
UNIT 14 NATIONAL LEVEL ACTION PLAN

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14.1 INTRODUCTION

“We have the moral responsibility to bequeath to our children a world which is safe, clean and productive, a world which should continue to inspire the human imagination with the immensity of the blue ocean, the loftiness of snow covered mountains, the green expanse of extensive forests and the silver streams of ancient rivers” said the former Prime Minister of India, Dr. Manmohan Singh. In the last couple of decades, India has emerged as one of the fastest growing economies along with China and Vietnam (Basu, 2008). The structural shift that took place in Indian economy in the post 1980s has contributed in rising growth rate in Gross Domestic Product (GDP) from 5.4 per cent in 1980s to 6.4 in the 1990s and further increased to 8.4 percent per annum during 2003-04 and 2011-12 (Mehrotra, 2014). Government of India's adoption of Structural Adjustment Programme (SAP) in 1991 to bring macroeconomic stability (Kennedy, Loraine, 2014), trade liberalization and attract investment from multinational and transnational corporations have had a significant impact on the growth of the secondary and tertiary sectors, migration from rural to urban areas and reduction in the growth of primary sector. It also affected environment severely. At the same time, poverty in rural areas measured in consumption terms has substantially decreased to 26 percent in 2011-12 from 34 percent in 2009-10 and 42 percent in 2004-05 at all India level. Still India needs to go a long way. Developing countries like India need to accelerate economic growth to reduce poverty and improve socio-economic conditions. In this situation, it is important for the countries to consider equity principle.

Hope you remember global climate change negotiations like Rio, Kyoto and Bali Action Plan which you have learnt in the unit 13 of this course. Please recall the Kyoto Protocol negotiations. Before the Kyoto protocol expires at the end of 2012, both developing and developed countries of United Nations (UN) Climate Change Conference signatories aspired to strike another deal. In this backdrop, the Copenhagen conference was convened in December 2009. Before conference negotiations started, the developed world suggested that the developing countries like India and China must undertake emission reduction commitments. India has been assuring that its per capita emission level never exceed that of the developed world. The climate change management at the international level consists of 1992 United Nations Framework Convention on Climate Change (UNFCCC), 1997 Kyoto Protocol and the decisions taken by the signatory countries under these instruments. Even though, it was considered as a first step to address climate change and its consequences, it was not sufficient to force member States to take appropriate actions to address climate change with rapid change in environment and rising temperature. It was widely considered as an inadequate instrument to combat climate change. Both the UNFCCC and Kyoto Protocol did not contain necessary clauses to mitigate greenhouse gases (GHG) emissions, which resulted lack of binding obligation for developing countries. Countries like China took adverse steps and started emitting GHG like developed nations just to counter their behaviour. This fuelled further to the existing problems and some of the developing countries withdrew from Kyoto protocol in the second commitment period. Hence, Parties to the UNFCCC came together and formed an Ad-Hoc Working Group at the Durban Conference in 2011. It was called as Durban Platform for Enhanced Action (ADP) to negotiate a new climate agreement by 2015 that would come into force from 2020. The four years of continuous negotiating process resulted with the formulation of 2015 Paris Agreement which was expected to govern, regulate and incentivise the next generation of climate actions. With this introduction, through this unit, we will discuss Copenhagen Summit; Paris Agreement; National Action Plan on Climate Change; Greenhouse Gas inventory; and also a critical review of India's Action Plan and India's policy and action towards renewable energy sources.

14.2 OBJECTIVES

After studying this unit, you should be able to:

- describe Copenhagen summit 2009;
- explain India's position in Copenhagen Summit;
- analyse India's Action Plan in Copenhagen Summit;
- examine Paris Agreement and its relation with India; and
- describe National Action Plan on Climate Change.

