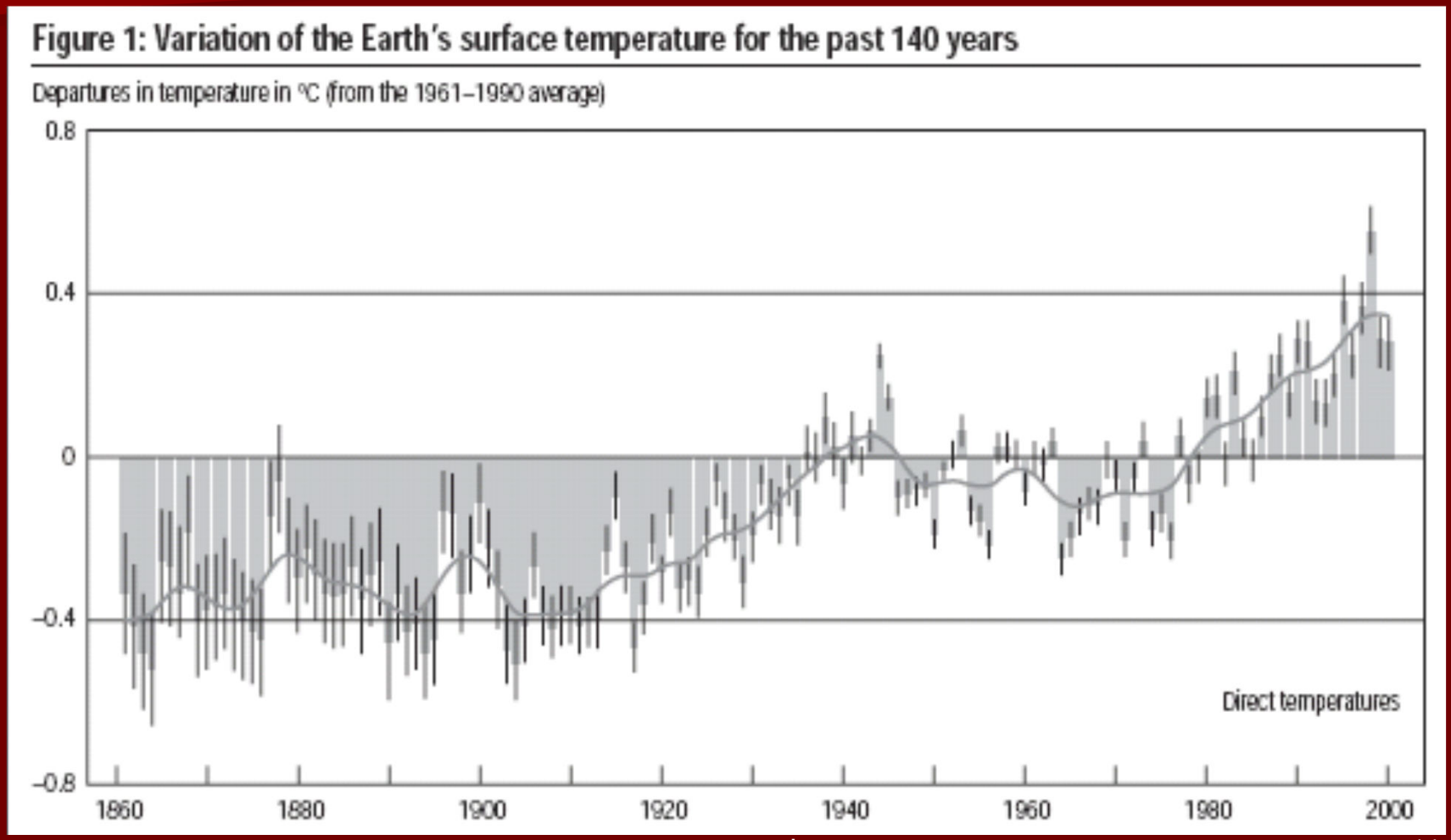
- GEOGRAPHICAL BOUNDARY CAN BE DIVIDED
- ATMOSPHERE IS INDIVISBLE
- WORLD DISCUSSION STARTED ON HOW TO MITIGATE CLIMATE CHANGE
- VARIOUS ALTERNATIVES DISCUSSED
- WHO ARE RESPONSIBLE FOR CLIMATE CHANGE ?

Climate Change

- Temperature Increase of 0.4^{O} C in last 100 years.
- Increase in monsoon seasonal rainfall across West Coast, AP
- Decrease in monsoon in North East India, Kerala
- Climate Models predict 2-4 ^{O}C rise by 2050s



Climate Change



Effects of changing climate

- A decrease in the quantity and quality of water in many arid and semi-arid areas
- A decrease in the reliability of hydropower and plantation biomass.
- An increase in the loss of species and degradation of key ecosystems such as coral reefs, which play a critical role in the economy of some developing countries;
- The displacement of tens of millions of people in low-lying areas
- An increased threat in national and regional security because of the loss of natural resources and the potential flow of environmental refugees
- An increase in the incidence of vector-borne diseases (e.g., malaria and dengue), water-borne diseases (e.g., cholera), and malnutrition throughout the tropics and sub-tropics, where millions of lives are lost every year;

Effects of changing climate

- A decrease in agricultural productivity in the tropics and sub-tropics.
- For low-lying areas in the world, the threat of climate change is a matter of survival. The sea level could rise by one meter over the next century, which would have the following consequences
  - In countries with significant low-lying areas, coastal communities would be severely threatened. For example, 17% of the land area of Bangladesh would be lost and tens of millions of people displaced.
  - The survival of low-lying small island states would be in doubt, in particular for the many island states in the Indian and Pacific Ocean and Caribbean that are only a few meters above sea level.
- While no one will be able to escape from climate change, it is the poorer people and countries who are most vulnerable to its negative impacts.

Figure 16.1 The objectives of Article 6 of UNFCCC – promoting public participation

