CHAPTER - 20

CLIMATE CHANGE ORGANIZATIONS

20.1. UNFCCC

- UN Summit Conference on Environment and Development (UNCED) held in Rio de Janerio in June 1992 adopted, by consensus, the first multilateral legal instrument on Climate Change, the UN Framework Convention on Climate Change or the UNFCCC.
- In 1992, countries joined UNFCCC, to cooperatively consider what they could do to limit average global temperature increases and the resulting climate change, and to cope with whatever impacts were, by then, inevitable. There are now 195 Parties to the Convention.
- The UNFCCC secretariat supports all institutions involved in the international climate change negotiations, particularly the Conference of the Parties (COP), the subsidiary bodies (which advise the COP), and the COP Bureau (which deals mainly with procedural and organizational issues arising from the COP and also has technical functions).
- All subsequent multilateral negotiations on different aspects of climate change, including both adaptation and mitigation, are being held based on the principles and objectives set out by the UNFCCC.

Do you know?

The major difference Tortoise vs turtle being that the land dwelling ones are called Tortoises and water dwelling are called Turtles. Tortoise are herbivorous where as turtle are omnivorous.

20.2. KYOTO PROTOCOL: COP-3.

- By 1995, countries realized that emission reductions provisions in the Convention were inadequate. They launched negotiations to strengthen the global response to climate change, and, two years later, adopted the Kyoto Protocol.
- The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997. Due to a complex ratification process, it entered into force on 16 February 2005.
- In short, the Kyoto Protocol is what "operationalizes" the Convention. It commits industrialized countries to stabilize greenhouse gas emissions based on the principles of the Convention.
- The major distinction between the Protocol and the Convention is that while the Convention encouraged industrialized countries to stabilize GHG emissions, the Protocol commits them to do so.

20.2.1. Targets

- KP, as it is referred to in short, sets binding emission reduction targets for 37 industrialized countries and the European community in its first commitment period.
- It only binds developed countries because it recognizes that they are largely responsible for the current high levels of GHG emissions in the atmosphere, which are the result of more than 150 years of industrial activity.
- KP places a heavier burden on developed nations under its central principle: that of "common but differentiated responsibility".
- Overall, these targets add up to an average five per cent emissions reduction compared to 1990 levels over the five-year period 2008 to 2012.

The architecture of the KP regime: What makes KP tick?

- The Kyoto Protocol is made up of essential architecture that has been built and shaped over almost two decades of experience, hard work and political will. The beating heart of KP is made up of:
  1. Reporting and verification procedures;
  2. Flexible market-based mechanisms, which in turn have their own governance procedures; and
  3. A compliance system.
- So, two things make KP tick.

1. **Emissions Reduction Commitments**

- The first was binding emissions reduction commitments for developed country parties. This meant the space to pollute was limited.
- Greenhouse gas emissions, most prevalently carbon dioxide, became a new commodity. KP now began to internalize what was now recognized as an unpriced externality.

Do you know?

Indian Water Monitor lizard is one of the largest as well as the heaviest species of lizards, second only to the Komodo Monitors

2. **Flexible Market Mechanisms**

- This leads us to the second, the flexible market mechanisms of the KP, based on the trade of emissions permits. KP countries bound to targets have to meet them largely through domestic action— that is, to reduce their emissions onshore.
- But they can meet part of their targets through three "market-based mechanisms" that ideally encourage GHG abatement to start where it is most cost-effective-- for example, in the developing world. Quite simply, it does not matter where emissions are reduced, as long as they are removed from the planet's atmosphere.
- The Kyoto Flexible Market Protocol mechanisms:
  - Joint Implementation (JI)
  - The Clean Development Mechanism (CDM)
  - Emission Trading

20.2.2. The objectives of Kyoto mechanisms:

- Its objective is to facilitate, promote and enforce compliance with the commitments under the Protocol.
  - Stimulate sustainable development through technology transfer and investment
  - Help countries with Kyoto commitments to meet their targets by reducing emissions or removing carbon from the atmosphere in other countries in a cost-effective way
  - Encourage the private sector and developing countries to contribute to emission reduction efforts

Joint Implementation:

- The mechanism known as "joint implementation", allows a country with an emission reduction or limitation commitment under the Kyoto Protocol (Annex B Party – developed country) to earn emission reduction units (ERUs) from an emission-reduction or emission removal project in another Annex B Party, each equivalent to one tonne of CO2, which can be counted towards meeting its Kyoto target.
  - Joint implementation offers Parties a flexible and cost-efficient means of fulfilling a part of their Kyoto commitments, while the host Party benefits from foreign investment and technology transfer.
  - Projects starting as from the year 2000 may be eligible as JI projects, ERU issued from 2008

Clean Development mechanism:

- The Clean Development Mechanism (CDM) allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries.
- It is the first global, environmental investment and credit scheme of its kind, providing standardized emissions offset instrument, CERs
- Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO2, which can be counted towards meeting Kyoto targets.

