

# FUNCTIONAL BACKGROUND OF CDM

24 JUN 2010, Ai Kawamura JICA Expert Team

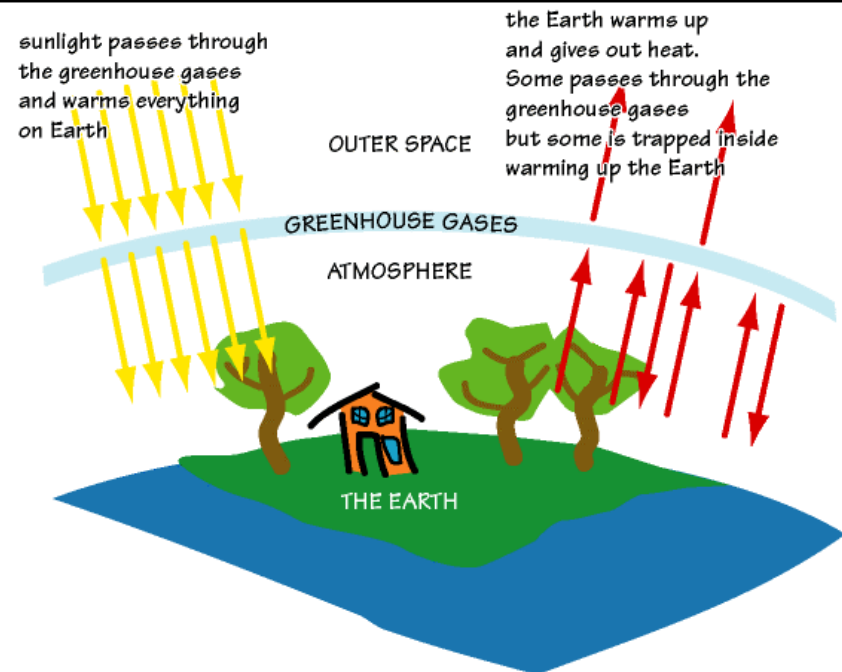
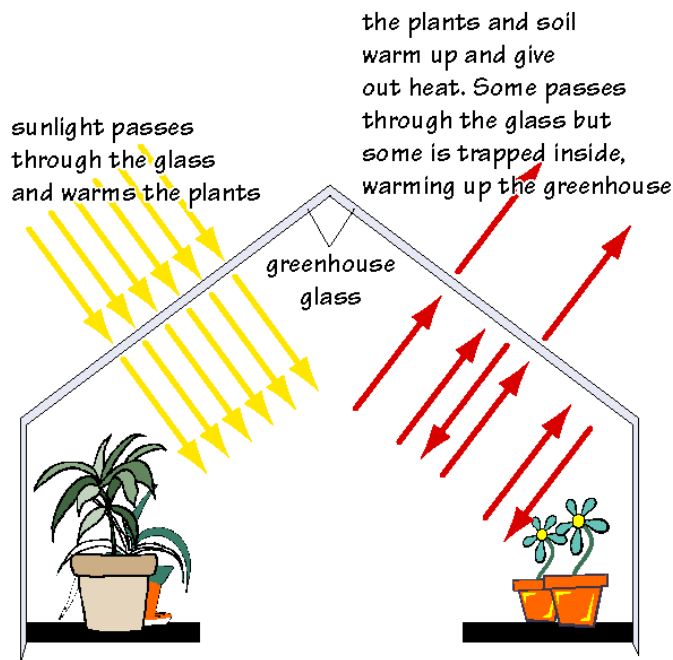
- 1. Kyoto Protocol and CDM**
- 2. What is CDM?**
- 3. Relevant Institutions and Their Functions**
- 4. Advantages, Limitations and Issues of CDM**

# 1. KYOTO PROTOCOL & CDM

# 1-1. CLIMATE CHANGE & GHGs(1)

## ● Greenhouse Gases (GHGs) and Global Warming

Temperature on the earth is determined as the result of a balance between the radiation from the Sun and infrared radiation from the earth. GHGs, by behaving like the glass in greenhouse, play the role of controlling this balance as shown in the figure below.



# 1-1. CLIMATE CHANGE & GHGs(2)

Increased GHGs in atmosphere trap more heat that should have given out back to the outer space.



Global temperature is increasing (Global Warming).

If it further continues

-Average global temperature will increase by 1.4 to 5.8 degree centigrade in the next 100 years.  
- Sea level may rise by about 1 meter by 2100.

- Melting of glaciers (e.g., Himalaya, East Nepal)
- More frequent and serious floods
- Expansion tropical epidemic/disease