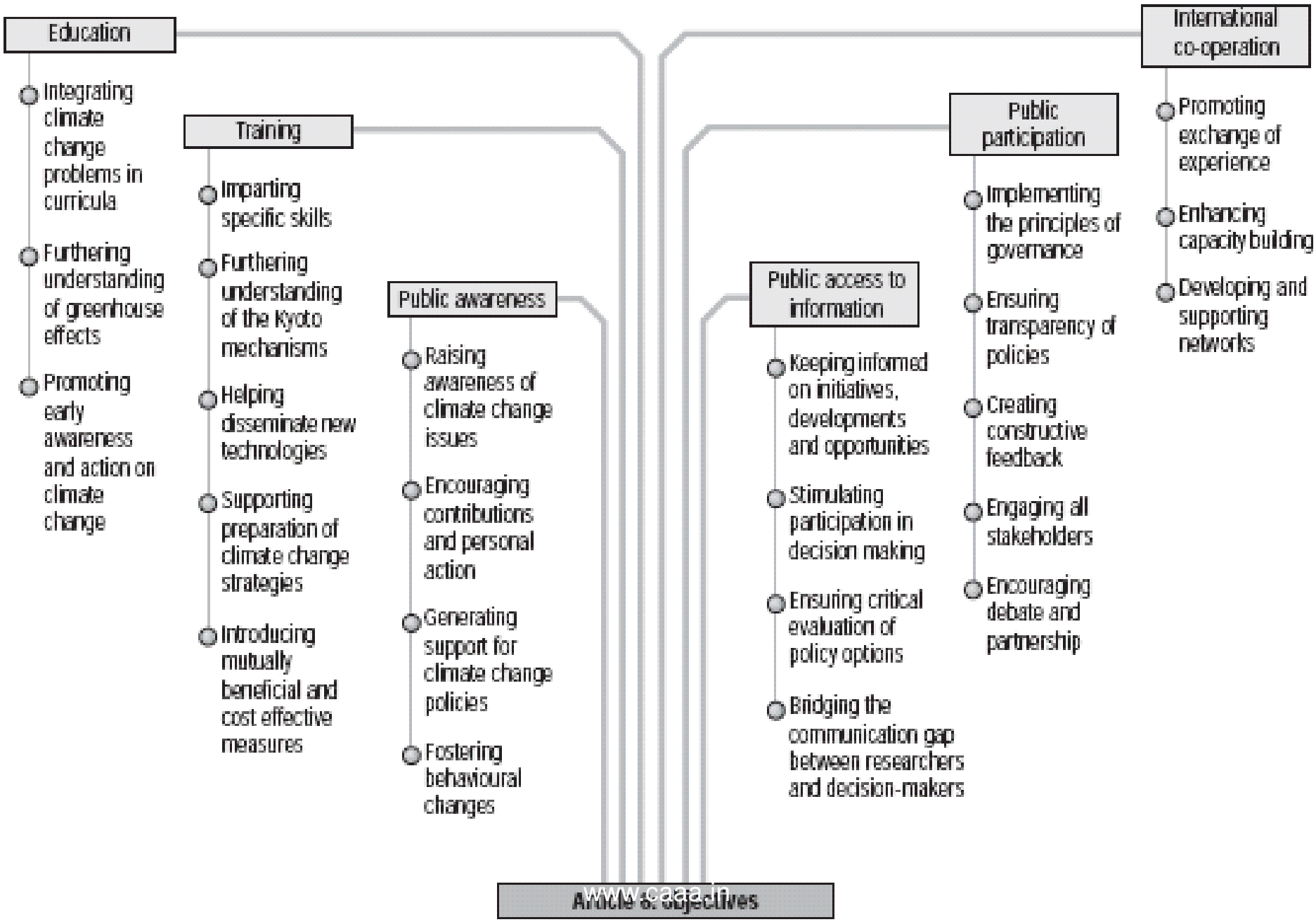
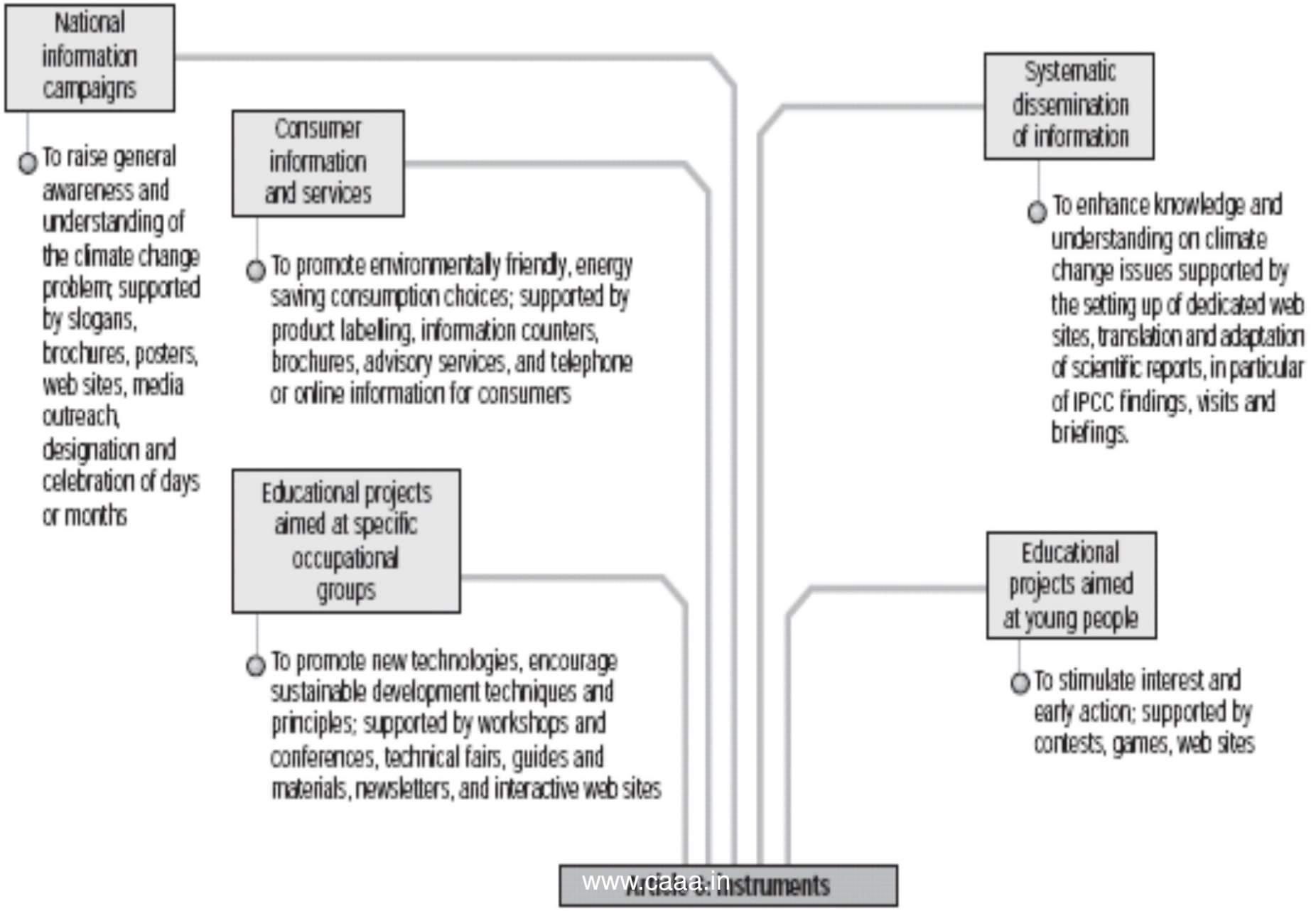


