



# **Global efforts to Mitigate Climate Change and Kyoto Mechanisms**

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# Presentation outline

- Introduction to climate change and Global warming

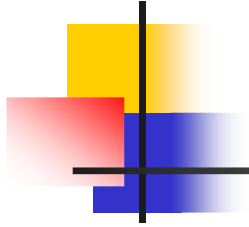
- Greenhouse gas effect

- Global Climate Change

- UNFCCC and Kyoto mechanism

- Clean Development Mechanism

- Outcomes of CANCUN Meeting in Mexico



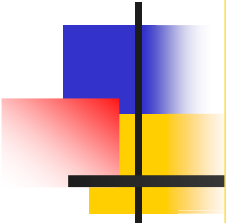
# **INTRODUCTION TO CLIMATE CHANGE**



**Since the mid 1990's, the  
Scientists have been  
increasingly concerned about  
the effect of human activities on  
the Earth's climate system**

**Burning of fossil fuels,  
industrialization, deforestation and  
certain land use practices are  
increasing the atmospheric  
concentrations of greenhouse  
gases such as carbon dioxide,  
methane and nitrous oxide**

# What is Climate Change (CC)?

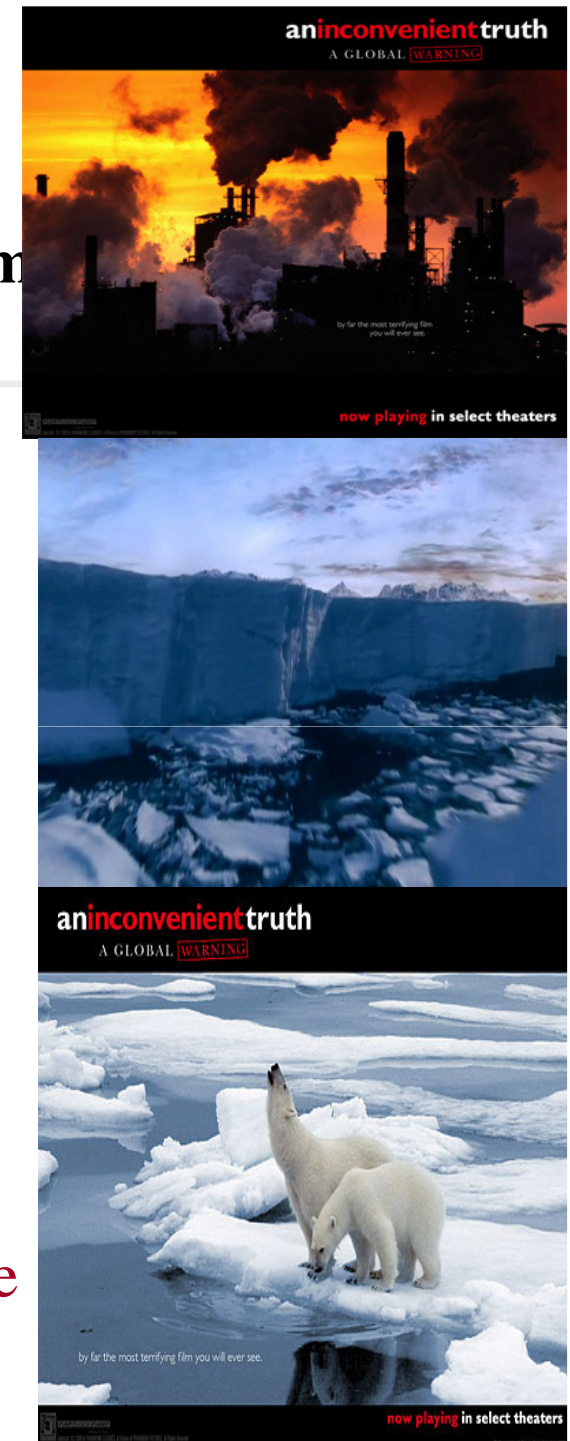


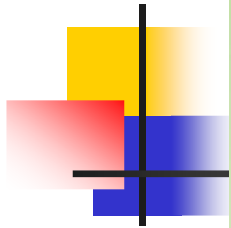
**„Change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere & which is in addition to natural climate variability observed over comparable time periods“**

