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ENVIRONMENT

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KYOTO PROTOCOL ON CLIMATE CHANGE

Kyoto protocol on Climate change

Six GHG included under Kyoto protocol

Parties to UNFCCC

Annex I

Annex II

Non annex

Flexibility Mechanisms

International Emissions Trading (IET)

Clean Development Mechanism (CDM)

Joint Implementation (JI)

Carbon credit

Important COP/MOP

Montreal action plan 2005 (COP-11/MOP-1)

Bali summit-2007 (COP-13/MOP-3)

Poznan summit- 2008 (COP-14/MOP-4)

Copenhagen summit -2009(COP-15/MOP-5)

Cancun summit - 2010 (COP-16/MOP-6)

Green climate Fund(GCF)

Technology mechanism and climate technology centre

Cancun adaptation fund

Durban summit - 2011 (COP-17/MOP-7)

Doha summit - 2012 (COP-18/MOP-8)

Paris summit - 2015 (COP-21/MOP-11)

RECENT DEVELOPMENTS - POST 2020

India's INDC

INDC of major countries

What is REDD , REDD +?

KYOTO PROTOCOL ON CLIMATE CHANGE

International treaty / Protocol giving effect to UNFCCC(Convention).

Voluntary Treaty but Legally Binding.

192 Parties (Canada withdrew in 2012), Adopted in 1997 at Kyoto (COP 3 of UNFCCC), entered into force in February 2005 (now MOP-1 of protocol happened along with COP -11 of UNFCCC).

- * Intergovernmental Panel on Climate Change (IPCC) has predicted an average global rise in temperature of earth from 1.1 and 6.4 °C between 1990 and 2100.
- * Committing state parties to reduce Green House Gases (GHG) emission.
- * Protocol is based on principle of common but differentiated responsibilities: responsibility on developed countries (historically responsible for current levels of greenhouse gases).
- * Protocol required industrialized nations to reduce emission of GHG by an average of 5.2 per cent below 1990 levels by 2012 during 'first commitment period' 2008-12. (5.2% figure is collective one, individual countries were assigned higher or lower targets and some countries were permitted increases.).
- * A second commitment period was agreed on in 2012 i.e, Kyoto was extended till 2020,
- * Negotiations for after second commitment period (end in 2020), resulted in Paris Agreement 2015.

SIX GHG INCLUDED UNDER KYOTO PROTOCOL

(listed in Annex A) are

1. Carbon dioxide (CO₂)
2. Methane (CH₄)
3. Nitrous oxide (N₂O)
4. Hydrofluorocarbons (HFCs)
5. Perfluorocarbons (PFCs)
6. Sulphur hexafluoride (SF₆)



PARTIES TO UNFCCC

Where classified as

- * **Annex I** - Includes industrialized countries and economies in Transition. Accepted strict GHG reduction (to 1990 level) obligations to be met by 2000. Such targets are listed in Annex B (Annex A list the 6 GHGases)
- * **Annex II** - Sub group of Annex I, These countries pay for the developing (Non annex) countries.
- * **Non Annex** - Developing countries, have no GHG reduction obligation.
- * Total annexure (Annex I, II, Non Annex, Annex A, B)
- *

FLEXIBILITY MECHANISMS

- * **To achieve GHG reduction**
- * Protocol defines 3 'Flexibility Mechanisms' that can be used by Annex I in meeting their emission limitation commitments.

Flexibility mechanisms are

1. International Emissions Trading (IET)
2. Clean Development Mechanism (CDM)
3. Joint Implementation (JI)

INTERNATIONAL EMISSIONS TRADING (IET)

- * Countries can trade in International carbon credit market. Countries with surplus credit can sell it to those with quantified emission limitation and reduction commitments under the Kyoto Protocol.
- * It's like a deficit country (not reduced to required level) buying from a surplus country for money.
- * Units here is **Assigned Amount Units (AAU)**

CLEAN DEVELOPMENT MECHANISM (CDM)

- * Developed country(annex I) can take up a Greenhouse gas reduction project activity in a Developing (non annex), as the cost is less here.
- * Developed countries would be given credits for meeting its Emission Reduction Target and Developing countries will receive Capital and Clean technology.
- * Unit is **Certified Emission Reduction (CER)**



JOINT IMPLEMENTATION (JI)

- * A Developed country(annex I) sets up a project in another Developed country(annex I) due to cost differences, and earns units, **Emission reduction units (ERU)**.