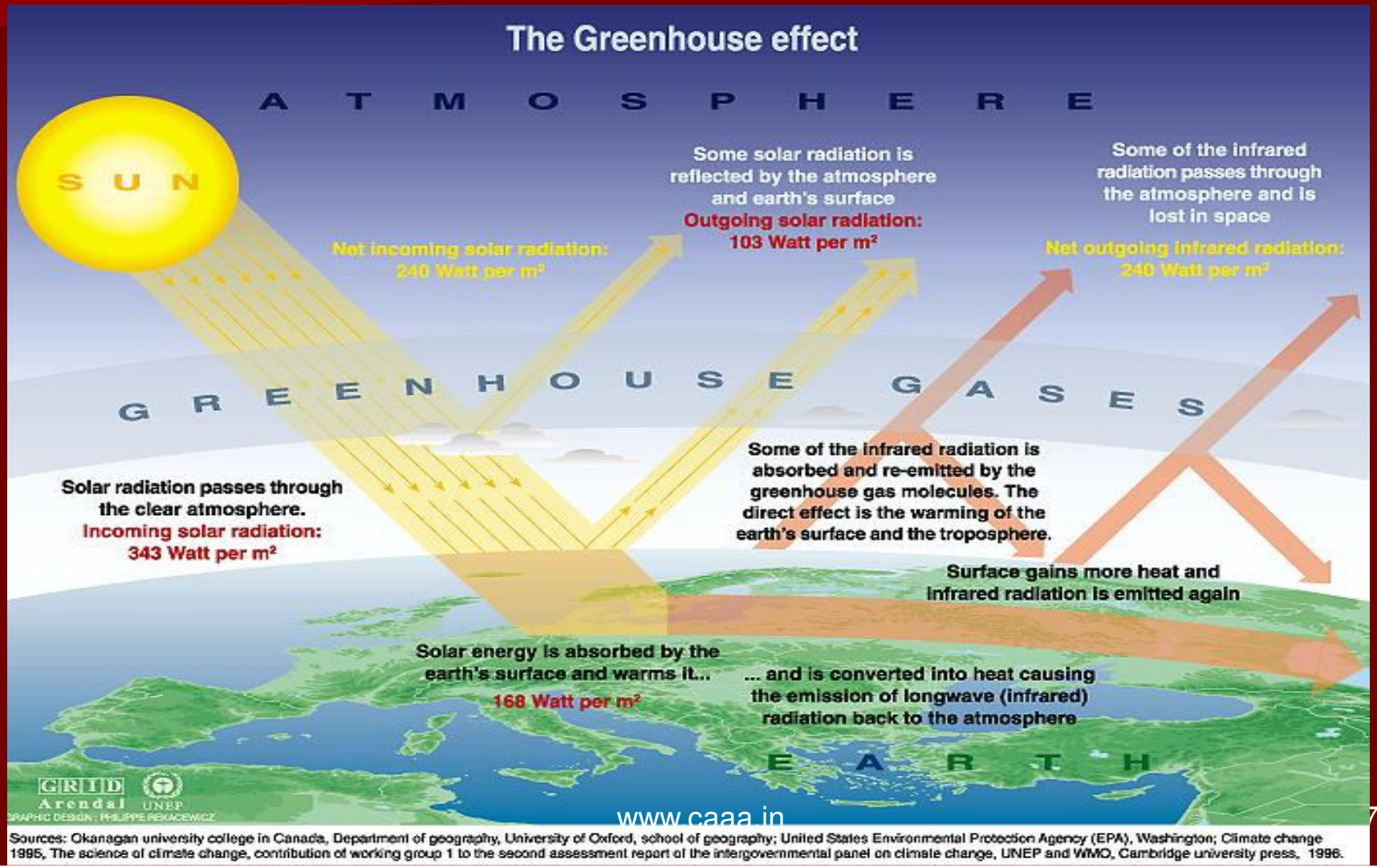
Figure 16.2 Ways of raising awareness on climate change



Key Words

- **Global warming** is the increase in the average temperature of the Earth's near-surface air and oceans in recent decades and its projected continuation.
- **GHG:** Green House Gases (eg. Carbon dioxide, Methane, Nitrous oxide, HFC 23, Sulphur hexafluoride and Per fluoro carbons)
- **UNFCCC:** United Nations Framework Convention on Climate Change
- **KP**: Kyoto Protocol
- **CERs:** A certified emission reduction or CER is a unit issued pursuant to reduction in GHG emissions equal to one metric tonne of carbon dioxide equivalent, calculated using global warming potentials defined by UNFCCC.
- **Clean development mechanism (CDM) :** Article 12 of the Kyoto Protocol defines the CDM as. "The purpose of the clean development mechanism shall be to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the Convention, and to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments".

The Green House Effect



Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.

Global Initiative to Mitigate CC

- United Nations Conference On Human Environment (1972)
- Vienna Convention For Protection Of Ozone Layer (1985)
- Montreal Protocol (1987)
- Intergovernmental Panel on Climate Change (1988)
- United Nations Conference on Environment And Development (1992) at Rio
- Conference Of The Parties To The UNFCCC (from 1995)
- Kyoto Protocol (1997)
- Marrakesh Accord (2001)
- World Summit on Sustainable Development (WSSD), 2002
- Global Environment Facility (GEF)
- Prototype Carbon Fund (PCF), World Bank, 2002

United Nations Framework Convention on Climate Change (UNFCCC)

- UNFCCC – An international environmental treaty entered into force on 21st March 1994.
- Signed by 154 states (plus the EU) in 1992
- Currently 195 parties have ratified UNFCCC
- Based on three principles – 1. Common but differentiated responsibility; 2. Precautionary approach; 3. Sustainable Economic Growth and Development.
- Divides countries into two main groups - Annex I (Developed) & Non-Annex I Countries (Developing).
- Under the UNFCCC, the Annex I parties, consisting of highly industrialized countries and countries undergoing transition to a market economy, have legally binding greenhouse gas (GHG) emission limitation and reduction commitments while developing countries have non-binding obligations to limit emissions.

Kyoto Protocol

- Its an addition to the UNFCCC Treaty.
- Is an international and legally binding agreement
- It was negotiated in Kyoto, Japan and entered into force on 16th February 2005
- It assigns mandatory targets for signatory nations to reduce their emission of the specified 6 greenhouse gases, or engage in emissions trading if they maintain or increase emission of these gases.
- Annex I (developed countries) parties of the UNFCCC have agreed to reduce their GHGs by 5.2 % below 1990 levels in the Protocol's 1st commitment period
- The first commitment period under this Protocol starts from calendar year 2008 to calendar year end 2012.

Greenhouse Gases (GHGs) Covered in Kyoto Protocol

1. CO2 - Carbon dioxide
2. CH4 - Methane
3. C2O - Nitrous oxide
4. PFCs - Perfluorocarbons
5. HFCs – Hydrofluorocarbons
6. SF6 - Sulphur hexafluoride

Global Warming Potential of GHG

Table 2: Global Warming Potentials (GWP) and Atmospheric Lifetimes (Years) Used in the Inventory

Gas	Atmospheric Lifetime	100-year GWP[a]	20-year GWP	500-year GWP
Carbon dioxide (CO_2)	50-200	1	1	1
Methane (CH_4)[b]	12±3	21	56	6.5
Nitrous oxide (N_2O)	120	310	280	170
HFC-23	264	11,700	9,100	9,800
HFC-125	32.6	2,800	4,600	920
HFC-134a	14.6	1,300	3,400	420
HFC-143a	48.3	3,800	5,000	1,400
HFC-152a	1.5	140	460	42
HFC-227ea	36.5	2,900	4,300	950
HFC-236fa	209	6,300	5,100	4,700
HFC-4310mee	17.1	1,300	3,000	400
CF_4	50,000	6,500	4,400	10,000
C_2F_6	10,000	9,200	6,200	14,000
C_4F_{10}	2,600	7,000	4,800	10,100
C_6F_{14}	3,200	7,400	5,000	10,700
SF_6	3,200	23,900	16,300	34,900

Source: IPCC (1996)

[a] GWPs used here are calculated over 100 year time horizon

[b] The methane GWP includes the direct effects and those indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

Kyoto Protocol – The "Flexibility Mechanisms"