# 1-2. KYOTO PROTOCOL & CDM(1)

## ● IMPORTANT TERMS

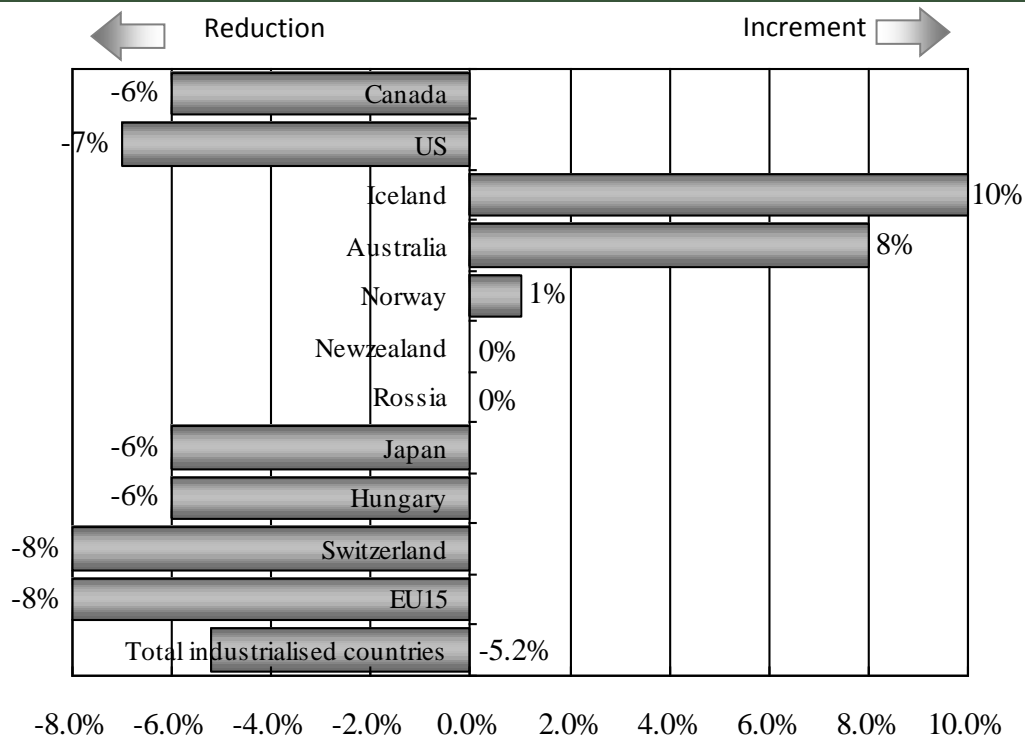
Annex I Parties	<b><u>Developed countries</u></b> and <b><u>economies-in-transition countries</u></b> that <b><u>commit themselves to achieve certain quantified emission limitation and reduction objectives</u></b> . By ratifying the KP, they can participate in CDM projects as <b><u>investing countries</u></b> .
Non-Annex I Parties	Countries to the Kyoto Protocol but are not listed in Annex I to the UNFCCC, generally <b><u>developing countries</u></b> that are eligible to be <b><u>host countries for CDM projects</u></b> . <i>(Sri Lanka is included in this category)</i>
Certified Emission Reduction (CER)	The <b><u>tradable units of the CDM</u></b> in <b><u>one tonne of carbon dioxide-equivalent (CO<sub>2</sub>-e)</u></b> .
UNFCCC (The United Nations Framework Convention on Climate Change)	A multilateral convention <b><u>aiming at stabilising GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system</u></b> (UNFCCC, Article2).

# 1-2. KYOTO PROTOCOL & CDM(2)

## • KYOTO PROTOCOL

The Kyoto Protocol (KP) was adopted at COP3 in Dec. 1997 (KP entered into force on 16 Feb. 2005)

### GHGs emission reduction commitment of Annex I countries



#### GHGs

CO<sub>2</sub>

CH<sub>4</sub>

N<sub>2</sub>O

HFCs

PFCs

SF<sub>6</sub>

# 1-2. KYOTO PROTOCOL & CDM(3)

- **FLEXIBILITY MECHANISM UNDER KYOTO PROTOCOL**

KP introduces flexibility market mechanisms (“Kyoto Mechanisms”)

There are mechanisms designed to help Annex 1 Parties reduce the costs of meeting their emission targets by achieving emission reductions at lower costs in other countries than they could domestically such as:

- ❑ Clean Development Mechanism (CDM) <Art.12 of the KP>
- ❑ Joint Implementation (JI) <Art.6 of the KP>
- ❑ Emissions Trading (ET) <Art.17 of the KP>