CARBON CREDIT

All the units of calculation done with regard to One Credit equivalent to One tone of carbon reduced. **If in IET one credit earned is called AAU, if in CDM it is CER, if in JI it is ERU.**

Such trading in Carbon credit is called **Carbon Trading** and is done in two stock exchanges (**Carbon Market**): Chicago Climate exchange and European Climate exchange. India is one of the biggest carbon trading(selling) partner.

SUBSIDIARY BODIES

- * **Subsidiary Board of Implementation (SBI)** makes policy and implementation recommendations to COP and other bodies.
- * **Subsidiary Board of Scientific and Technological Advice (SBSTA)** Serves as a link between Experts (Such as IPCC) and COP (which focuses Policy setting). SBBI and SBSTA meetings also happen with COP.

IMPORTANT COP/MOP

CONFERENCE OF THE PARTIES (COP): Annual meeting of parties to convention (UNFCCC) from 1995 to assess progress in dealing with climate change.

MEETING OF PARTIES (MOP): In 1997 (COP), **Kyoto, Protocol** under UNFCCC was concluded and **established legally binding** Obligations for developed countries (Annex 1). MOP is meeting of parties (192) to Kyoto protocol. From 2005 MOP (MOP-1) and COP (COP-11) meets together.

MONTREAL ACTION PLAN 2005

- * 11th session (COP-11/MOP-1), Protocol enters in to force.

BALI SUMMIT-2007 (COP-13/MOP-3)

- * Negotiation on the post 2012, framework was achieved with Bali Action Plan adoption. Launch of Adaptation fund.

POZNAN SUMMIT- 2008(COP-14/MOP-4)

- * Agreed on Principles for Financing of fund to poor countries.
- * To incorporate forest protection into international community efforts of combating climate change.

COPENHAGEN SUMMIT -2009 (COP-15/MOP-5)

- * Conference did not achieve any legally binding agreement for long-term action.
- * But Copenhagen accord (outside UNFCCC process- a meaningful agreement between United States and BASIC countries) came out.
- * Accord Favoured developed countries, it pledged 30\$ billion to developing world over next three years, rising to \$100\$ bn/year by 2020, to help poor countries adapt to climate change.
- * Paying developing countries to reduce emissions from deforestation and degradation, known as 'REDD +'

CANCUN SUMMIT - 2010 (COP-16/MOP-6)

Agreed on legally binding agreement in 2015 which will take effect in 2020.

- * Agriculture (emits Methane) brought in by developed countries as GHG source.

GREEN CLIMATE FUND(GCF) was formally established(pledged in accord).

- * GCF will support projects, programmes, policies and other activities in developing countries.
- * GCF is governed by Green Climate Fund Board, temporary trustee was World Bank. The fund is expected to raise 100\$ bn/year by 2020

TECHNOLOGY MECHANISM AND CLIMATE TECHNOLOGY CENTRE and Network for co-operation on clean technology established.

CANCUN ADAPTATION FUND established, to help vulnerable poor countries adapt to climate impacts.

- * Cancun Fund from 2% of Certified Emission Reduction issued for CDM projects. Governed by Adaptation fund board.



IN MITIGATION FRONT,

- * Developed countries submitted emission reduction targets and agreed on strengthened reporting frequency, standards and to develop low carbon national plans and strategies.
- * Developing countries submitted **Nationally Appropriate Mitigation Actions (NAMAs)**, to be implemented subject to financial and technical support.