– UNFCCC Definition

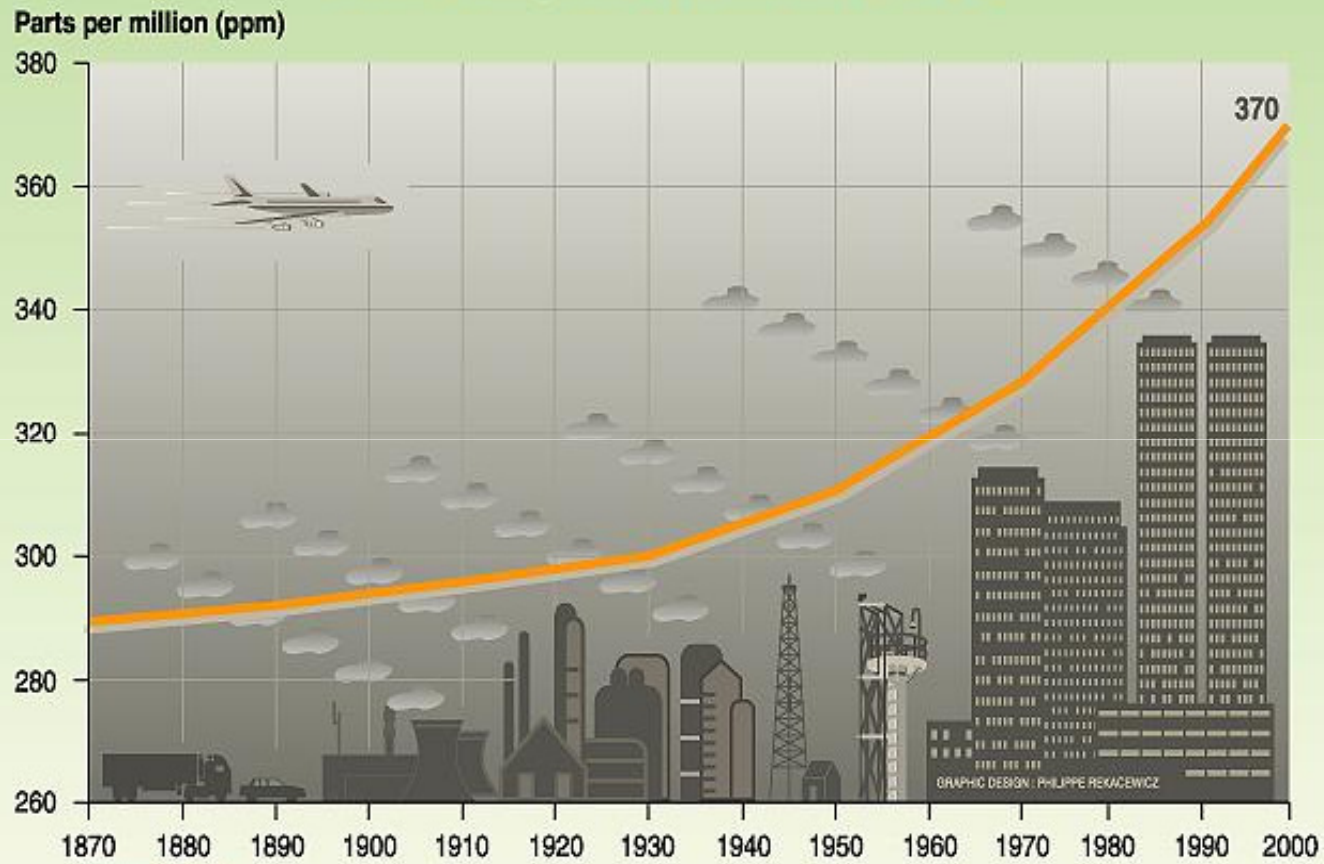
# Global Climate Change

- CO<sub>2</sub> concentration of the atmosphere in the year 1750 was 280 ppm and at present 360 ppm
- By year 2100, projected CO<sub>2</sub> concentration is about 540 to 970 ppm
- During the last century, global temperature has increased by 0.6 °C
- Global average temperature is projected to increase by 1.4 to 5.8° C over the period 1990 to 2100
- During the period 1860 – 2000, the global mean sea level has risen by 10-20 cm
- **During the next century global mean sea level is expected to rise by 9 – 88 cm.**
- Fossil fuel burning will be the dominant influence on the atmospheric concentration of CO<sub>2</sub>
- Source: IPCC





## Global atmospheric concentration of CO<sub>2</sub>



GRID  
Arendal UNEP

Sources: TP Whorf Scripps, Mauna Loa Observatory, Hawaii, institution of oceanography (SIO), university of California La Jolla, California, United States, 1999