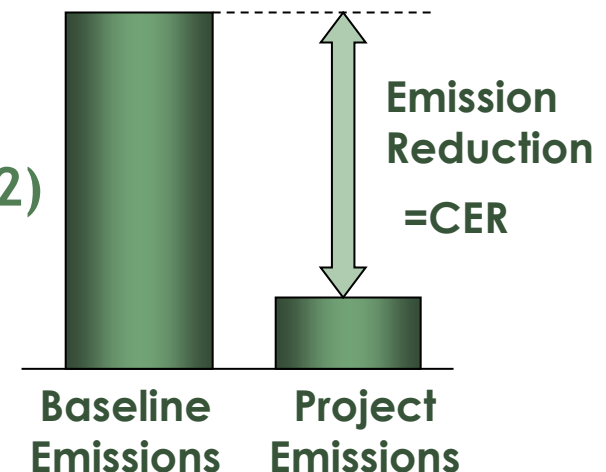


## 2. WHAT IS CDM?

p. 1 ~3 of  
CDM/JI Manual

# 2-1. WHAT IS CDM(1)

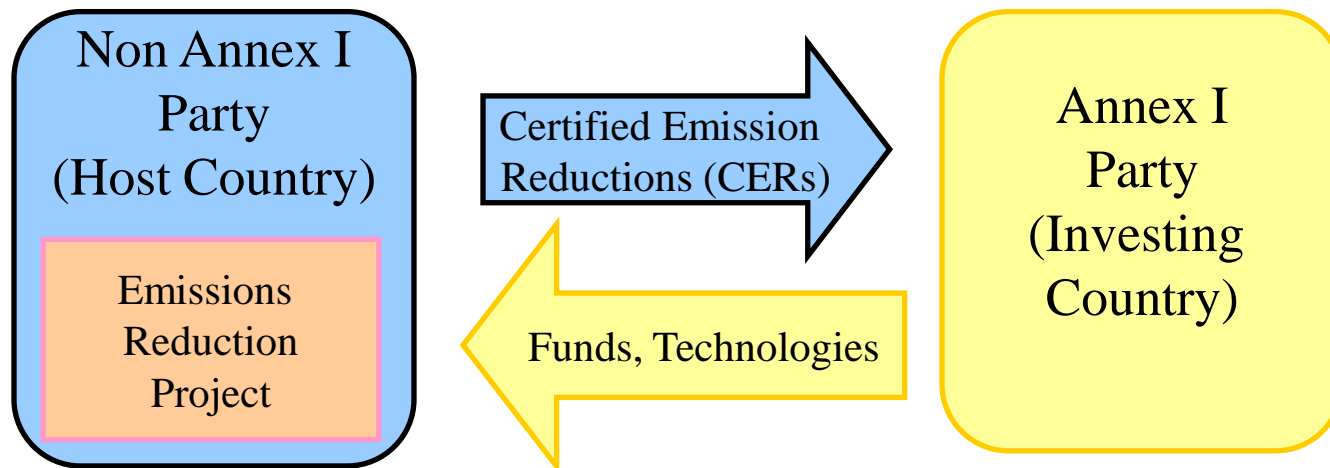
- ⊙ The only mechanism applicable to both Annex I & non-Annex I parties **(Sri Lanka is included in non-Annex I parties)**
- ⊙ The reduced amount of GHGs certified by CDM Executive Board (UNFCCC) becomes carbon credits called “Certified Emission Reductions (CERs)” which can be transferred/traded to Annex I parties
- ⊙ The reduced amount of GHGs resulting from a CDM project can be used as part of quantified emission reduction targets for Annex I parties
- ⊙ The unit of CER is ton of carbon dioxide (tCO<sub>2</sub>)
- ⊙ CER can be dealt at market



# 2-1. WHAT IS CDM(2)

## *Purpose of the Mechanism:*

- ◎ To assist Non-Annex I parties (developing countries)
  - in achieving sustainable development and
  - in contributing to the ultimate objective of the Convention
- ◎ To assist Annex I parties (developed & economies-in-transition countries)
  - in achieving compliance with their commitments.



## 2-2. REQUIREMENTS FOR CDM

- ◎ A CDM project activity must contribute “Sustainable Development” of host countries.
- ◎ To be registered as CDM, the project must comply with the following conditions< Para 5. Art.12 of the KP >:

- The Project must be implemented on the basis of voluntary participation approved by each Party involved;
- The Project must have real, measurable, and long-term benefits related to the mitigation of climate change; and
- Emission reduction achieved by the Project must be additional to any that would occur in the absence of the certified project activity. (Additionality)