Example

- A CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy-efficient boilers. The mechanism stimulates sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction or limitation targets.
- Most of the CDM projects were implemented in China and India as climate in these countries is favorable for implementing projects for almost all the spheres such as Agriculture, Waste handling and disposal, Afforestation and reforestation. Such CDM projects are also to be supported by the approval of Annex B countries - those which have quantified obligations according Kyoto Protocol.

Carbon Trading:

- Carbon trading is the name given to the exchange of emission permits. This exchange may take place within the economy or may take the form of international transaction.
- Two types of Carbon trading:
  1. Emission trading and
  2. Offset trading.

Emission trading/ 'cap-and-trade',

- Emission permit is known alternatively as carbon credit. For each Annex I country, the protocol has assigned a fixed amount of carbon emission in the agreement. This amount is actually the amount of emission which is to be reduced by the concerned country.
- On the other hand, it implies that the country was permitted to emit the remaining amount. This emission allowance is actually one kind of carbon credit.
- The total amount of allowance is then subdivided into certain units. The units are expressed in terms of carbon-equivalent. Each unit gives the owner the right to emit one metric tonne of carbon dioxide or other equivalent green-house gases.

Offset Trading/ Carbon Project/ 'baseline-and credit' trading:

- Another variant of carbon credit is to be earned by a country by investing some amount of money in such projects, known as carbon projects, which will emit lesser amount of green-house gas in the atmosphere.
- For example, suppose a thermal plant of 800 megawatt capacity emit 400 carbon-equivalent in the atmosphere. Now a country builds up a 800 megawatt wind energy plant which does not generate any amount of emission as an alternative of the thermal plant. Then by investing in this project the country will earn 400 carbon-equivalent.
- According to an estimate made by the World Bank's Carbon Finance Unit, volume of carbon trade through Emission Trading route alone had shown a 240 percent increase in 2005 over the previous year.

Benefits of Flexible Market Mechanisms

- This has the parallel benefits of stimulating green investment in developing countries and of including the private sector in this endeavour to cut and hold steady GHG emissions at a safe level.
- It also makes "leap-frogging" more economical that is, the possibility to skip older, dirtier technology for newer, cleaner infrastructure and systems, with obvious longer-term benefits.
- The Kyoto Protocol compliance mechanism is designed to strengthen the Protocol's environmental integrity, support the carbon market's credibility and ensure transparency of accounting by Parties.

Do you know?

One of the unique features of the Rock pythons of India is that they can raise their body temperature above the ambient level, through muscular contractions. Rock python of India is an endangered species. The reason for this is that it is killed for its fine skin, meat and even for medicinal purposes.

20.2.4. Non-Compliance of Kyoto And Penalties

- Like most things in life, failure to comply with the Protocol carries penalties.
- If a country does not meet the requirements for measurements and reporting said country looses the privilege of gaining credit through joint implementation projects.
- If a country goes above its emissions cap, and does not try to make up the difference through any of the mechanisms available, then said country must make up the difference plus an additional thirty percent during the next period.
- The country could also be banned from participating in the 'cap and trade' program.

20.3. BALI MEET:

- Bali Meet was the meeting of 190 countries that are party to a UN treaty on climate change held in December 2007.

Objectives:

- The treaty's aim was to push the world towards taking action that reduces the greenhouse gases in the atmosphere which cause climate change.
- Bali was to discuss what happens after 2012— what are countries expected to do after the first phase of Kyoto ends in 2012.

- As per developed countries, after 2012, even the developing countries like India and China, which are increasing their emissions as they grow economically, also undertake some kind of emission cuts. This meant a complete overhaul of the existing UN treaty.
- In Bali, the nations have decided upon a new set of principles that will, help the countries decide a post-2012 deal.

20.3.1. Bali Roadmap

- The participating nations adopted the Bali Road Map as a two-year process to finalizing a binding agreement in 2009 in Copenhagen.
- The Bali Road Map includes;
  - The Bali Action Plan (BAP)
  - The Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol negotiations and their 2009 deadline,
  - Launch of the Adaptation Fund,
  - Decisions on technology transfer and
  - On reducing emissions from deforestation.