14.3 COPENHAGEN SUMMIT 2009

The mandate of the 15th Conference of Parties (COP) in Copenhagen is to enhance long term cooperation on climate change under the Bali action

Conventions on Climate Change plan. It is not about renegotiating the United Nations Framework Convention on Climate Change (UNFCCC). The climate change attracted everyone in this world. The Intergovernmental Panel on Climate Change (IPCC) and the scientific community proposed number of actions and plans to halt global warming. The result is the climate change negotiation. The Copenhagen summit in 2009 was a great success. It has brought global environmental issue to the wider forum. Nearly 130 government delegates from 191 countries and over 40,000 scientists, activists and industrialists registered for the convention. Leaders who spoke in the convention quoted the scientific findings of the IPCC and they were aware about the threats of climate change and how it would affect people, food production, water supply and environment.

The Copenhagen summit was convened to negotiate post-Kyoto protocol agreement at the UN Framework Convention on Climate Change (UNFCCC) to sign a legally binding deal. The Bali action plan in the year 2007 laid a roadmap for the post-Kyoto Protocol agreement for developed countries (Annexure 1 parties in the convention) to reduce greenhouse gases (GHG) emission and assist developing countries to adapt climate change. The developed countries also agreed to help developing countries by transferring their technology to make them to adopt low carbon emission path way. The Bali climate convention has agreed two track negotiations: 1. “working group for long-term cooperative action”, 2. “working group on Kyoto protocol”.

IPCC set the targets for the Copenhagen negotiations. According to them, the GHG emissions will increase enormously by 2015 and then decline by 25-40% over 1990 level by 2020 and will reduce by 80 % over 1990 by 2050 to stabilize carbon dioxide concentration at 450ppm to limit the global warming below 2°C. (IPCC 2007). The analysis of World Resource institute shows that the commitments announced so far by rich countries may add up to only 13-19 % emission reduction whereas according to IPCC, 25-40 % reduction is needed (Levin and Bradley, 2009). According to the study by International Energy Agency, limiting global warming to 2°C with the carbon dioxide concentration limited to 450ppm is feasible, only if the world is ready to invest in low carbon technologies. The key issues discussed at Copenhagen summit are as follows:

- Making continuous progress in the negotiations of Kyoto protocol.
- Insisting governments to commit mid-term GHG emissions reduction.
- Developing scientific monitoring, reporting and verification methods.
- Funding for adaptation and mitigation.
- Transferring technology to the developing countries.

According to the assessment, even if the carbon dioxide concentration is stabilized at 450ppm which seems highly unlikely there is 26-78 % of risk of overshooting the 2°C goal (Meinshausen, 2005). The Copenhagen summit has taken into consideration of scientific communities view on restricting global warming below 2°C. After the debates and the intervention of Island countries and Least Developed Countries, the summit included 1.5°C as a target for future negotiations and considerations. This Copenhagen summit

also recognized the need to cooperate in achieving halting of the global and national emissions as soon as possible by keeping the special circumstances of developing countries and the need for economic development and poverty alleviation (Ravindranath, 2010).

Copenhagen green fund was established to support mitigation, adaptation, technology transfer and reducing emissions from deforestation. The accord also agreed to transfer technology by establishing a mechanism to do the same. The developed countries agreed to provide US\$ 30 billion immediately for the period of 2010-2012 and mobilize US\$ 100 billion per year for the developing countries.

Check Your Progress 1

Note: 1) Use the space given below for your answers.
2) Check your answers with those given at the end of this unit.

1. What are the issues discussed at Copenhagen Summit?

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2. What is known as Green Fund?

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14.4 INDIA AND COPENHAGEN SUMMIT

The Indian delegations in the Copenhagen Summit have expressed the positive outcome because it does not set the time limit for reducing the GHG emissions. India has to increase fossil fuel based energy to promote the economic growth. The assumption is that if it increases the fossil fuel energy, it automatically reduces the poverty.

India's expectation from Copenhagen Summit is as follows:

- International cooperation should be there to combat climate change.
- The outcome of the negotiations in the Copenhagen should be fair and equitable. It must be in accordance with the "principle of common but differentiated responsibilities and respective capabilities" as per 1992 Rio declaration.
- Summit should provide a space to accelerate socio-economic development in order to eradicate poverty through ecologically sustainable manner.