Basically activities mandated by the law are not applicable

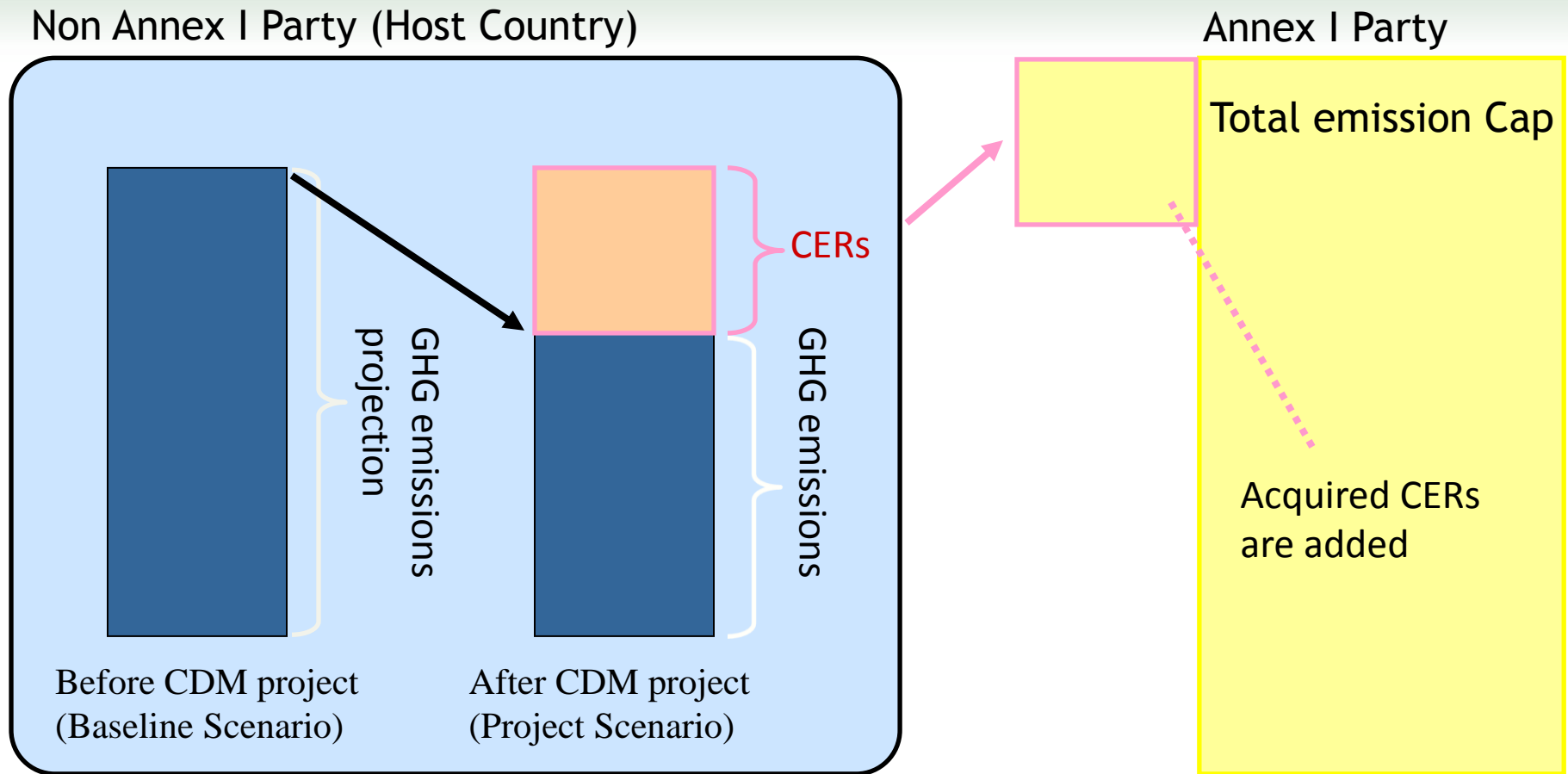


Monitoring work is required



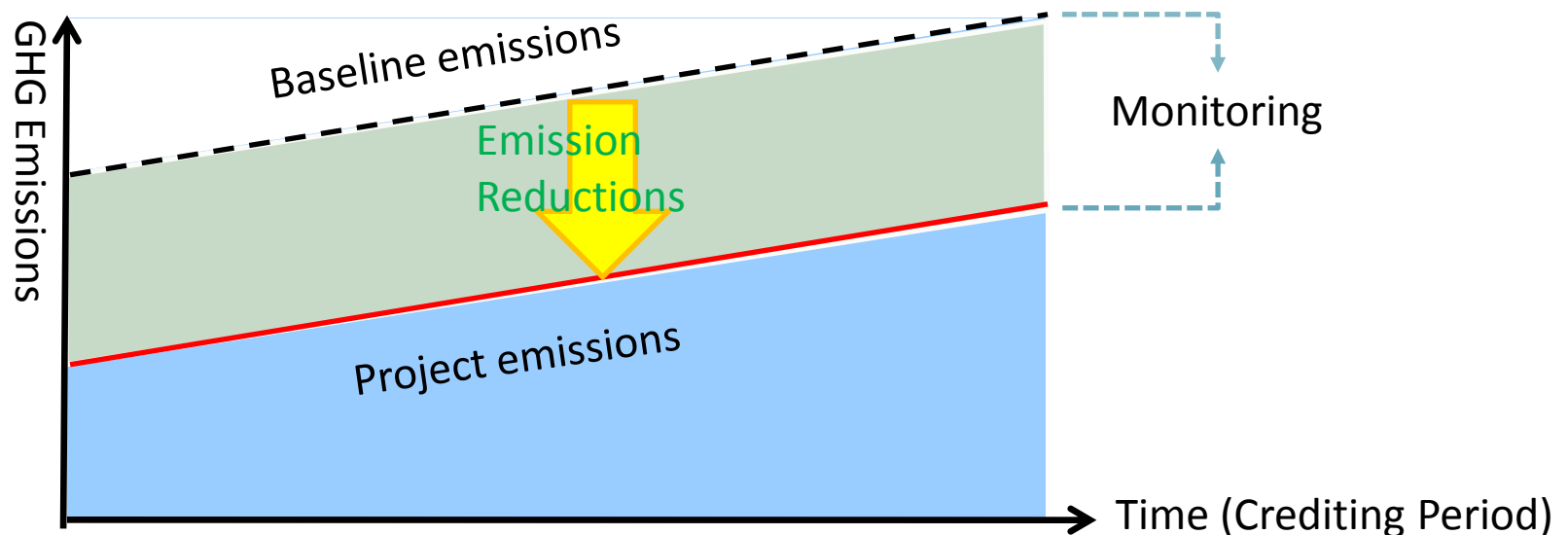
Additionality establishment is required

## 2-3. MECHANISMS OF CDM



## 2-4. BASELINE SCENARIO & PROJECT SCENARIO

- ⊙ Baseline Scenario: the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed project activity (3/CMP.1, Annex, para 44).
- ⊙ Project Scenario: A proposed CDM project.



## 2-4. BASELINE SCENARIO & PROJECT SCENARIO

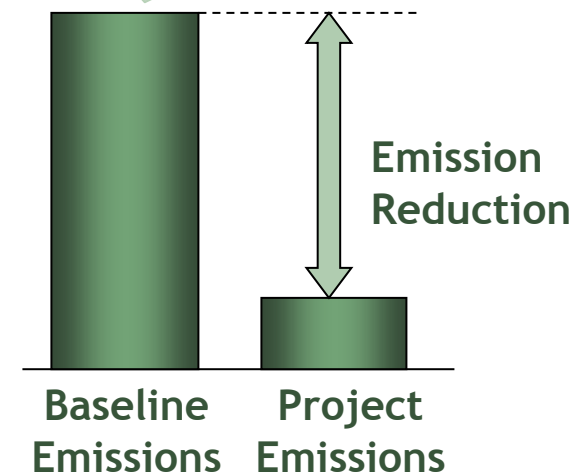
- ◎ A baseline (scenario and emissions) shall be established:
  - through approved and new methodologies;
  - in a transparent and conservative manner regarding the choice of approaches, assumptions, methodologies, parameters, data sources, key factors and additionality, and taking into account uncertainty;
  - on a project-specific basis;
  - in the case of SSC CDM project activities, in accordance with simplified procedures developed for such activities;
  - taking into account relevant national and/or sectoral policies and circumstances (such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector).