20.3.2. Bali Action Plan

- The Conference of Parties decided to launch a comprehensive process to enable the implementation of the Convention through long-term cooperative action up to and beyond 2012, by addressing:
  - A shared vision for long-term cooperative action, including a long-term global goal for emission reductions.
  - Enhanced national/international action on mitigation of climate change.
  - Enhanced action on adaptation.
  - Enhanced action on technology development and transfer to support action on mitigation and adaptation.
  - Enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation.

Do you know?

Russell's Viper is responsible for the more deaths due to snakebite than any other venomous snake. It is highly irritable and when threatened, coils tightly, hisses, and strikes with a lightning speed. Its hemotoxic venom is a very potent coagulant, which damages tissue as well as blood cells.

20.4. COP 15 COPENHAGEN SUMMIT:

- A legally binding agreement could not be arrived n CoP 15, Copenhagen mainly due to discord between developing and developed nations.
- The summit concluded with the CoP taking a note of Copenhagen Accord (a five nation accord- BASIC and US).
- The Copenhagen Accord is a non-binding agreement.
- The Accord states that deep international emissions cuts are needed to hold the increase in global temperature to under two degrees Celsius.
- Under the Accord, developed countries (Annex I) agree to set targets for reductions in their greenhouse gas emissions by 2020.
- Developing countries agree to pursue nationally appropriate mitigation strategies to slow the growth of their emissions, but are not committed to reducing their carbon output.
  - Recognizes the need to establish a mechanism (including REDD-plus) to enable the mobilization of financial resources from developed countries to help achieve this
  - Developing countries, specially these with low-emitting economies should be provided incentives to continue to develop on a low-emission pathway
  - Agrees that developed countries would raise funds of $30 billion from 2010-2012 of new and additional resources
  - Agrees a "goal" for the world to raise $100 billion per year by 2020. New multilateral funding for adaptation will be delivered, with a governance structure.

20.5. COP 16 CANCUN SUMMIT

- The Cancun Agreements include decisions under both the Convention and Kyoto protocol negotiating tracks.
- As per the Cancun Agreements, all Parties to the Convention (including the developed and developing countries) have agreed to report their voluntary mitigation goals for implementation.
- These will be subject to measurement and verification or international consultation, as appropriate, in accordance with agreed international guidelines.

- Decisions were taken at Cancun to set up a Green Climate Fund, a Technology Mechanism, and an Adaptation Committee at global level to support developing country actions for adaptation and mitigation.
- These decisions are significant because they reflect, to a large degree, the political understanding that was reached by a select group of countries in the form of the Copenhagen Accord in December 2009.

20.5.1. Cancun Agreements

- Industrialized country targets are officially recognized under the multilateral process and these countries are to develop low-carbon development plans and strategies and assess how best to meet them, including through market mechanisms, and to report their inventories annually.
- Developing country actions to reduce emissions are officially recognized under the multilateral process. A registry is to be set up to record and match developing country mitigation actions to finance and technology support from by industrialized countries. Developing countries are to publish progress reports every two years.
- A total of $30 billion in fast start finance from industrialized countries to support climate action in the developing world up to 2012 and the intention to raise $100 billion in long-term funds by 2020 are included in the decisions.
- In the field of climate finance, a process to design a 'Green Climate Fund' under the Conference of the Parties, with a Board with equal representation from developed and developing countries, is established.
- A new Cancun Adaptation Framework is established to allow better planning and implementation of adaptation projects in developing countries through increased financial and technical support, including a clear process for continuing work on loss and damage.
- Governments agree to boost action to curb emissions from deforestation and forest degradation in developing countries with technological and financial support.
- Parties have established a technology mechanism with a Technology Executive Committee and Climate Technology Centre and Network to increase technology cooperation to support action on adaptation and mitigation.

20.5.2. Mechanism of COP 16

- Three mechanisms that are outcome of CoP 16 are
  1. Technology mechanism
  2. Green climate fund
  3. Adaptation committee

Technology Mechanism

- A Technology Mechanism, under the guidance of and accountable to the Conference of the Parties (COP), was established by the 16th session of the COP in Cancun 2010.
- The Technology Mechanism is expected to facilitate the implementation of enhanced action on technology development and transfer in order to support action on mitigation and adaptation to climate change.