14.4.1 India's Position

1. India, as a sovereign State totally rejected any form of surveillance or supervision by international organisations in relation to CO₂ emission reduction within the state, especially to the extent that:

Conventions on Climate Change

- It did not want financial support from international agencies or organization. It was ready to manage from domestic resources.
 - It was ready to take its own procedure for reduction of CO₂ emissions and the percentage reduction will remain at the discretion of the country.
2. The Copenhagen Conference is not a legally binding text. The Copenhagen Conference is only a procedure for improving the existing institutional framework to combat climate change and is not under any circumstances a re-negotiation of it nor can it result in the development of a new framework.

The UN Framework Convention on Climate Change adopted at the Rio de Janeiro Earth Summit, 1992 is the legally binding text. Based on this, the international community must operate in order to achieve its objectives and to deal with the phenomenon of climate change. It is fully applicable for India. The purpose of the Copenhagen Summit is to continue to implement, and to reinforce the existing institutional framework and not create a new one. In other words, the purpose of the Conference is to encourage the long-term collaboration under the Bali Action Plan and not renegotiate the UN Framework Convention on Climate Change (UNFCCC).

3. As a continuation of that position taken by India, the Kyoto Protocol remains the core, adequately binding text at international level, and consequently it was not considered necessary to prepare a new text. The Kyoto Protocol will remain in force even after 2012. The only subject for debate is determination of new restrictions on the quantity of CO₂ emissions for developed countries and the setting of a new time period for achieving those targets after 2010. The validity of the Kyoto Protocol cannot be allowed to cease after 2012 nor can the expectation for developed countries to undertake the obligation to limit the quantity of CO₂ emissions after 2012 be abandoned.
4. As we mentioned earlier, the developed economies are responsible for the phenomenon of underdevelopment in the global system. As a consequence, it is for certain that the responsibility of the developed countries to actively support sustainable development in developing countries by transferring economic resources and technology without enforcing conditions of any sort, such as patents or copyright. The parties responsible for the underdevelopment cannot set conditions.
5. It is unfair to impose emission norms to all industries at global level on issues relating to sectoral emission reduction policies. In other words, the types of industries which cause the greatest harm by emitting large quantities of CO₂ must be identified and focus should be given only on those industries.

14.4.2 India and BASIC Countries (Brazil, South Africa, India & China)

On the one hand, the developing countries like India and other countries in the BASIC group came together and took strong position on emission norms, and the developed countries on the other led by the USA withdrew from the

Conference. The fragmentation of views and the closely-held views of various groups of States meant that the Conference had every prospect of failing.

The enabling conditions have emerged as a result of multilateral pressures and negotiations during the Copenhagen Conference, mainly from the USA, coupled with the personal attendance of former US President Obama at the Conference. This would not have been the case if, in the meantime, the necessary consent had not been obtained from the large number of States. These States have been created as number of blocs. Finally, the Copenhagen Accord successfully emerged (<http://unfccc.int/resource/docs/2009>).

India has announced a voluntary reduction of CO₂ emissions by 20-25% up to 2020 compared to a 2005 baseline for emissions, particularly through a process of implementing policy measures which included the mandatory application of quality characteristics to fuels. Both the USA, and China, as well as India, have already submitted plans to curtail emissions. More specifically, on 8.3.2010 the Government of India's Minister for Environment & Forests in a letter to the Executive Director of the UNFCCC Secretariat, Mr. Yvo de Boer, pointed out that

“Please refer to your letter vide no. YdB/DBO/JBU/eps/log286-10 dated 3 February, 2010 regarding listing in the chapter of the Copenhagen Accord. It may be recalled that India actively participated in the discussions on the Copenhagen Accord. India stands by the contents of the Accord. Our clear understanding is that the Accord is a political document. It is not legally binding. The Accord is meant to facilitate the ongoing negotiations in the two tracks in accordance with the principles and provisions of the UNFCCC, the Kyoto Protocol and the Bali Action Plan. The Accord was not adopted by the Conference of Parties but just taken note of. However, the Accord could have value if the areas of convergence reflected in the Accord are used to help the Parties reach agreed outcomes under the UN multilateral negotiations in the two tracks, i.e., the Ad-hoc Working Group on Long Term Cooperative Action and the Ad-hoc Working Group on Kyoto Protocol. The Accord is only an input into the two-track negotiations. The Accord is not /a new track of negotiations or a template for outcomes.” (www.usclimatenetwork.org/policy/copenhagen-accord-commitments#note10).