- Provides for 3 co-operative implementation mechanism.
  - **1) Joint Implementation (JI),**

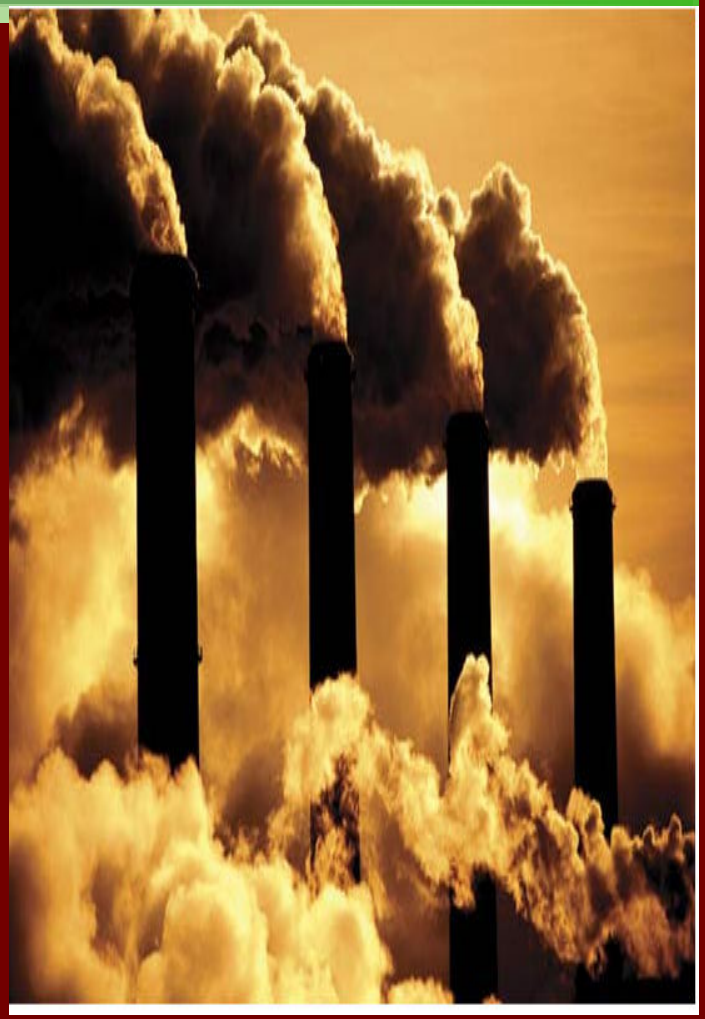
    (which allows countries to claim credit for emission reduction that arise form investment in other industrialized countries, which result in a transfer of 'emission reduction units' between countries)
  - **2) Clean Development Mechanism (CDM),**

    (through which industrialized countries can finance mitigation projects in developing countries contributing to their sustainable development)
  - **3) International Emissions Trading (ET)**

    (which permits countries to transfer parts of their 'allowed emissions' - assigned amount units)

India & Carbon Credits

- India ratified UNFCCC on 1st November 1993.
- India ratified Kyoto Protocol on 26th August 2002
- The Ministry of Environment and Forests, Government of India, is the nodal agency for climate change issues in India.
- The National Action Plan on Climate Change (NAPCC), was released by the Prime Minister on 30th June, 2008
- India is being heralded as the next carbon credit destination of the world.
- On 7th September 2012, the one billionth CER credit under the KP's CDM was issued to a project at a manufacturing plant in India that has switched its fuel source from coal and oil to locally gathered biomass.



India's National Action Plan on Climate Change (NAPCC)

- NAPCC was released on 30th June, 2008
- It is '*A National Document compiling action taken for addressing the challenge of Climate Change, and the action it proposes to take*
- The Action Plan, would be implemented through a core of eight National Missions running through 2017:
  1. National Solar Mission
  2. National Mission for Enhanced Energy Efficiency
  3. National Mission on Sustainable Habitat
  4. National Water Mission
  5. National Mission for Sustaining the Himalayan Ecosystem
  6. National Mission for creating a "Green India")
  7. National Mission for Sustainable Agriculture
  8. National Mission on establishing a Strategic Knowledge Platform for Climate Change.

Contd…

- The Prime Minister's Council on Climate Change is in charge of the overall implementation of the plan. The Council will also be responsible for periodically reviewing and reporting on each mission's progress.
- The Council is Chaired by the Prime Minister.
- The NAPCC consists of several targets on climate change issues and addresses the urgent and critical concerns of the country.
- The National Missions were to be institutionalized by the respective Ministries and would be organized through inter-sectoral groups.

Contd…

- Each Mission was to evolve specific objectives spanning the remaining years of the 11th plan period at the time it was laid down and the 12th Plan Period and each Mission will report publicly on its annual performance.
- Ministries with lead responsibility for each of the missions are directed to develop objectives, implementation strategies, timelines, and monitoring and evaluation criteria, to be submitted to the Prime Minister's Council on Climate Change.
- Each Mission will report publicly on its annual performance
- All the missions have been implemented and progress is being made

Clean Development Mechanism (CDM)

- CDM offers industrialized countries the possibility to engage in economically and environmentally competitive emission reduction projects in developing countries (the Non-Annexure I countries).
- Through the CDM, certified emission reductions (CERs) will be generated.
- These CER credits, each equivalent to one tonne of CO2, can be can be traded and sold, and used by industrialized countries for the purpose of being counted towards meeting Kyoto targets.

Institutional Framework

- The CDM is administered by the CDM Executive Board (CDM Board)
- CDM Board reports and is accountable to the Conference of Parties (COP).
- Developing country is the Project Developer also known as the Host Party/Country
- Annexure 1 countries are the Investors
- The project has to be first approved by Designated National Authority (DNA) of the Host country where the project is being set up.

Contd...

- The Designated National Authority (DNA) in India is the National Clean Development Mechanism Authority (NCDMA)
- An institution which verifies the essential prerequisites for CDM projects and certifies the emission reductions is the Designated Operational Entity (DOE)

Project requirements

- Must promote sustainable development as defined by host countries
- Emission reductions must be:
  - Real
  - Measurable
  - Additional
- Funding for CDM must not divert funds from existing government development programs

Carbon Credits

- Carbon credits are reductions of emission of Green House Gases (GHGs) caused by a project.
- 1 M ton CO2 = 1 carbon credit = 1 CER [Certified Emission Reduction Unit –in CDM terminology]
- The reduction is achieved by improved and modern technology and process.
- VER –Voluntary/Verified Emission reductions (For non registered Projects)

Host country eligibility requirements

- Ratified Kyoto Protocol
- Designate a DNA
  - Designated National Authority
  - Approves CDM projects
    - Confirms project in line with country's sustainable development agenda.
    - Confirms project in accordance with all laws
    - Reviews PDD to see if complete
  - Approval process not set by CDM. Each country allowed to determine own rules

Methodologies

- Incineration of HFC 23 waste streams
- Analysis of the least cost fuel option for seasonality operating biomass cogeneration plants
- Recovery & utilization of gas from oil wells that would otherwise be flared.
- Natural Gas based package cogeneration
- Steam system efficiency improved by replacing steam traps.
- Baseline methodology for decomposition of N_20 from existing adipic acid production plants
- Method for zero emissions grid connected electricity generation from renewable sources