Reducing Emissions from Deforestation and forest Degradation (REDD) also gained. Carbon Capture and Storage (CCS) was included in **Clean Development Mechanism (CDM)**

DURBAN SUMMIT - 2011 (COP-17/MOP-7)

- * Conference agreed to start negotiations on Legally Binding deal comprising All countries, to be adopted in 2015, governing post 2020.
- * **Statement of Equity** finds place in the climate talks.
- * India gains leadership of developing countries
- * GCF management framework adopted.

DOHA SUMMIT - 2012 (COP-18/MOP-8)

- * **Loss and Damage** word incorporated for first time- in principle agreement that richer nations could be financially responsible to other nations for their failure to reduce carbon emissions.
- * Conference made little progress on actual funding of GCF.

PARIS SUMMIT - 2015 (COP-21/MOP-11)

- * Adoption of the Paris Agreement governing climate change reduction measures from 2020. It will enter into force if 55 countries (producing 55% GHG) ratify and will **become Legally Binding**.
- * Paris Agreement is a separate instrument under the UNFCCC rather than an amendment of Kyoto protocol.
- * Each country that ratifies the agreement will be required to set a target for emission reduction, but amount will be voluntary.
- * There will be **No Mechanism** to force. If a set target is not met. There will be only 'Name and Shame' system. No differences for Annex 1 or Non annex etc, practically

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responsibility for all including India and China(though voluntarily accepted)

- * Commitments by each country called '**INTENDED NATIONALLY DETERMINED CONTRIBUTIONS**' (INDCS).

The summit,

- * Reaffirms goal of limiting global temperature increase well below **2°C**, while urging efforts to limit increase to 1.5 °C.
- * Extend current goal of mobilizing **100\$ bn/yr** through 2025, and a new goal after 2025;
- * Extend mechanism to address '**loss and damage**'
- * Call for new mechanism, similar to Clean Development Mechanism under Kyoto Protocol.

RECENT DEVELOPMENTS – POST 2020

The second commitment period ended in 2020, and it has largely been superseded by the Paris Agreement, adopted in 2015.

Key Recent Developments (Post-2020)

- * End of the Second Commitment Period (Doha Amendment):
- * Kyoto Protocol's second commitment period, extended via the Doha Amendment, ran from 2013 to December 31, 2020.
- * Amendment set new emission reduction targets for 37 countries, including the EU, Australia, and Switzerland, aiming for an 18% reduction below 1990 levels. It entered into force on December 31, 2020, after ratification by 144 states, but its impact was symbolic as it coincided with the end of the commitment period.
- * Doha Amendment's late activation limited its practical effect, as global focus had shifted to the Paris Agreement, which includes all countries, not just developed ones.

Transition to the Paris Agreement:

- * CDM and JI are unlikely to continue post-2020 under the Kyoto framework due to the absence of a third commitment period, though similar mechanisms may persist under the Paris Agreement.

Legacy and Impact Assessment:

- * Recent analyses highlight the Kyoto Protocol's mixed legacy. A 2023 study using the generalized synthetic control method estimated that it reduced emissions in ratifying countries by



about 7% compared to a “no-Kyoto” scenario during the first commitment period (2008–2012). However, global emissions rose by 32% from 1990 to 2010, driven by growth in developing countries like China and India, which were exempt from binding targets.

Continued Relevance of Kyoto Mechanisms:

- * CDM, which allowed developed countries to earn credits by funding emission reduction projects in developing countries, remains influential.
- * It was the first global environmental investment and credit scheme and inspired similar mechanisms in the Paris Agreement. Some Annex I parties continued CDM projects into the second commitment period, but only those with Doha Amendment commitments could use certified emission reductions (CERs) for compliance.

Country-Specific Developments:

- * **India:** As a non-Annex I country, India was exempt from binding targets but ratified the Doha Amendment in 2017, benefiting from CDM projects and technology transfers. Recent studies suggest the Kyoto Protocol had a short-term negative impact on India's environmental footprint but no long-term effect, emphasizing the need for revised urban planning and globalization-driven environmental strategies.
- * **Canada, Japan, and Russia:** These countries withdrew from or declined second-period targets, citing economic concerns or the lack of participation by major emitters. Canada's 2011 withdrawal avoided a potential \$14 billion penalty.
- * **EU:** The EU exceeded its first-period targets (reducing emissions by 11.7% against an 8% goal) and remained committed to the second period, reinforcing its leadership in global climate policy.