Consequently, the position of the Indian Government which emerged as a result of the negotiations which took place during the Conference is, to a greater or lesser extent, different from the original ones.

14.4.3 Impact of India's Position on the Copenhagen Summit

1. India has emerged as regional leader in the SAARC region by strengthening its economy.
2. Development of basic block in the conference is the result of India's aspiration as a regional leader to foster adhoc partnership.
3. It has strengthened its relationship with China.
4. The closer ties of India and China on climate change issues are expected to bring multiple impact at the international level.

- Conventions on Climate Change**
5. India strengthened its position by mobilizing more developing countries to adopt joint position and shape the final conference text. So the text was not binding. It acted as a powerful member for the economically developing force.
 6. The role played by the G77 was worth to be noted and India being part of G77 group had a significant influence.
 7. The conference proceedings showed that the developed countries have splitted into many and least developed countries took different positions. The island nations had a different position. This affected the outcome of the conference proceedings and the conference could not take specific time frame for implementing the climate change.

Check Your Progress 2

- Note:** 1) Use the space given below for your answers.
 2) Check your answers with those given at the end of this unit.

1. List out the expectations of India from Copenhagen Summit.

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14.5 INDIA’S POLICY AND ACTION TOWARDS RENEWABLE ENERGY SOURCES

This section is the official announcement of the Government of India for the post Copenhagen domestic actions. The following are some of the policies framed and implemented by India towards renewable energy sources (Ministry of Environment and Forest, 2010).

1. Expert group was set up on low carbon strategy for inclusive growth

The representation from industry, leading think tank, research institutions and civil society and government are part of this expert group. The group has given mandate to develop a road map for India for low carbon development. It will recommend prioritized actions in sectors such as electricity, transport, etc.

2. A “carbon tax” on coal to fund clean energy

India has announced a levy – a clean energy cess – on coal, at the rate of Rs. 50 (~USD 1) per ton, which will apply to both domestically produced and imported coal.

- This money will go into a National Clean Energy Fund that will be used for funding research, innovative projects in clean energy technologies, and environmental remedial programmes.
- The expected earnings from this cess is around USD 500 million for the financial year 2010-11.

3. Perform, Achieve and Trade (PAT) mechanism for energy efficiency

India's cabinet approved the National Mission on Enhanced Energy Efficiency (NMEEE) on 24th June, 2010. The Mission includes several new initiatives – the most important being the Perform, Achieve and Trade (PAT) mechanism, which will cover facilities that account for more than 50% of the fossil fuel used in India, and help reduce CO₂ emissions by 25 million tons per year by 2014-15.

- a. About 700 of the most energy intensive industrial units and power stations in India would be mandated to reduce their energy consumption.
- b. In order to enhance the cost effectiveness of this mechanism, facilities which achieve savings in excess of their mandated reduction would be issued Energy Savings Certificate (ESCerts) for the savings that are in excess of their mandated target. These ESCerts can be used by other facilities for compliance if they find it expensive to meet their own reduction target.
- c. Energy efficiency ratings made mandatory for 4 key appliances — refrigerators, air conditioners, tube lights and transformers.

4. Release of India's National GHG inventory

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) required to submit periodical report on emissions according to the paragraphs 8-24 of the annex to decision 17/CP.8 meant for reporting of National Communications (NC) from Non-Annex I parties. India being a signatory of UNFCCC prepares national inventory on emissions by collecting quantitative data. The data will be collated, analysed and reported in the form of table.

India released its Greenhouse Gas (GHG) Emissions Inventory for 2007, with the aim of enabling informed decision-making and to ensure transparency.