## 2-5. ADDITIONALITY

- ◎ Each project must satisfy the “additionality” criteria to be approved as a CDM project.
  - ◎ Investment barrier
  - ◎ Technological barrier
  - ◎ Barrier due to prevailing practice
  - ◎ Other barriers
- ◎ Guidelines for additionality demonstration.
  - ◎ “The tool for the demonstration and assessment of additionality”
  - ◎ “Combined tool to identify the baseline scenario and demonstrate additionality”

*Additionality: A CDM project activity is additional if GHG emissions are reduced below those that would have occurred in the absence of the registered CDM project activity.*

“Additionality”  
= This emission  
reduction would not  
have been achieved  
without CDM





# **3. RELEVANT INSTITUTIONS & THEIR FUNCTIONS**

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CDM/JI Manual

# 3.1. RELEVANT INSTITUTIONS



UNFCCC  
(CDM EB)

Designated  
National Authority  
(DNA)

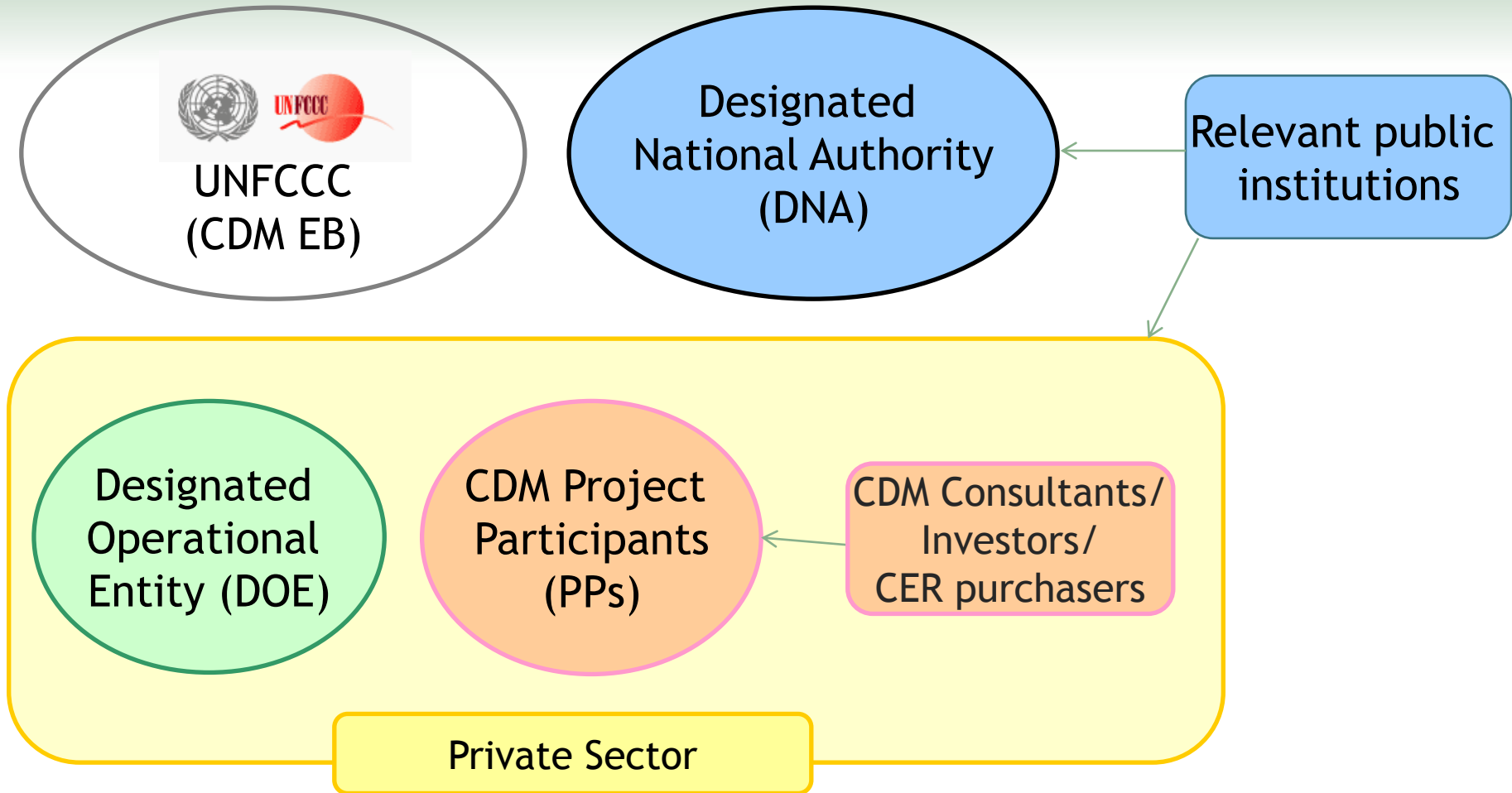
Relevant public  
institutions

Designated  
Operational  
Entity (DOE)