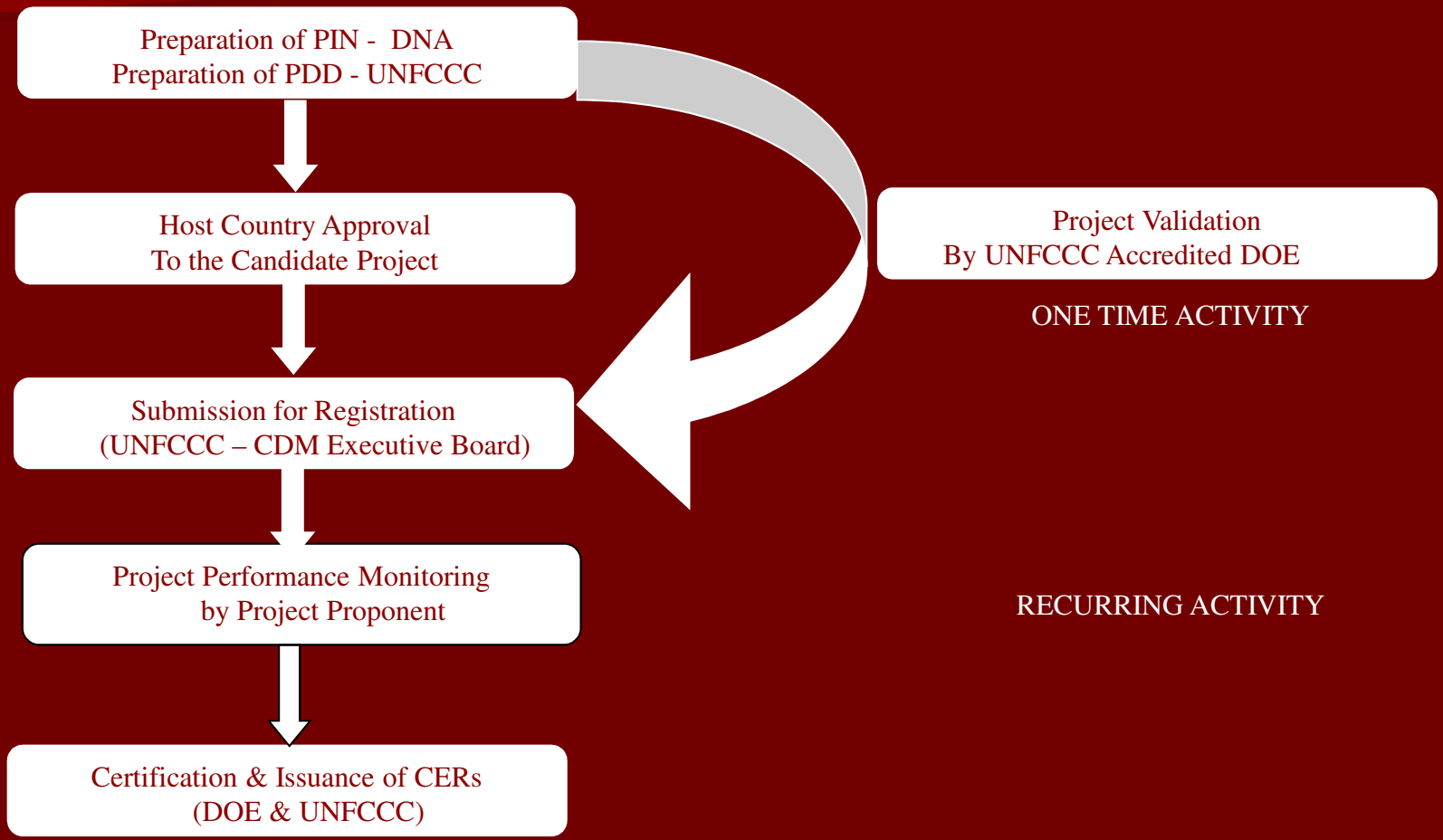
Methodologies

- Methodology from greenhouse gas reductions through waste head recovery & utilization for power generation at cement plants
- Avoid emissions from organic waste through alternative waste treatment processes
- Substitute of CO_2 from fossil or mineral origin by CO2 from renewable sources in the production of inorganic compounds
- Methods for bus rapid transit projects
- Methane emissions reduction from organic waste, water and bio-organic solid waste using composting
- Afforestation and reforestation activities

Small Scale CDM Projects

- Power projects upto 15 mega watts
- Energy saving of 60 giga watts hours per year
- Reduction of 60 kt CO2 per year.
- A & R Sequestration of 8 kt CO2
- It should not be debundled component of large methodology
- Approved Simplified Methodologies by CDM EB
- Same DOE can undertake validation, verification and certification
- Bundling of projects feasible

CDM Project Cycle - Basics



CDM Registration
Step 1: PDD submission

- Project Design Document
  - Presents information on the essential technical and organizational aspects of project activity
  - Contains information on activity, application of approved baseline and monitoring methodologies
  - Submitted to DOE, which decides on validity. Must be accepted by EB
  - Must demonstrate project will result in net carbon emission reductions

Baseline Methodology

- Application of an approach for determination of baseline scenario
- Should reflect aspects such as environmental conditions and past land uses and land-use changes
- Must be established in a transparent and conservative manner
- Submitted to DOE, which decides on validity. Must be accepted by EB

The Additionality Test

- "additionality" criteria, – " The emission reductions of the proposed project must be additional to any that would occur in absence of the project".
- Would the project have happened otherwise?
- Emission Additionality
- Financial Additionality
- Environmental Additionality
- Technological Additionality

Host Country Approval

- Project must obtain approval from the host government.
- The Designated National Authority (DNA) in India is the National Clean Development Mechanism Authority (NCDMA)
- The NCDMA is a single window clearance for CDM projects in the country.
- Once the members of NCDMA are satisfied, the Host Country Approval (HCA) is issued by the Member-Secretary of the National CDM Authority.

Step 2: Validation and Registration

- Validation conducted by a DOE
  - Reviews PDD
  - Validates proposed CDM project and submits a validation report to EB
    - PDD
    - Written approval of project by DNA
    - Explanation of response to public comments
- Registration
  - Requested by DOE to the EB
  - Registration is final after 8 weeks unless a review is requested

Step 3: Implementation and Monitoring

- Project Implementation
  - Follow methodology written in PDD
- Monitoring
  - Follow methodology set in the PDD
  - Complete and submit a monitoring report
    - Includes estimates of carbon emission reductions
    - Available to the public

Step 4: Verification and certification

- Verification
  - Independent review of emission reductions by a DIFFERENT DOE
  - DOE submits 'verification report' to EB and is made publicly available
  - Report covers a specific period
- Certification
  - Conducted by DOE
  - Specific period, project achieved certain level of emission reductions
  - Reductions are additional