- With this publication, India has become the first “non-Annex I” (i.e. developing) country to publish such updated numbers.
- India also announced its intent to publish its emissions inventory in a two-year cycle going forward, which is much more frequent than the requirement under its NATCOM commitments. India will be the first developing country to do so.
- According to the results, India's emissions are less than a fourth of the USA and China.
- Results also show that the emissions intensity of India's GDP declined by more than 30% during the period 1994-2007 due to the efforts and policies that India has proactively put in place.
- Despite its already low emissions intensity, India intends to do even more. India has announced its intent to further reduce the emissions intensity of its GDP by 20-25% between 2005 and 2020, even as it accelerates infrastructure development and the growth of its manufacturing sector.

Conventions on Climate Change We have given GHG emissions by sector wise for 2014 in the table 14.1

Table 14.1 Greenhouse Gas Emissions by sectors in India by 2014 (Gg)

| | CO ₂ emission | CO ₂ removal | CH ₄ | N ₂ O | HFC23 | CF4 | C ₂ F ₆ | SF ₆ | CO ₂ equivalent |
|--|--------------------------|-------------------------|-----------------|------------------|-------|------|-------------------------------|-----------------|----------------------------|
| Total without LULUCF (Gg) | 1,997,891.85 | - | 20,005.35 | 475.29 | 1.59 | 2.61 | 0.71 | 0.004 | 2,607,488.12 |
| Total with LULUCF (Gg) | 2,015,107.03 | 319,860.23 | 20,053.54 | 476.71 | 1.59 | 2.61 | 0.71 | 0.004 | 2,306,295.43 |
| 1. Energy | 1,844,705.03 | - | 2,133.37 | 65.35 | - | - | - | - | 1,909,765.74 |
| 2. IPPU | 153,186.81 | - | 177.85 | 10.36 | 1.59 | 2.61 | 0.71 | 0.004 | 202,277.69 |
| 3. Agriculture | - | - | 14,709.78 | 349.39 | - | - | - | - | 417,217.54 |
| 4. LULUCF | 17,216.04 | 319,860.23 | 48.19 | 1.42 | - | - | - | - | -301,192.69 |
| 5. Waste | - | - | 2,984.35 | 50.18 | - | - | - | - | 78,227.15 |
| Memo Item (not accounted in total Emissions) | 812,030.60 | - | 0.11 | 0.11 | - | - | - | - | 812,067.87 |
| International Bunkers | 4,943 | - | 0.11 | 0.11 | - | - | - | - | 4,980.811 |
| Aviation | 3,681.65 | - | 0.03 | 0.10 | - | - | - | - | 3,714.12 |
| Marine | 1,261.88 | - | 0.08 | 0.01 | - | - | - | - | 1,266.69 |
| CO ₂ from Biomass | 807,087.06 | - | - | - | - | - | - | - | 807,087.06 |

IPPU: The Industrial Processes and Product Use

Source: MoEFCC. (2018). India: Second Biennial Update Report to the United Nations Framework Convention on Climate Change. Ministry of Environment, Forest and Climate Change, Government of India.

As per the table 14.1, India's emissions in 2014 were 2,607,488.12 Gg of CO₂e of greenhouse gases (GHGs) without Land Use, Land-Use Change and Forestry (LULUCF). The following are the excerpts from the report.

“The energy sector accounted for 73% of the total GHG emissions for the year 2014. Fuel combustion activities emitted 1,871,709 Gg CO₂e in 2014 including 1,140,983 Gg CO₂e from energy industries. Within energy industries, 94.96% of emissions were from electricity production, 4.39% from refinery and 0.66% from manufacturing of solid fuels. Thus, electricity production accounted for about 42% of the entire GHG emissions from all the sectors in 2014. The manufacturing industries and construction together emitted 351,909.54 Gg CO₂e, which was 18.4% of total emissions from the energy sector. The sub-categories that share the total contribution to the emissions from the manufacturing industries are: Cement (13.4%), Iron & steel (43.9%), Non-ferrous metals (0.5%), Chemicals (0.6%), Pulp & paper (1.1%), Mining & quarrying (0.9%), Textile/leather (1.0%), Bricks (0.8%), Fertilizer (1.7%), Engineering Sector (0.1%), and Non-specific Industries (36%)”.