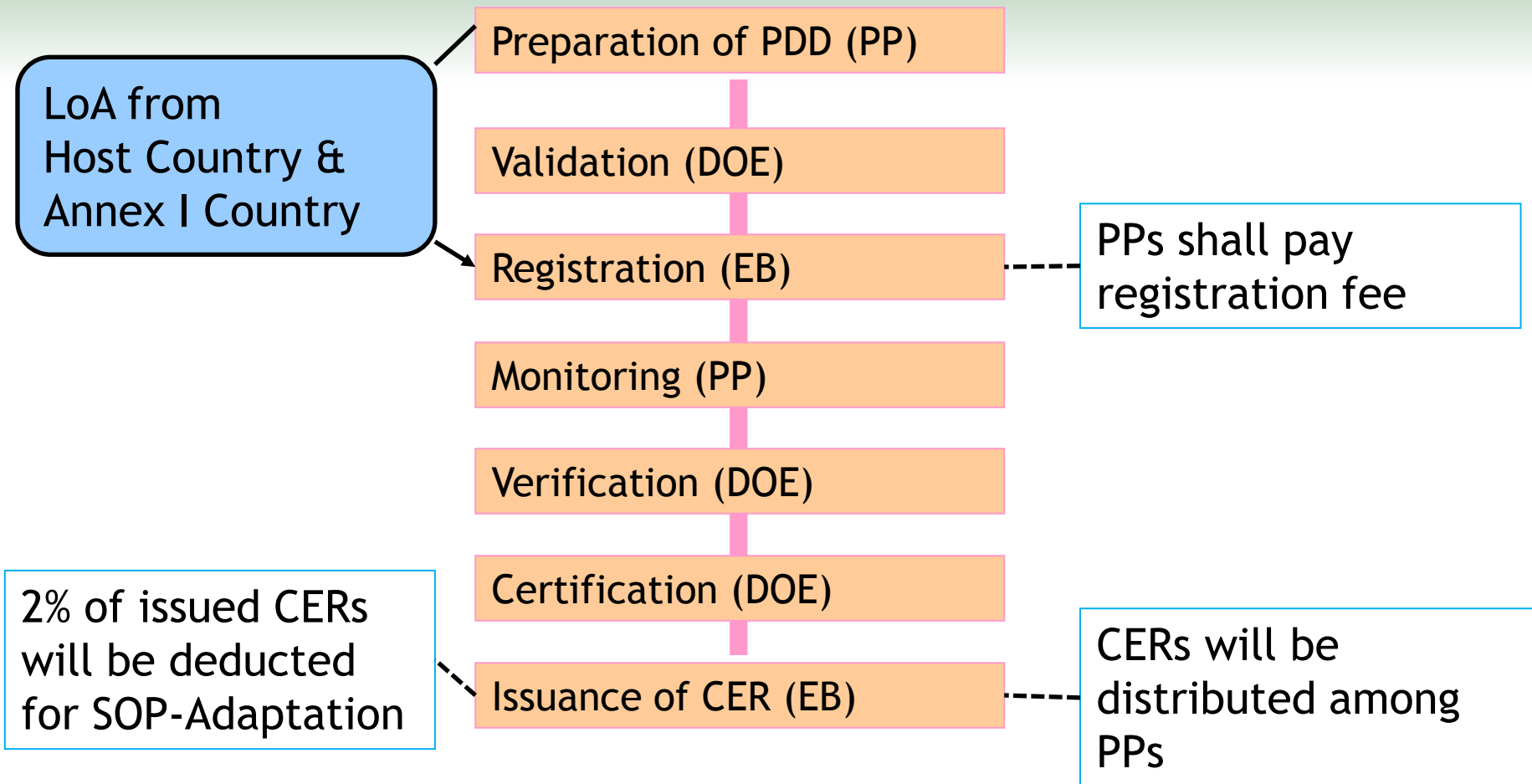
CDM Project  
Participants  
(PPs)