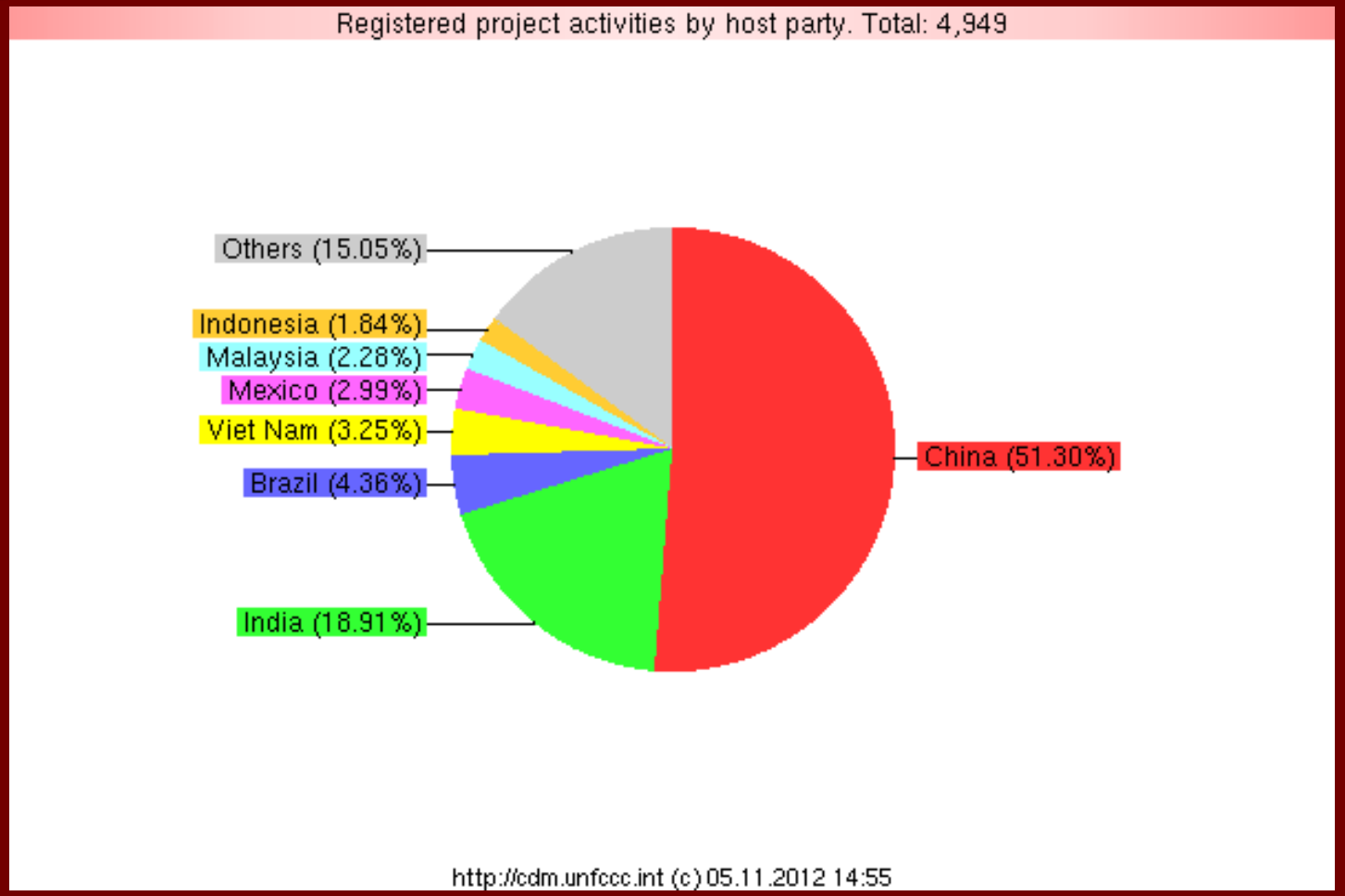
Registration Fee

- USD 0.10 per CER for the first 15,000 tonnes of CO2 equivalent for which issuance is requested in a given calendar year;
- USD 0.20 per CER for any amount in excess of 15,000 tonnes of CO2 equivalent for which issuance is requested in a given calendar year
- Maximum Fee USD 350,000
- No registration fee to be paid for CDM project activities with expected average annual reduction below 15,000 t CO2-equivalent.
- No registration fee are to be paid for CDM project activities hosted in least developed countries

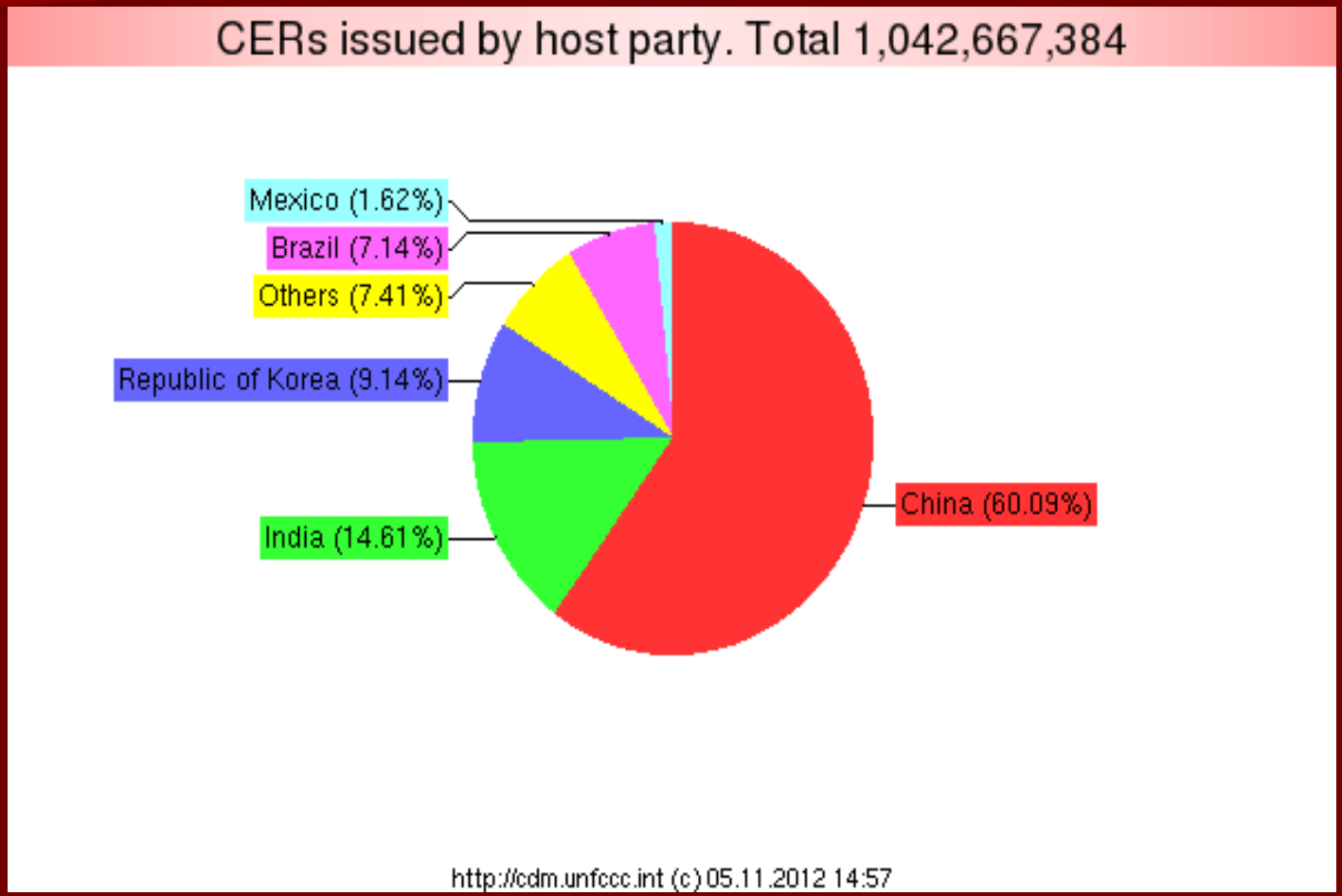
Step 5: Issuance of CERs

- CER: Certified Emission Reduction credits
  - Issued after verification and certification by DOE
  - Can be sold in international emissions reduction market
- Project review
  - After credits sold, project can review what steps it wants to take, e.g.:
    - Dissolution of project
    - Renewal for another crediting period
    - Change of project participants