# What is global warming ?

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The effect of heat trapping due to the increasing presence of green house gases (i.e. Carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydro-chlorofluorocarbons) in the earth atmosphere is known as greenhouse effect or global warming



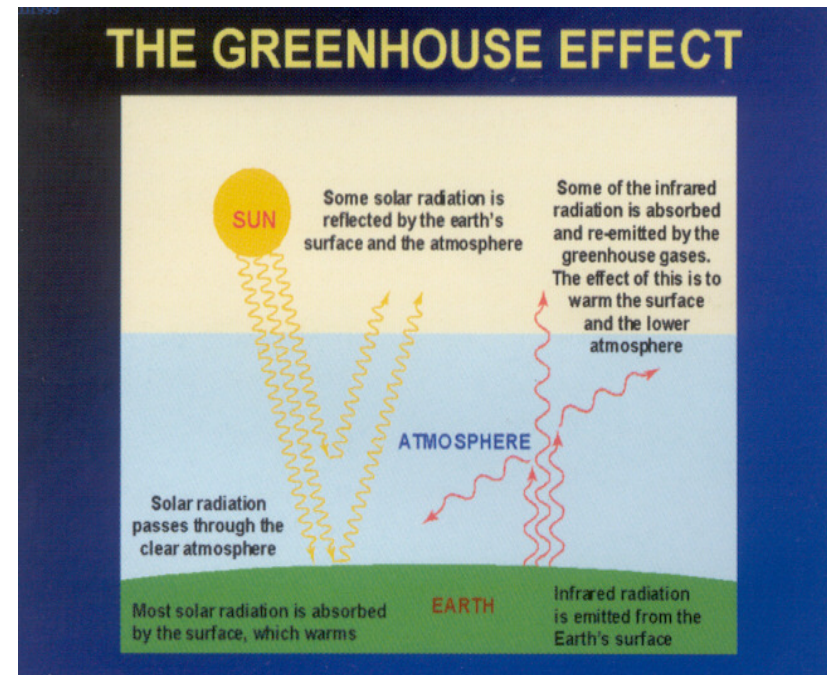
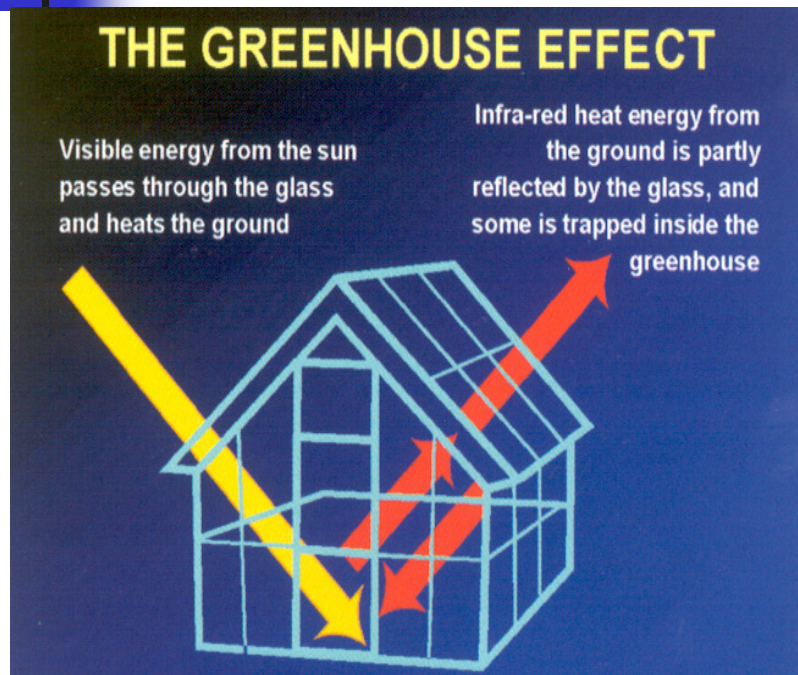
# How does it happen?



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- Solar radiation with shorter wavelength (0.2 – 0.4 micrometers) easily reaches to earth surface and is absorbed by earth surface
- Earth surface radiates back the long wave infrared bands (4 – 100 micrometers)
- The greenhouse gases send these infrared radiation back to the earth surface.
- This trapped heat causes earth's average surface temperature to rise.