CDM Consultants/  
Investors/  
CER purchasers

Private Sector

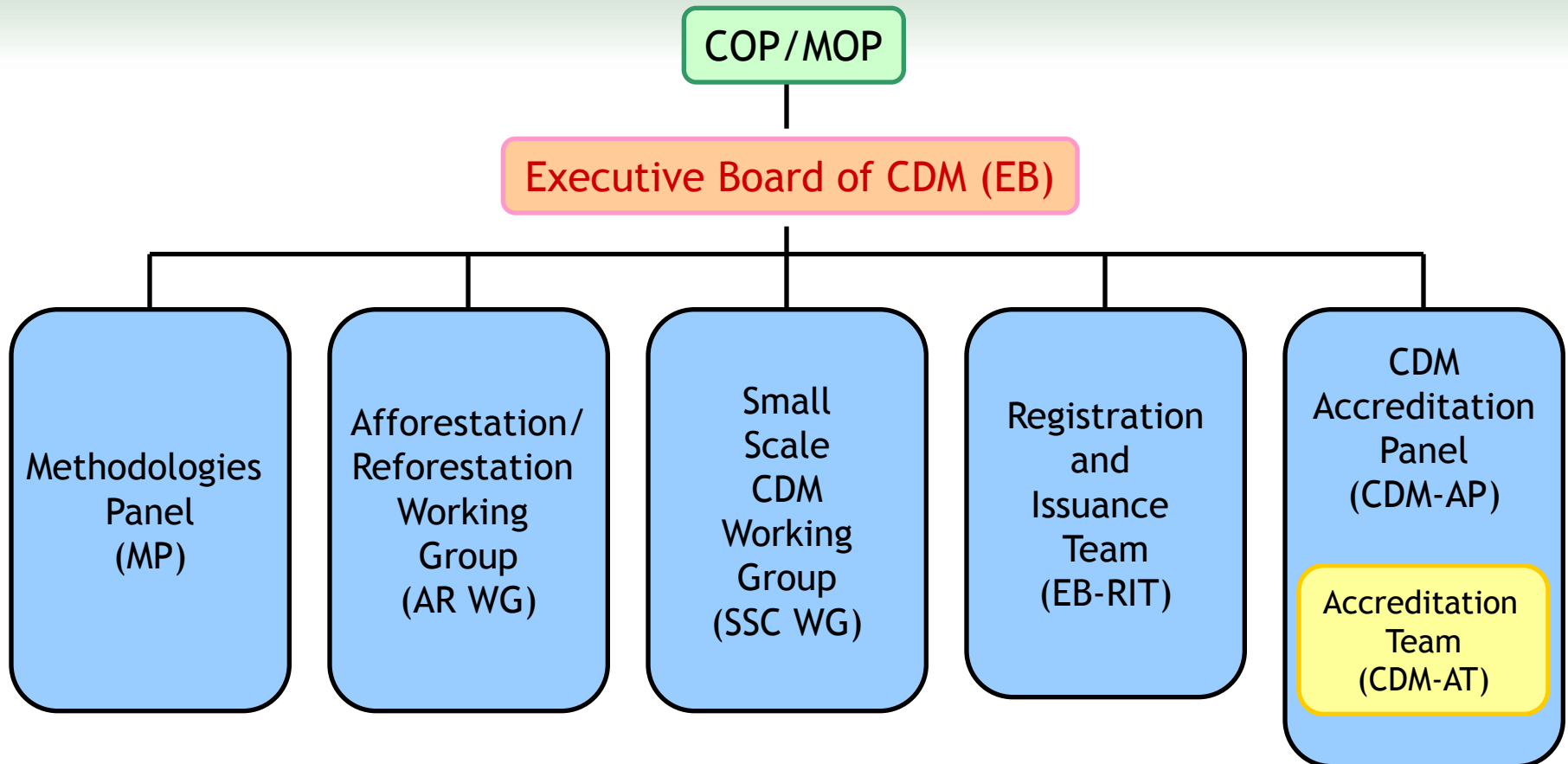


## 3.2. FUNCTIONS OF EACH INSTITUTION



# 3.3.UNFCCC

(UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE)



COP: Conference of the Parties (for United Nations Framework Convention on Climate Change)

MOP: Meeting of the Parties (for Kyoto Protocol)

# 3.3.UNFCCC

## MEMBERS OF CDM-EB (AS OF MAY. 2010)

	Member (10)	Alternate Member (10)
Africa	Mr. Djemouai (Algeria)	Mr. Adejuwon (Nigeria)
Asia	Mr. Kakakhel (Pakistan)	Mr. Sethi (India)
Eastern Europe	Ms. Harutyunyan (Armenia)	Ms. Bozanic (Serbia)
Latin America	Mr. Sealy (Barbados)	Mr. Miguez (Brazil)
Western Europe	Mr. Hession (UK)	Mr. Bernheim (EC)
Annex I	Mr. Barata (Portugal) *Vice chair	Mr. de Jonge (Netherlands)
	Mr. Stiansen (Norway)	Mr. Kuroki (Japan)
Non-Annex I	Mr. Gwage (Uganda)	Mr. Manso (Costa Rica)
	Mr. Duan (China)	Ms. Hughes (St.Kitts&Nevis)
AOSIS	Mr. Mahlun (Jamaica) * Chair	Mr. Takesy (Micronesia)

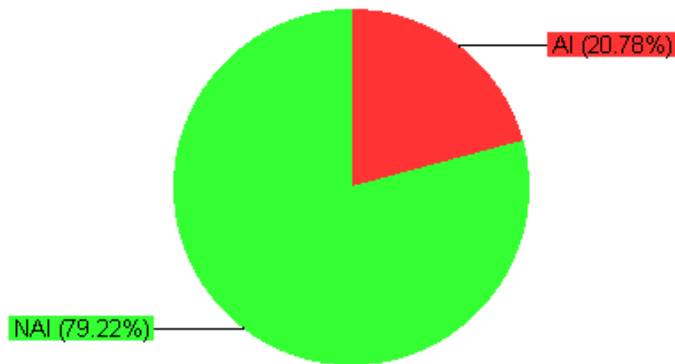
AOSIS: Alliance of Small Island States

## 3.3.DNA (DESIGNATED NATIONAL AUTHORITY)

- ◎ Countries participating in the CDM shall set up a DNA (designated national authority) for the CDM.
  - ◎ Annex I countries (incl. Japan) conducting capacity building activities for set-up/strengthening Host countries' DNA.
- ◎ CDM project participants shall receive written approval of voluntary participation from the DNA of each country involved.
- ◎ Other functions
  - ◎ Official country data such as emission factor of national grid or investment benchmark can be officially announced by DNA.
  - ◎ EB54 “Guidelines for Demonstrating additionality of Renewable Energy Projects ( $\leq 5$  MW) & Energy Efficiency Projects (with Energy Saving  $\leq 20$  GWh/y)”. Appropriate technologies can be recommended by DNA and to be approved by CDM-EB.

# 3.3.DNA (DESIGNATED NATIONAL AUTHORITY)

Designated National Authorities (DNA). Total 154

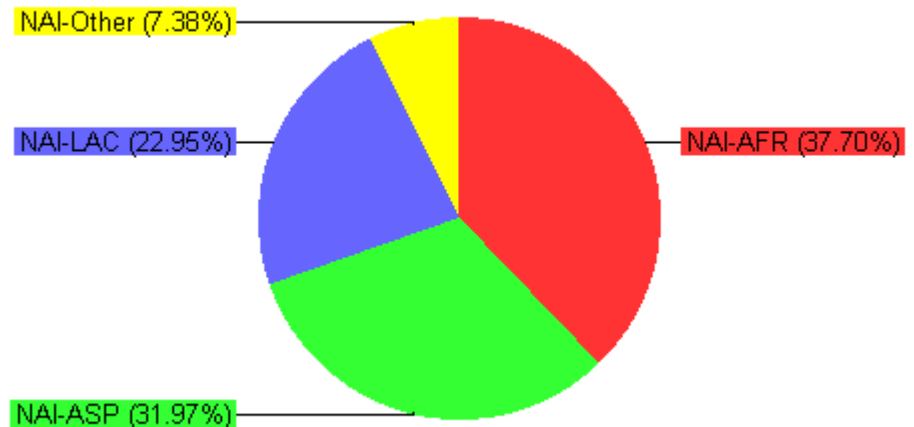


<http://cdm.unfccc.int> (c) 22.06.2010 11:48

NAI-Africa: 46  
 NAI-Asia and the Pacific: 39  
 NAI-Latin America and the Caribbean: 28  
 NAI-Other: 9