Green Climate Fund

- At COP 16, Parties, established a Green Climate Fund (GCF) as an operating entity of the financial mechanism of the Convention under Article 11.
- The GCF will support projects, programmes, policies and other activities in developing country Parties. The Fund will be governed by the GCF Board.
- The assets of the GCF will be administered by a trustee only for the purpose of, and in accordance with, the relevant decisions of the GCF Board.
- The World Bank was invited by the COP to serve as the interim trustee of the GCF, subject to a review three years after operationalization of the Fund.
- The COP also decided that an independent secretariat will support the operations of the Fund. The COP also decided that the GCF was to be designed by the Transitional Committee (TC).

Do you know?

At the time of nesting, the female hornbill starts living in a tree hollow sealed with dung and pellets of mud. The male collects the pellets, swallows them and regurgitates small saliva-cased building materials. This material is given to the female, along with food, through a slit in the tree seal. The process of incubation continues for 6-8 weeks. The female hornbill comes out only after she has molted and fresh feathers have grown on her and her young ones.

Update

- At COP 17 held in Durban, in which Parties approved the governing instrument for the GCF. Arrangements between the COP and the Fund are to be concluded at COP 18 to ensure that it is accountable to and functions under the guidance of the COP.
- The COP will provide guidance to the Board, including on matters related to policies, programme priorities and eligibility criteria and matters related thereto. The Board will provide annual reports to the COP on its activities.

Adaptation Fund

- The Adaptation Fund was established to finance concrete adaptation projects and programmes in developing country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change.
- The Adaptation Fund is financed from the share of proceeds on the clean development mechanism project activities and other sources of funding. The share of proceeds amounts to 2% of certified emission reductions (CERs) issued for a CDM project activity.
- The Adaptation Fund is supervised and managed by the Adaptation Fund Board (AFB). The AFB is composed of 16 members and 16 alternates and meets at least twice a year.
- Upon invitation from Parties, the Global Environment Facility (GEF) provides secretariat services to the AFB and the World Bank serves as trustee of the Adaptation Fund, both on an interim basis.

Do you know?

The only endemic genus in the hotspot is the Namadapha flying Squirrel which is critically endangered and is described only from a single specimen from Namdapha National Park

Adaptation Committee

- As part of the Cancun Adaptation Framework, Parties established the Adaptation Committee to promote the implementation of enhanced action on adaptation in a coherent manner under the Convention through the following functions:
  I. Providing technical support and guidance to the Parties
  II. Sharing of relevant information, knowledge, experience and good practices
  III. Promoting synergy and strengthening engagement with national, regional and international organizations, centres and networks
  IV. Providing information and recommendations, drawing on adaptation good practices, for consideration by the COP when providing guidance on means to incentivize the implementation of adaptation actions, including finance, technology and capacity-building
  V. Considering information communicated by Parties on their monitoring and review of adaptation actions, support provided and received

20.6. COP 17 DURBAN SUMMIT

- Firm India forces climate breakthrough at Durban
- Principle of Equity Must In Future Talks

New global climate change regime

- India had gone to Durban with two major demands — that the principle of equity remain intact in any new climate regime and that this new global deal be launched after 2020.

Outcome

- New deal to be finalized by 2015 and launched by 2020
- Second phase of Kyoto Protocol secured
- Green Climate Fund launched, though empty as yet Green tech development mechanism put in place
- Equity finds place back in future climate talks
- Adaptation mechanism
- Transparency mechanism

Geopolitical Fallout

- India regains leadership of developing world. EU gains heft at cost of US but also generates bad relations with developing countries. Small island states lose respect by becoming EU front.
- BASIC grouping looks more fragile than before with India and China remaining close but Brazil and South Africa drifting.

India's Gains And Losses

- Wins on all its important non-negotiables Common but differentiated responsibility principle retained.

- Secures 10 years of economic growth without carbon containment Intellectual Property Rights and technology not as well anchored in new deal
- Loopholes for developed world not fully blocked
- Agriculture brought in by developed nations under climate change

Agenda Ahead For India

- Fight to deploy principle of equity in practice in a new deal
- Ensure that review of existing commitments of developed world is mandated
- Ensure Kyoto Protocol's second phase from 2012-2017 takes off
- Negotiate for 5 yrs the hard talks that will set out terms of new global regime

Do you know?

The Relict Dragonfly (Epiophlebia laidlawi) is an endangered species found here with the only other species in the genus being found in Japan. The region is also home to the Himalayan Newt the only salamander species found within Indian limits.