# Natural greenhouse effect has operated for billions of years!



*Without this effect the Earth's temperature would be about 33 deg. C colder*

## The main greenhouse gases

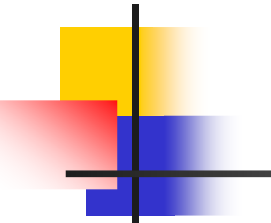
Greenhouse gases	Chemical formula	Pre-industrial concentration	Concentration in 1994	Atmospheric lifetime (years) <sup>***</sup>	Anthropogenic sources	Global warming potential (GWP) <sup>*</sup>
Carbon-dioxide	CO <sub>2</sub>	278 000 ppbv	358 000 ppbv	Variable	Fossil fuel combustion Land use conversion Cement production	1
Methane	CH <sub>4</sub>	700 ppbv	1721 ppbv	12,2 +/- 3	Fossil fuels Rice paddies Waste dumps Livestock	21 **
Nitrous oxide	N <sub>2</sub> O	275 ppbv	311 ppbv	120	Fertilizer industrial processes combustion	310
CFC-12	CCl <sub>2</sub> F <sub>2</sub>	0	0,503 ppbv	102	Liquid coolants. Foams	6200-7100 ****
HCFC-22	CHClF <sub>2</sub>	0	0,105 ppbv	12,1	Liquid coolants	1300-1400 ****
Perfluoromethane	CF <sub>4</sub>	0	0,070 ppbv	50 000	Production of aluminium	6 500
Sulphur hexa-fluoride	SF <sub>6</sub>	0	0,032 ppbv	3 200	Dielectric fluid	23 900

Note : pptv= 1 part per trillion by volume; ppbv= 1 part per billion by volume, ppm v= 1 part per million by volume

<sup>\*</sup> GWP for 100 year time horizon. <sup>\*\*</sup> Includes indirect effects of tropospheric ozone production and stratospheric water vapour production. <sup>\*\*\*</sup> On page 15 of the IPCC SAR. No single lifetime for CO<sub>2</sub> can be defined because of the different rates of uptake by different sink processes. <sup>\*\*\*\*</sup> Net global warming potential (i.e., including the indirect effect due to ozone depletion).



## Per capita emissions in South Asian countries in comparison to USA



<b>Country</b>	<b>Per Capita emissions (carbon tons )</b>	
	<b>1990</b>	<b>1996</b>
<b>USA</b>	<b>5.18</b>	<b>5.37</b>
<b>Bangladesh</b>	<b>0.04</b>	<b>0.05</b>
<b>Bhutan</b>	<b>0.02</b>	<b>0.04</b>
<b>India</b>	<b>0.22</b>	<b>0.29</b>
<b>Maldives</b>	<b>0.19</b>	<b>0.31</b>
<b>Nepal</b>	<b>0.01</b>	<b>0.02</b>
<b>Pakistan</b>	<b>0.16</b>	<b>0.18</b>
<b>Sri Lanka</b>	<b>0.06</b>	<b>0.11</b>

# **Human Influence on Climatic Change Leads to United Nations Framework Convention on Climate Change- UNFCCC (At Rio Summit, 1992)**

## **Objectives of the UNFCCC**

- **Stabilize the atmospheric greenhouse gases at a level that would prevent dangerous anthropogenic interference with the climatic system.**
- **It should be achieved in a time frame to.**
  - ☞ **Ensure the food production is not threatened.**
  - ☞ **Enable economic development proceeds in a sustainable manner.**
- **Ratified 193 countries. Sri Lanka ratified in 1993. Ministry of Environment is the Focal Point for the UNFCCC and Kyoto Protocol**

# **Kyoto Protocol adopted in 1997 in Kyoto**

## **Major objective**

**“Industrialized countries should reduce their combined GHG emission by at least 5.2% compared to their emission levels in 1990 , during the period 2008-2012”.**

**Can reach these targets through three 'Flexible Mechanisms.**

**Sri Lanka acceded to the Kyoto Protocol in September, 2002**



- **Kyoto targets for 39 countries**

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- **Target is to reduce CO2 by 5.2% from the 1990 level**

## **Country Target**

<b>USA</b>	<b>7%</b>
<b>EU countries</b>	<b>8%</b>
<b>Japan</b>	<b>6%</b>
<b>Croatia</b>	<b>5%</b>



# Kyoto Mechanisms

## Clean Development Mechanism

Projects in developing countries  
- Sustainable Development Objective

## Joint Implementation

Projects between countries with targets  
(Annex 1 countries)