Annex I: 32  
 Non-Annex I: 122

Non-AI DNA by region. Total 122



<http://cdm.unfccc.int> (c) 22.06.2010 11:48

Source : UNFCCC-CDM website (<http://cdm.unfccc.int>) (as of 22 Jun. 2010)

## 3.4.DOE (DESIGNATED OPERATION ENTITY)

- ◎ Entities accredited by the CDM-EB and designated by the COP/MOP
  - Validation: 30 entities
  - Verification/Certification: 30 entities
  
- ◎ Two functions
  - Validation: validates and subsequently requests registration of a proposed CDM project activity.
  - Verification & Certification: verifies emission reduction of a registered CDM project activity, certifies as appropriate and requests the CDM-EB to issue CERs accordingly.



## 3.4.DOE (DESIGNATED OPERATION ENTITY)

	Sectoral Scopes
1.	Energy industries (renewable - / non-renewable sources)
2.	Energy distribution
3.	Energy demand
4.	Manufacturing industries
5.	Chemical industry
6.	Construction
7.	Transport
8.	Mining/Mineral production
9.	Metal production
10.	Fugitive emissions from fuels (solid, oil and gas)
11.	Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride
12.	Solvents use
13.	Waste handling and disposal
14.	Afforestation and reforestation
15.	Agriculture

## 3.4.DOE (DESIGNATED OPERATION ENTITY)

Entity Name	Country	Sectoral Scope for Validation	Sectoral Scope for Verification/Certification
JQA	Japan	1-15	1-15
JACO	Japan	1-15	1-15
DNV	UK	1-15	1-15
TUV-SUD	Germany	1-15	1-15
TECO	Japan	1-3	1
JCI	Japan	1,2,4,5,10,13	1,2,13
KPMG AZSA	Japan	1-3, 10	1-3, 10
BVCH	UK	1-15	1-15
SGS	UK	1-15	1-15
KEMCO	Rep of Korea	1-15	1-15

## 3.4.DOE (DESIGNATED OPERATION ENTITY)

Entity Name	Country	Sectoral Scope for Validation	Sectoral Scope for Verification/Certification
TUV Rheinland	Germany	1-15	1-15
ERM CVS	UK	1-5, 8-10, 13	1-5, 8-10, 13
CRA	Canada	1,4,5,10,12,13	1,4,5,10,12,13
AENOR	Spain	1-15	1-15
TUV Nord	Germany	1-15	1-15
LRQA	UK	1-13	1-13
KFQ	Rep of Korea	1-5, 9-11, 13	1-5, 9-11, 13
SQS	Switzerland	1-15	1-15
Shin Nihon	Japan	1-3	1-3
NKKKQA	Japan	1, 3-5, 7, 12, 13	1, 3-5, 7, 12, 13

## 3.4.DOE (DESIGNATED OPERATION ENTITY)

Entity Name	Country	Sectoral Scope for Validation	Sectoral Scope for Verification/Certification
PJR CDM	Japan	1-3, 7,9,12,13,15	1-3, 7,9,12,13,15
CEC	China	1-3, 8,10	1-3, 8,10
RINA	Italy	1-8,10,11,13-15	1-8,10,11,13-15
SIRIM	Malaysia	1-4, 13	1-4, 13
KSA	Rep. of Korea	1-5, 13	1-5, 13
EMC	Rep. of Korea	1-8, 13-15	1-8, 13-15
JMA	Japan	1-4,6,8,9,14	1-4,6,8,9,14
GLC	Germany	1-3, 7, 10,13	1-3, 7, 10,13
CQC	China	1-13	1-13
EYG	France	14	14

## 4. ADVANTAGES, LIMITATIONS & ISSUES OF CDM

## 4-1. ADVANTAGES (BENEFITS) OF CDM

### **(a) Additional Revenue from CERs (carbon credit)**

- Acquisition of CER under CDM will improve the cash flow of the project that contributes to GHGs emission reduction.

### **(b) Transfer of Technology**

- CDM will promote introduction and transfer of the state-of-art technologies that can contribute for GHG emission reduction to the participants

### **(c) Mitigation of Various Environmental Pollution**

- Application of GHGs emission reduction technologies through CDM will also contribute to mitigation of various environment pollution issues, e.g. air pollution, water pollution, waste management, and so forth.

# 4-1. ADVANTAGES (BENEFITS) OF CDM

## (d) Promotion of Renewable Energy

- CDM will contribute to promote renewable energy production and utilization to replace imported fossil fuel.

## (e) Increase of Productivity

- Some of GHGs emission reduction technologies may increase productivity through achievement of energy and raw materials saving.

## (f) Expansion of New Business Opportunities

- CDM will increase the opportunities of business partnership with foreign companies that may trigger business market expansion for the private sector in host countries.



**Contribution to Sustainable Development of Sri Lanka**

## 4-2. LIMITATIONS AND ISSUES OF CDM

According to the current commitment period, the current CDM framework is guaranteed until 2012.



Uncertainty in CER market (ref. VER)

Administration cost and time for formulating a CDM project (Has been difficult to formulate small to medium projects)



Small Scale bundling & Programmatic CDM

Ongoing discussions at UNFCCC how to support host countries less than 10 registered projects.

- lower registration fee
- Giving priority in completeness check of request for registration etc





**THANK YOU**