20.7. OTHER MECHANISMS OF UNFCCC

1. Special Climate Change Fund (Sccf)

- The Special Climate Change Fund (SCCF) was established under the Convention in 2001 to finance projects relating to: adaptation; technology transfer and capacity building; energy, transport, industry, agriculture, forestry and waste management; and economic diversification.
- The Global Environment Facility (GEF), as an operating entity of the financial mechanism, has been entrusted to operate the SCCF.

2. Finance Mechanism for Climate Change

- The Financial resources that have been made available to Non-Annex I Parties to the UNFCCC consist of the following three modules:
  - **The "National Communications Module":** This module presents information communicated by Annex II Parties on the provision of financial resources related to the implementation of the Convention through their fourth and fifth national communications.

Fast-Start Finance

- During the Conference of the Parties (COP15) held in December 2009 in Copenhagen developed countries pledged to provide new and additional resources, including forestry and investments, approaching USD 30 billion for the period 2010 - 2012 and with balanced allocation between mitigation and adaptation. This collective commitment has come to be known as 'fast-start finance'.
- Following up on this pledge, the Conference of the Parties (COP 16)in Cancún, in December 2010, took note of this collective commitment by developed country Parties and reaffirmed that funding for adaptation will be prioritized for the most vulnerable developing countries, such as the least developed countries, small island developing States and Africa.
- At COP 17 Parties welcomed the fast-start finance provided by developed countries as part of their collective commitment to provide new and additional resources approaching USD 30 billion for the period 2010–2012, and noted the information provided by developed country Parties on the fast-start finance they have provided and urged them to continue to enhance the transparency of their reporting on the fulfillment of their fast-start finance commitments.
- **The "Funds Managed by the GEF Module"** is a joint effort between the secretariat of the UNFCCC and the secretariat of the Global Environment Facility (GEF). This module presents information on financial flows that have been channelled, mobilized and leveraged by the GEF in its role as an operating entity of the Financial Mechanism of the UNFCCC.

20.8. REDD & REDD+

- REDD (Reducing Emissions from Deforestation and Forest Degradation) is the global endeavour to create an incentive for developing countries to protect, better manage and save their forest resources, thus contributing to the global fight against climate change
  - REDD+ goes beyond merely checking deforestation and forest degradation, and

includes incentives for positive elements of conservation, sustainable management of forests and enhancement of forest carbon stocks.

- REDD+ conceptualizes flow of positive incentives for demonstrated reduction in deforestation or for enhancing quality and expanse of forest cover.
- It works on the basis of creating a financial value for the carbon stored and enhanced in biomass and soil of standing forests. Countries that reduce emissions and undertake sustainable management of forests will be entitled to receive funds and resources as incentives.
- REDD+ approach incorporates important benefits of livelihoods improvement, biodiversity conservation and food security services.

Will India Benefit from REDD+?

India's sustained efforts for conserving and expanding its forest and tree resources have the possibility of being rewarded for providing carbon service to the international community in addition to providing traditional goods and services to the local communities.

- The incentives so received from REDD+ would be passed to the local communities involved in protection and management of the forests. This will ensure sustained protection of our forests against deforestation.
- It is estimated that a REDD+ programme for India could provide capture of more than 1 billion tonnes of additional CO2 over the next 3 decades and provide more than USD 3 billion as carbon service incentives under REDD+.

India's Position on Redd And Redd+

- India believes REDD needs to be seen in the broader context of REDD+, not in isolation or in a truncated form since reduction of deforestation, and conservation and improvement of forests are two sides of the same coin, and so should be treated at par.
- India's stand was finally accepted in 13th Meeting of the Conference of the Parties (COP 13) at Bali when elements of conservation, sustainable management of forests and enhancement of forest carbon stocks were added to the then existing text of reducing deforestation and forest degradation as part of Bali Action Plan.
- It has presented an ambitious Green India Mission programme under its National Action Plan on Climate Change.

India initiatives related to REDD+

- India has made a submission to UNFCCC on "REDD, Sustainable Management of Forest(SMF) and Afforestation and Reforestation (A&R)" in December 2008
- A Technical Group has been set up to develop methodologies and procedures to assess and
- monitor contribution of REDD+ actions
- A National REDD+ Coordinating Agency is being established
- A National Forest Carbon Accounting Programme is being institutionalized
- India is hosting the Conference of Parties (COP-11) of the Convention on Biological Diversity (CBD) in 2012, to coincide with twenty years of Rio convention.
- Study on the impact of climate change on India's forests assigned to the Indian Network for Climate Change Assessment (INCCA), has been released in November 2010.
- There is likely to be an increase in Net Primary Productivity (NPP) ranging from 20 – 57 %.