## International Emissions Trading

Between countries with targets  
(Annex 1)





# Objectives of Clean Development Mechanism

- ❖ **It assist developed countries achieving their appropriate targets.**
- ❖ **Serves to support sustainable development in developing countries.**
- ❖ **Involves the participation of both developed & developing countries.**
- ❖ **Sri Lanka has no commitment under Kyoto Protocol.**
- ❖ **Participation in CDM mutually benefit Sri Lanka & global community.**

# Current Status of CDM Projects

- **Total Registered CDM Projects – 2805**
- **Issued CERs: 548,305,016**
- **Projects from Sri Lanka -**
  - Registered – 7
  - Validation Process - 15
- **Number of Projects Received the Host Country Approval - 20**
- **Number of Projects received In Principal Letter - 124**

# Outcomes of CANCUN Meeting (COP16/CMP6) in Mexico, 2010

## **(1) Mitigation targets by Annex I**

- (2) Takes note of quantifies economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention as communicated by them and contained in document FCCC/SB/2010/INF.X (to be issued);

## **2. Mitigation actions by Non-Annex I**

Takes note of nationally appropriate mitigation actions to be implemented by non-annex I Parties as communicated by them and contained in document FCCC/AWGLCA/2010/INF.Y (to be issued);

## 3. Shared vision

□

Further recognizes that deep cuts in global greenhouse gas emissions required ...(snip)... to hold the increase in global average temperature below 2°C above pre-industrial levels,...

□

**Agrees**, in context of the long-term goal and the ultimate objective of the Convention and the Bali Action Plan, to work towards identifying a global goal for substantially reducing global emission by 2050...

[Source : Presentation By Sathoshi Iemoto]

## (5) REDD+

▫ Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities,

- (a) Reducing emission from deforestation
- (b) Reducing emission from forest degradation
- (c) Conservation of forest carbon stocks
- (d) Sustainable management of forest
- (e) Enhancement of forest carbon stocks

## (6) Finance

- Decides to establish a Green Climate Fund, to be designated as an operating entity of the financial mechanism
- Invites the World Bank to serve as the interim trustee of the Green Climate Fund,...
- Decided that the Green Climate Fund shall be designated by a Transitional Committee,...

(40 members (25 from developing-/15 from developed countries

[Source : Presentation By Sathoshi Iemoto]

# Decisions for Market Mechanism matters

- CDM matters

- \*Appeal process Continue to discuss

- \*Loans for fewer than 10 registered project host countries- Agreed

- \*Standardized baseline- Agreed

- \*Eligibility of Carbon Capture and Storage (CCS)- Agreed

- Market Mechanism for after 2013

- Mechanisms under Kyoto Protocol- Continue to discuss

- Mechanisms under UNFCCC- Agreed to establish



# Topics for further negotiation

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## Market Mechanism after 2013

- - “Cancun Agreement” clarified the direction
    - Expand Market Mechanism through “Bilateral Crediting Mechanism”, “Sectoral Crediting Mechanism”, etc.

Still several Parties (Bolivia, Venezuela, Cuba, etc.) against for mechanism issue

# Negotiation position for 2nd Commitment Period of KP

NO ← → YES

## Japan, Canada, Russia

- ✓ Cannot accept 2<sup>nd</sup> Commitment Period
- ✓ Establish a new legally-binding framework impartiality and effectiveness (with participation of all major economies)

## USA (not the member of KP)

- ✓ Unconcerned

## Major Developing Countries (NAI)

- ✓ Annex I Parties have to pursue their ambitious target on 2<sup>nd</sup> commitment period
- ✓ US have to accept obligation
- ✓ Against for NAI's commitment

## SIDS

- ✓ Not only Annex I, but also NAI Parties have to commit reduce GHG obligatory

## EU ("Yes" with conditions)

- ✓ Accept 2<sup>nd</sup> Commitment Period with establishment of comprehensive international agreement under the AWG-LCA

[Source : Presentation By Sathoshi Iemoto]



## For More Information

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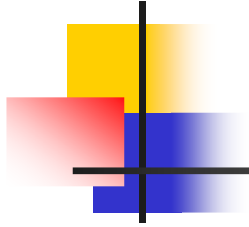
**Web : <http://www.climatechange.lk>**



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SECRETARIAT**

**SRI LANKA**

MINISTRY OF ENVIRONMENT  
AND NATURAL RESOURCES



**Thank You**