Limitations and Criticisms

- * **Global Emission Trends:** Despite reductions by some Annex I countries, global GHG emissions have continued to rise, particularly from developing nations exempt under the Protocol. This underscores the need for universal frameworks like the Paris Agreement.
- * **Economic Concerns:** Countries like the U.S. and Canada cited economic disadvantages due to the Protocol's exclusion of developing nations, which has fueled debates about fairness in climate obligations.
- * **Data Gaps:** Recent developments specific to the Kyoto Protocol are sparse post-2020, as global climate efforts have shifted to the



Paris Agreement. Most sources focus on its historical impact rather than ongoing activities.

INDIA'S INDC

Reduce emission intensity by 33 to 35 per cent by 2030 compared to 2005 levels

By,

- * Introducing new, more efficient, cleaner technologies in thermal power generation
- * Reducing emissions from transportation sector
- * Promoting energy efficiency, mainly in industry, transportation, buildings and appliances
- * Developing climate resilient infrastructure
- * Pursue Zero Effect, Zero Defect policy under Make in India programme.

Produce 40 per cent of electricity from non-fossil fuel based energy resources by 2030, if international community helps with technology transfer and low cost finance.

By,

- * Installing 175 GW of solar, wind and biomass electricity by 2022.
- * Aggressively pursuing hydropower
- * Achieving 63 GW nuclear target by 2032
- * Created National Air Quality Index

Create an additional carbon sink of 2.5 to 3 billion tonnes of carbon dioxide equivalent by 2030 through additional forest and tree cover.

By,

- * Full implementing Green India Mission and other programmes of afforestation
- * Developing 140,000 km long tree line on both sides of national highways- Green Highway

Develop robust adaptation strategies for agriculture, water and health sectors

By,

- * Redesigning National Water Mission(NWM) and National Mission on Sustainable Agriculture(NMSA)



- * Active implementation of National Initiative on Climate Resilient Agriculture (NICRA), setting up of 100 soil laboratories, distribution of soil health cards.
- * Additional impetus on watershed development through **Neeranchal scheme**
- * Effective implementation of National Mission on Clean Ganga
- * Early formulation and implementation of National Health Mission (NHM)
- * Complete Integrated Coastal Zone Management plan. Mapping and demarcation of coastal hazard lines

Financial cost for India to implement INDC

- * At least 2.5 \$ trillion required between now and 2030 to implement all planned actions.
- * 834 \$ bn required for mitigation actions till 2030.
- * INR 170.84 bn collected through cess on coal production. for funding clean energy projects
- * National Adaptation Fund has been created with initial allocation of Rs 3500 million
- * Tax free infrastructure bonds of INR 50 billion being introduced for funding renewable energy projects

INDC of Major countries

- * EU will cut emissions by 40%, below 1990 level by 2030.
- * US will cut emissions by 26% to 28%, below 2005 level by 2025.
- * China will cut emissions by 60-65% below 2003 level by 2030, Non fossil fuel to be 20% of fuel consumption.

WHAT IS REDD , REDD +?

REDUCING EMISSIONS FROM DEFORESTATION AND FOREST DEGRADATION

- * One of the cheapest options for cutting GHG according to the centre for International Forestry Research(CIFOR).
- * While REDD calls for checking Deforestation REDD + rewards incentives for doing it. Creating financial value for carbon stored and enhanced in biomass and soil of standing forests. Sustainable management of forests and forest cover increase will be rewarded.



Notes

- * **REDD +** approach incorporates important benefits of livelihoods improvement, biodiversity conservation and food security services.
- * **India gains a lot in REDD+ .** India could provide Capture of more than 1 billion tones of additional CO₂ over next 3 decades and provide more than 3\$ million as carbon service incentives.
- * Incentives received will be passed to local communities (tribes) involved.
- * Green India Mission under **National Action plan on Climate Change** is on the line of REDD +.

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