India looks for Enhanced Implementation of the Unfccc

India looks forward to enhanced international cooperation under the UNFCCC. Overall, future international cooperation on climate change should address the following objectives:

- Minimizing the negative impacts of climate change through suitable adaptation measures in the countries and communities affected and mitigation at the global level
- Provide fairness and equity in the actions and measures
- Uphold the principle of common but differentiated responsibilities in actions to be taken, such as concessional financial flows from the developed countries, and access to technology on affordable terms
- India as a large democracy, with the major challenge of achieving economic and social development and eradicating poverty, will engage in negotiations and other actions at the international level in the coming months that would lead to efficient and equitable solutions at the global level.

20.9. THE GEF

- Article 11 of the UNFCCC creates a 'financial mechanism' for convention implementation, which is to function under the guidance of the UNFCCC COP and be accountable to the COP.
- Under Article 11(1), the COP is to decide on the financial mechanism's policies, programme priorities and eligibility criteria relating to the convention.
- Article 21 names the GEF to serve as the financial mechanism on an interim basis.
- The GEF was established in 1991 by the World Bank in consultation with the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), to provide funding to protect the global environment.
- The GEF's governance, operational, financial and administrative oversight procedures are set out in the Instrument for the Establishment of the Restructured Global Environment Facility, which was adopted in 1994 and subsequently amended in 2002 (GEF Instrument).
- The GEF now has six focal areas:
  1. biological diversity;
  2. climate change;
  3. international waters;
  4. land degradation, primarily desertification and deforestation;
  5. ozone layer depletion; and
  6. persistent organic pollutants.

20.10. CLIMATE-SMART AGRICULTURE

- While agriculture is the sector most vulnerable to climate change, it is also a major cause, directly accounting for about 14 percent of greenhouse gas emissions (IPCC 2007).
- And yet, agriculture can be a part of the solution: helping people to feed themselves and adapt to changing conditions while mitigating climate change.
- It is possible for agriculture to actually sequester or absorb carbon into the soil rather than emitting it. This can be done without the trade off with productivity and yields.
- It is possible to have higher yields, more carbon in the soil and greater resilience to droughts and heat.
- This is called the 'triple win': interventions that would increase yields (poverty reduction and food security), make yields more resilient in the face of extremes (adaptation), and make the farm a solution to the climate change problem rather than part of the problem (mitigation).
- These triple wins are likely to require a package of interventions and be country- and locality specific in their application. This method of practicing agriculture is called 'Climate Smart Agriculture'.

20.10.1 Climate-smart agriculture includes proven practical techniques.

For example,

- by increasing the organic content of the soil through conservation tillage, its water holding capacity increases, making yields more resilient and reducing erosion.
- Promoting soil carbon capture also helps mitigate climate change. Another example is integrated soil fertility management that can lower fertilizer costs, increase soil carbon and improve yields.
- Climate-smart agriculture gives attention to landscape approaches, for example, integrated planning of land, agriculture, forests, fisheries and water to ensure synergies are captured.
- These can be further strengthened by adding better weather forecasting, more resilient food crops and risk insurance to cover losses when the vagaries of weather strike.
- If yields increase through such practices and become more stable, it results in improved farm incomes. A more stable income helps enhance the adaptive capacity of farmers.
- A good number of countries are now showing that it can be done.
- China has been a leader in this, with programs such as the Loess Plateau now internationally famous.
- Brazil has also invested in good quality research and extension and is demonstrating these triple results.
- And small-holder farmers in Kenya are already receiving cash payments on a pilot basis for new farming techniques that will hold more carbon in the soil, even while increasing soil fertility.

Cop 17

- COP 17 in Durban offers a unique opportunity for Africa to shape the global climate agenda and establish an agriculture work program that is informed by science and covers adaptation and mitigation.