CDM Registration and CER Statistics



CDM Registration and CER Statistics

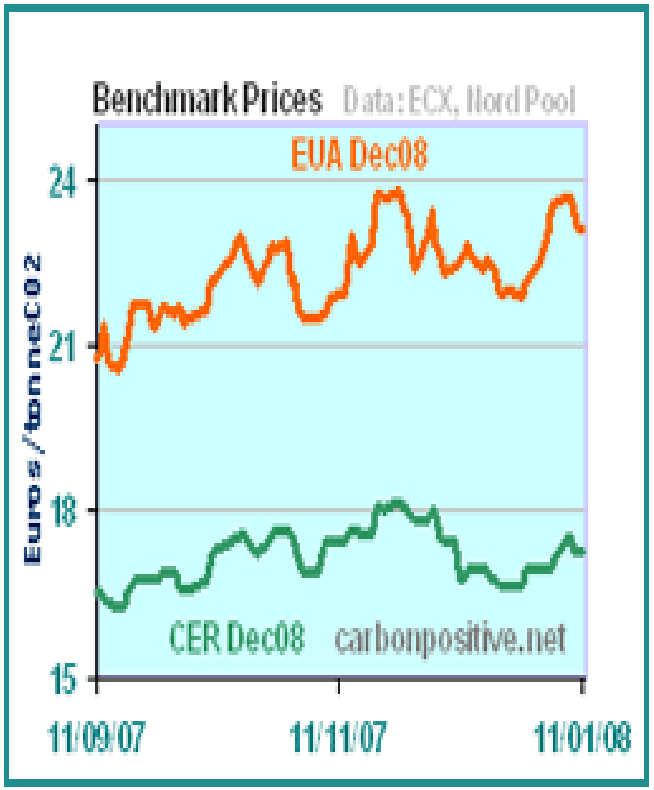


TYPICAL –Full CDM Cycle Time Frame

- Registration Process=►TOTAL 8 –12 Months [Existing Methodology], 24 Months [for New Methodology]
  - Project Design Document: Large scale - 3 to 4 months, Small scale PDD : 1 to 2 months
  - Host country approval : 2 to 4 months
  - Validation
    - ☐☐Adopt an approved methodology : about 2 months
    - ☐☐Propose a new methodology : 6 to 12 months
  - Registration
    - ☐☐Large scale PDD: 8 weeks after submission unless revision req.
  - ☐☐Small scale PDD: 4 weeks after submission unless revision req.
- Accrual Process Accrual Process=►TOTAL about 14 Months
  - Data Generation –Duration [Say 1 year]
  - Certification –About 1 Month
  - International Trading & FINAL Receipt of funds–About 1 Month

Factors determining CER price

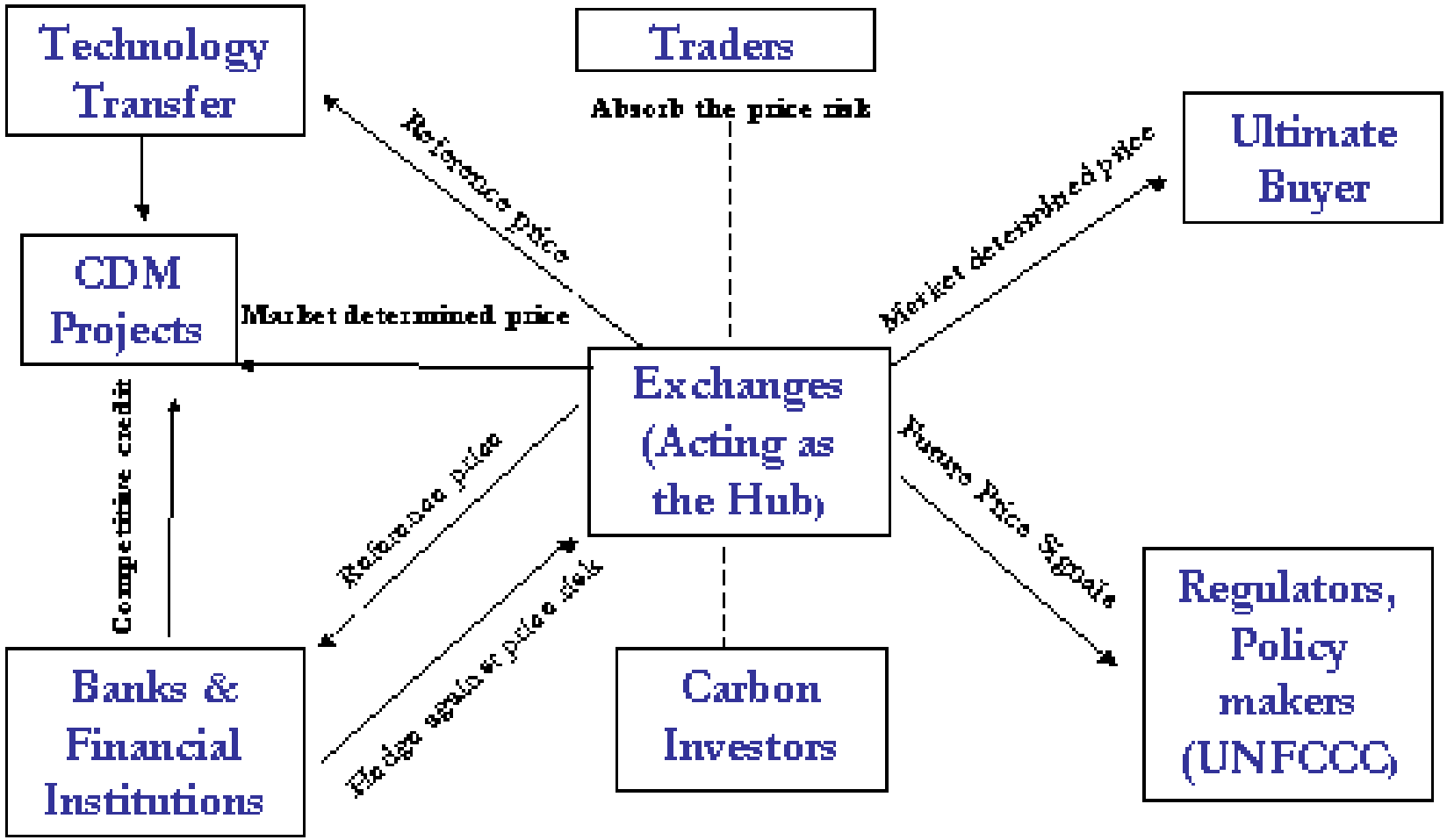
- Country's rating in terms of country risk, credibility and performance of NCDMA
- The status of the project
- The size of the project / offerings of CERs
- The history of the project in honouring its commitments to buyers
- Credit rating and standing of the project developers
- No. of project participants
- Reputation of project participants
- The work done by the project proponents in terms of sustainable development