The report further mentioned that “Road transport accounted for 90.1% of the total emissions from the transport sector, followed by civil aviation (5.6%), railways (3.1%) and domestic water-borne navigation (1.2%). In 2014, other sectors in the energy sector together emitted 128,643 Gg of CO₂e, of which approximately two-thirds were contributed by the residential sector, about one fifth by the commercial sector and rest by the biomass burnt for energy (non-CO₂ GHGs) and the agriculture/fisheries sectors put together. A comparison of fossil fuel combustion emissions using both, the reference approach and the sectoral approach was also conducted, and the difference was found to be 3.83%. The total fugitive emissions in the year 2014 were 38,057 Gg CO₂e, of which 43% was from coal mining and post mining operations in India. Fugitive methane emissions have registered a decrease of 22% between 2010 and 2014, mainly due to a relative reduction in underground mining activities. Fugitive emissions contributed to 2% of emissions from the energy sector”.

“The Industrial Processes and Product Use (IPPU) category emitted 202,278 Gg of CO₂e in the year 2014, and accounted for 8% of the total GHG emissions. Within IPPU, cement production is the largest emission source, accounting for about 57% of total IPPU sector emissions. In total 42,145 Gg CO₂e was emitted as fluorinated gases in 2014. Agriculture sector is the main source of methane (CH₄) and nitrous Oxide (N₂O) emissions. CH₄ emissions occur from this sector mainly due to livestock rearing (enteric fermentation and manure management) and rice cultivation. N₂O is principally emitted due to the application of fertilizers to the agricultural soils. In the year 2014, the agriculture sector emitted 417,218 Gg of CO₂e, which amounted to around 16% of the emissions of India for that year. Of these, 74% was CH₄, and 26% was N₂O. LULUCF sector was a net sink of 301,193 Gg CO₂e during 2014, registering an increase in the sink activity of the sector. Cropland dominates the CO₂ emissions /removal estimates for India for the year 2014. Forest land, cropland and settlement categories were net sinks while grassland was a net source of CO₂. About 12% of India’s GHG emissions were offset by the LULUCF sector. The waste sector contributed to 3% to total GHG emissions in 2014. The waste sector was dominated by emissions from wastewater handling which account for more than 80% of the sectoral emissions. Methane from solid waste disposal was 717 Gg whereas CH₄ emissions from wastewater treatment and discharge, including domestic, commercial and industrial wastewater were 2,267 Gg. Domestic and commercial wastewater handling also emitted 50 Gg of N₂O.”

5. National Mission on Sustainable Habitat

The NMSH was recently approved as one of the eight National Missions under the Prime Minister’s National Action Plan on Climate Change (NAPCC). A comprehensive strategic plan is being drafted for the implementation of this mission.

6. Jawaharlal Nehru National Solar Mission

The JNNSM which has been launched recently is an ambitious mission to make India a global leader in solar energy. This is also one of the eight National Missions under NAPCC.

- The National Solar Mission aims at generating 20,000 MW of solar power by 2022.

- The Mission also has other targets: 2000 mw of off-grid solar plants, and 20 million square meters of solar collectors to be installed. In addition, 20 million solar lighting systems will be created/distributed in rural areas, saving about 1 billion litres of Kerosene every year.

7. Green India Mission

The GIM, also one of the eight National Missions under NAPCC, is being finalised. The overarching target of the GIM is to double the area to be taken up for afforestation/eco-restoration in India in the next 10 years, taking the total area to be afforested or eco-restored to 20 million ha. This would increase the above and below ground biomass in 10 million ha of forests/ecosystems, resulting in increased carbon sequestration of 43 million tons CO₂e annually.

Key features of GIM include:

- Increasing the quality of our forest cover by increasing the cover and density of our medium density and degraded forests.
- Taking a holistic view of forestry, and not merely focus on plantations to meet carbon sequestration targets.
- Focusing on decentralization and involving existing local governance institutions. Forests are the main source of livelihood to over 200 million people in India and hence GIM will actively try to secure the participation of local communities.