20.11.INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

- The UN General Assembly adopted a resolution, in December 1988, on the subject and endorsed the UNEP/WMO proposal for the setting up of the Inter-Governmental Panel on Climate Change (IPCC).
- It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 to provide the governments of the world with a clear scientific view of what is happening to the world's climate.
- The Secretariat coordinates all the IPCC work and liaises with Governments. The secretariat is supported by WMO and UNEP and hosted at WMO headquarters in Geneva.
- It is open to all member countries of the United Nations (UN) and WMO. Currently 195 countries are members of the IPCC.
- The initial task for the IPCC as outlined in the UN General Assembly Resolution 1988 was to prepare a comprehensive review and recommendations with respect to the state of knowledge of the science of climate change; social and economic impact of climate change, and possible response strategies and elements for inclusion in a possible future international convention on climate.
- IPCC's Role as defined in Principles Governing IPCC Work, "to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation".
- The IPCC is a scientific body. It reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change.
- It does not conduct any research nor does it monitor climate related data or parameters.
- Thousands of scientists from all over the world contribute to the work of the IPCC on a voluntary basis.
- Review is an essential part of the IPCC process, to ensure an objective and complete assessment of current information.
- Governments participate in the review process and the plenary Sessions, where main decisions about the IPCC work programme are taken and reports are accepted, adopted and approved.
- By endorsing the IPCC reports, governments acknowledge the authority of their scientific content. The work of the organization is therefore policy-relevant and yet policy-neutral, never policy-prescriptive.
- The IPCC has delivered on a regular basis the most comprehensive scientific reports about climate change produced worldwide, the Assessment Reports.
- It has also responded to the need of the UNFCCC for information on scientific and technical matters through Special Reports, Technical Papers and Methodology Reports.
- It has also produced methodologies and guidelines to help Parties to the UNFCCC prepare their national greenhouse gas inventories.

20.11.1.Assessment Reports

- In accordance with its mandate and as reaffirmed in various decisions by the Panel, the IPCC prepares at regular intervals comprehensive Assessment Reports of scientific, technical and socio-economic information relevant for the understanding of human induced climate change, potential impacts of climate change and options for mitigation and adaptation.
- Assessment Reports are normally published in several volumes, one for each of the Working Groups of the IPCC and, subject to the decision by the Panel, a Synthesis Report.
- Each of the Working Group volumes is composed of individual chapters, an optional Technical Summary and a Summary for Policymakers.
- Synthesis Reports synthesize materials contained within the Assessment Reports, eventually integrating them with information coming from the Special Reports as well.

- They are written in a non-technical style suitable for policymakers. They are composed of a longer report and a Summary for Policymakers.
- Four Assessment Reports have been completed in 1990, 1995, 2001 and 2007. The IPCC Fifth Assessment Report (AR5) is scheduled for completion in 2013/14.

IPCC 4th AR

- Warming of the climate system is unequivocal.
- Anthropogenic warming and sea level rise would continue for centuries due to the timescales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized, although the likely amount of temperature and sea level rise varies greatly depending on the fossil intensity of human activity during the next century
- The probability that this is caused by natural climatic processes alone is less than 5%.
- World temperatures could rise by between 1.1 and 6.4 °C (2.0 and 11.5 °F) during the 21st century (table and that: Sea levels will probably rise by 18 to 59 centimetres
- There is a confidence level >90% that there will be more frequent warm spells, heat waves, and heavy rainfall.
- There is a confidence level >66% that there will be an increase in droughts, tropical cyclones, and extreme high tides.
- Both past and future anthropogenic carbon dioxide emissions will continue to contribute to warming and sea level rise for more than a millennium.
- Global atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values over the past 650,000 years.

AR5 Contents

- Compared with previous reports, the AR5 will put greater emphasis on assessing the socio-economic aspects of climate change and implications for sustainable development, risk management and the framing of a response through both adaptation and mitigation.
- The AR5 will comprise the full reports prepared by the Working Groups (I, II and III) as well as the Synthesis Report.
- Key AR5 cross-cutting themes will be:
  - Water and the Earth System: Changes, Impacts and Responses;
  - Carbon Cycle including Ocean Acidification;
  - Ice Sheets and Sea-Level Rise;
  - Mitigation, Adaptation and Sustainable Development; and
  - Article 2 of the UNFCCC (see UNFCCC for definition).

Special Reports

- Special Reports have been prepared on topics such as aviation, regional impacts of climate change, technology transfer, emissions scenarios, land use, land use change and forestry, carbon dioxide capture and storage and on the relationship between safeguarding the ozone layer and the global climate system.