Industries having scope of generation of CERs

- Agriculture
- Energy (renewable & non-renewable sources)
- Manufacturing
- Fugitive emissions from fuels (solid, oil and gas)
- Metal production
- Mining and mineral production
- Chemicals
- Afforestation & reforestation

Carbon Credit Supply Chain
(After the advent of Exchanges)



Risks associated with CDM project

Registration Risk

- Delay of registration
- Failure of registration
- CER calculation
- Baseline Risk
- UNFCCC Policy

Market Risk

- Market volatility
- CER Entry Restriction (Cap Risk)
- ITL
- Hot Air

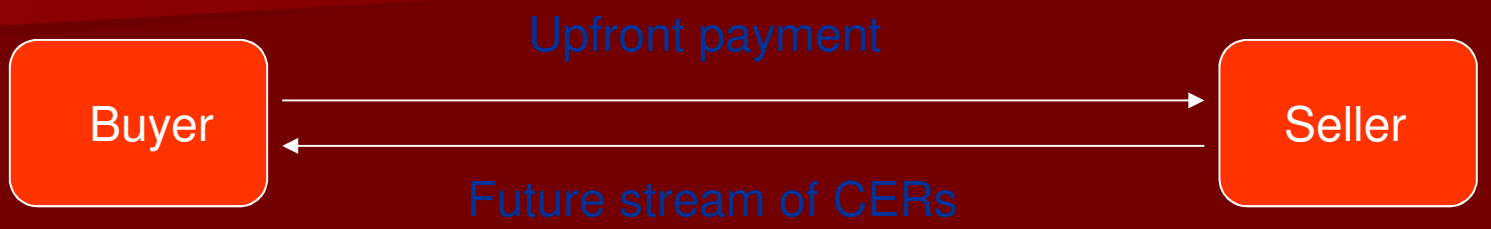
Buyer Risks

- Reliability of Buyer
- Balance Sheet

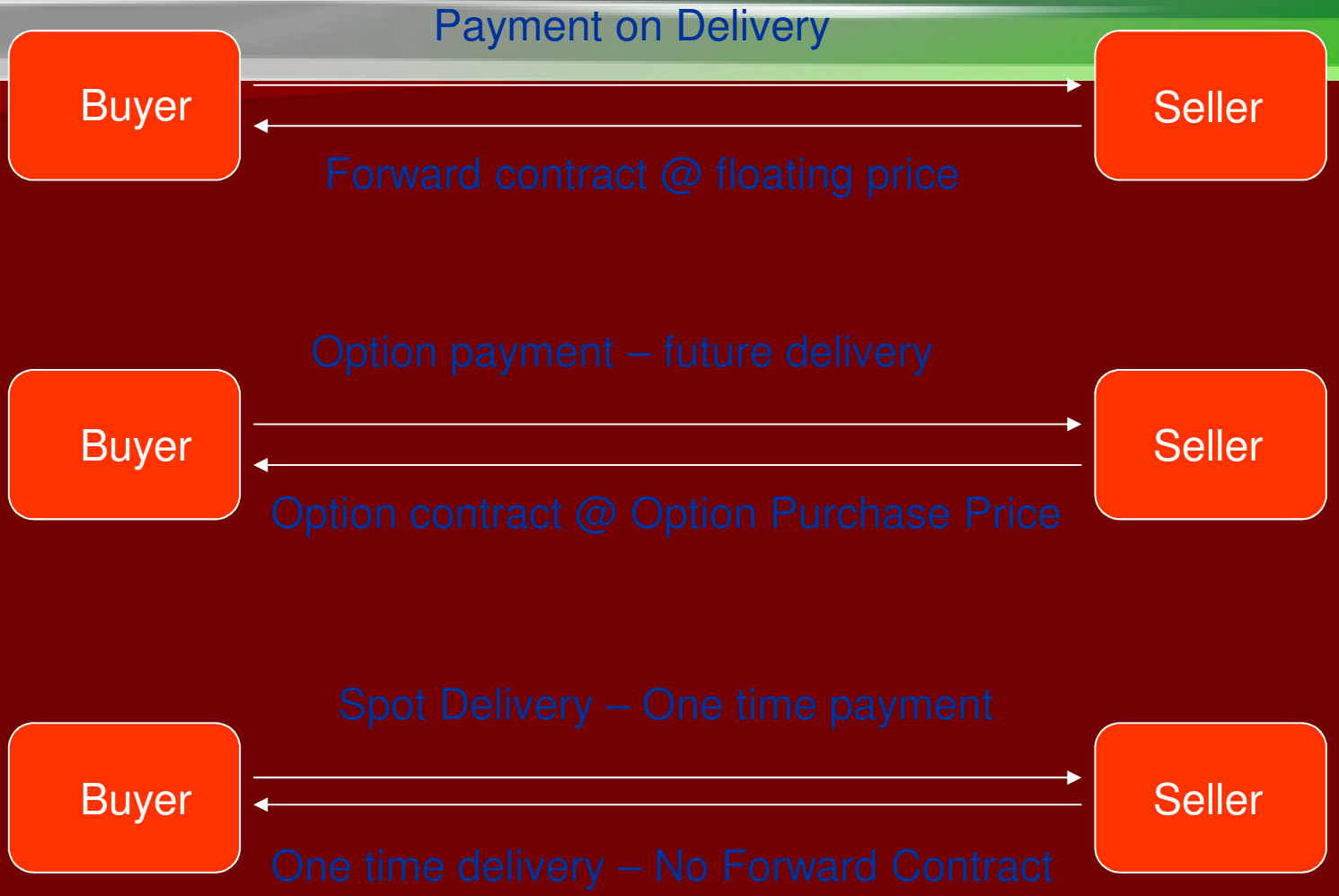
Project Risks / Delivery Risks

- Asset Transfer
- Underperformance
- Late delivery
- Project commissioning risk

Transaction Structures



Transaction Structures *contd.*



About the Author

- *CA. Rajkumar S Adukia is an eminent business consultant, academician, writer, and speaker. He is the senior partner of Adukia & Associates.*
- *In addition to being a Chartered Accountant, Company Secretary, Cost Accountant, MBA, Dip IFR (UK), Mr. Adukia also holds a Degree in Law and Diploma in Labour Laws and IPR.*
- *Mr. Adukia, a rank holder from Bombay University completed the Chartered Accountancy examination with 1st Rank in Inter CA & 6th Rank in Final CA, and 3rd Rank in Final Cost Accountancy Course in 1983.*
- *He started his practice as a Chartered Accountant on 1st July 1983, in the three decades following which he left no stone unturned, be it academic expertise or professional development.*

About the Author

- *He has been coordinating with various Professional Institutions, Associations, Universities, University Grants Commission and other Educational Institutions.*
- *Authored more than 50 books on a vast range of topics including Internal Audit, Bank Audit, SEZ, CARO, PMLA, Anti-dumping, Income Tax Search, Survey and Seizure, IFRS, LLP, Labour Laws, Real estate, ERM, Inbound and Outbound Investments, Green Audit etc.*
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THANK YOU