20.12. NATIONAL GREEN HOUSE GAS INVENTORIES PROGRAMME (NGGIP)

- The IPCC established the national green house gas Inventories Programme (NGGIP) TO provide methods for estimating national inventories of greenhouse gas emissions to, and removals from, the atmosphere.
- The guidance produced by the NGGIP is used by countries that are Parties to the UN Framework Convention on Climate Change (UNFCCC) to estimate the emissions and removals that they report to the UNFCCC.
- It may be used by others who want to produce estimates consistent with national totals. Internationally agreed guidance is needed so that emission and removal estimates can be compared between countries and over time.
- All the IPCC guidance has therefore been compiled by an international range of authors and with an extensive global review process.

Methodology

- The first methodologies were produced by the IPCC in early 1990s and have been revised since (Development of IPCC Guidelines and Good Practice Guidance).
- The Revised 1996 Guidelines for National Greenhouse Gas Inventories, the Good Practice

Guidance and Uncertainty Management in National Greenhouse Gas Inventories (GPG2000) and the Good Practice Guidance for Land Use, Land-Use Change and Forestry (GPG-LULUCF) are used by developed countries to estimate emissions and removals, and are recommended by the UNFCCC for use by all countries.

- The 2006 IPCC Guidelines for National Greenhouse Gas Inventories (the 2006 Guidelines) are the IPCC's most recent guidance on methods and data for developing estimates of emissions and removals of greenhouse gases.
- They build on earlier guidance, over a decade of experience and a world-wide scientific and technical effort to produce guidelines, applicable to all countries notwithstanding widely varying levels of resources and expertise.

Mandate

- The current mandate of the National Greenhouse Gas Inventories Programme (NGGIP) was approved by IPCC16 (Montreal, May 2000). IPCC19 (Geneva, April 2002) decided to maintain its Task Force on Inventories, co-chaired by two members of the IPCC Bureau (one from an industrialized country and one from a developing country) with twelve additional members on the Task Force Bureau (two per IPCC/WMO region).
- The NGGIP is mandated to carry out the work, as approved by the Panel, on inventory-related methodologies and practices.

The Panel decided:

- That the IPCC is responsible for assessing and developing inventory methods and practices which are scientifically sound and relevant to all countries, noting particularly the lack of information in developing countries.
- This includes
  (a) developing methods for estimating emissions of greenhouse gases (GHGs) by sources and removals by sinks,
  (b) assessing and developing methods to quantify and to manage uncertainties in the estimates of GHGs,
  (c) assessing the scientific literature related to the development of GHG emission factors and management of inventories;
  (d) disseminating information related to inventory methods and practices,
  (e) identifying the implications of the different options in relation to inventory methods and practices and
  (f) assessing scientific issues related to independent verification.

20.13. GREEN ECONOMY

- The 'Green Economy' can be considered synonymous to a 'sustainable' economy. However, the Green Economy concept often carries a more distinctive meaning.
- Green economy focuses specifically on the fundamental changes that are required to ensure that economic systems are made more sustainable.Green Economy focuses on the ways to overcome the deeply rooted causes of unsustainable economic development.
- A Green Economy is one whose growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystems.
- The Green Economy is about sustainable energy, green jobs, low carbon economies, green policies, green buildings, agriculture, fisheries, forestry, industry, energy efficiency, sustainable tourism, sustainable transport, waste management, water efficiency and all other resource efficiency.

Transition to green economy

Three priorities in transition of economy to green economy are

- decarbonizes the economy;
- commit the environmental community to justice and equity; and
- conserve the biosphere.

A key step forward consists in changing our conception of growth and prosperity – achieving more with less and creating real wealth and quality of life.

Measures to adapt green economy

- Energy audit can reduce your building's climate footprint and lead to significant savings in energy costs.

- Overfishing in many parts of the world threatens to deplete future fish stocks. We can avoid this by working to promote sustainable fishing practices.
- Deforestation accounts for close to 20% of the world's greenhouse gas emissions.
- Sustainably managed forests can continue to support communities and ecosystems without damaging environment and climate.
- Use electronic files to reduce your demand for paper products.
- When you support certified sustainable forest products, you support a healthy environment and sustainable livelihoods.
- Car-pooling or taking public transport reduces environmental impacts and economic costs while strengthening community.
- Walking or riding a bike for short trips is good for your health - and the environment.
- Taking small steps towards wise water use can help conserve this precious resource
- Resource efficiency is key to a Green Economy and water is one of our most important resources.
- The development of clean, renewable energy by using solar, wind, tidal,etc will contribute to green economy.
- Recycling appropriate materials and composting food waste reduces the demand on our natural resources.
- Moving towards a green economy has the potential to achieve sustainable development and eradicate poverty on an unprecedented scale, with speed and effectiveness.