8. Regional and International Cooperation

- South Asian Association for Regional Cooperation (SAARC), which comprises the 8 South Asian countries, adopted the Thimpu Statement on Climate Change on 29th April 2010. The Statement calls for, among other things, an Intergovernmental Expert Group on Climate Change to develop clear policy direction for regional cooperation on climate change.
- India announced the grant of USD 1 million each to SAARC Forestry Centre, Thimpu, Bhutan and SAARC Coastal Management Centre, Male, Maldives.
- India and Bangladesh to set up the India-Bangladesh Sunderbans Ecosystem Forum to conserve the Sunderbans – the world’s largest riverine delta. Climate change will be the central component of this Forum.

9. Climate Change Science

- The Indian Network for Climate Change Assessment (INCCA) is undertaking a major “4×4” assessment of the impacts of climate change on four sectors – water resources, agriculture, forests and human health – in four critical regions of India – the Himalayan region, North east, Western Ghats and Coastal India.
- INCCA is basically a network consisting of 127 research organizations. Its task is to perform research in the domain of climate change and climate change impacts on various sectors of Indian economy.

10. India's first CDM PoA (Bachat Lamp Yojana)

The Bachat Lamp Yojana (BLY) conceived as CDM Programme of Activity (PoA) for mass distribution of Compact Fluorescent Lamps (CFLs) in India has been registered successfully by the CDM-Executive Board.

11. Himalayan Ecosystem

The mission aims to evolve policy and management strategies for protecting and sustaining the Himalayan mountain ecosystem including Himalayan glaciers. Further, it aims to establish “an observational and monitoring network” to assess the resources and ecosystem health of Himalayan ecosystem.

14.6 PARIS AGREEMENT

The successful multilateral diplomacy has brought a historic Paris Agreement to address climate change. The Paris Agreement is a ‘treaty’ under the Vienna Convention on the Law of Treaties, 1980. It legally binds all States that have expressed their consent to be bound by this agreement. Once they accept and approve, they ratify the same and take necessary measures to implement the same by formulating laws, policies and programmes.

Any legal character of a provision in the international treaties makes the parties to oblige legally. It also set the standards for States to achieve the obligations within prescribed time period. States need to assess their work in a regular interval and submit reports periodically. This may give clear picture whether states have compliance/non-compliance to the agreed provisions. If we assess Paris Agreement through these lenses, states need to fully oblige mitigation and transparency sections of the Agreement. Unlike mitigation and transparency sections, adaptation sections seem to be soft obligations.

175 countries including India ratified Paris Agreement. As we mentioned earlier, unlike the divisive Kyoto Protocol, all parties required to submit relevant documents with regard to GHG mitigation and adaptation measures to counter adverse effects of climate change as per Paris Agreement at regular intervals. 189 states/countries covering over 95% of global emissions have submitted nationally determined contributions in the context of Paris Agreement. The Paris Agreement has aspired to address adverse effects of climate change by stabilizing temperature rise (‘well below 2°C’ and to aspire to 1.5°C). As we mentioned earlier, each state/country must report to their efforts to combat GHG emissions or mitigation measures in every five years.

Agreement provides autonomy to the states/countries to decide on their own to address climate change. But, their successive efforts must be progressive one compared to previous ones. There are three important components in the Paris agreement. Firstly, states/countries must take transparent measures to address or mitigate climate change and their agreed contribution. Secondly, there will be global stock taking process which will be assessed periodically to recognize collective progress towards the Agreement’s long term goals. Thirdly, there will be a compliance system that facilitates member states/countries. It was recognized by the previous studies that the measures taken to mitigate and adapt to climate change might affect human rights. First of its kind, Paris Agreement accepted

Conventions on Climate Change the relationship between climate change and human rights like right to life, right to health, right to food, and right to housing, with marked departure from earlier climate change instruments. It contained explicit reference. In addition to this, states/countries need to formulate necessary laws to improve socio-economic conditions of vulnerable to address human rights issues. Yet, until recently, no legally binding international climate instrument explicitly recognised the existence of intersections between human rights concerns and climate change.

As far as India is concerned, the Paris Agreement requires India to submit its national contribution every five years, ensuring that each contribution is a progression on the previous one. It also requires India to report periodically on its actions to achieve and implement its contribution. In addition, India should 'strive' to submit long-term low-GHG development strategies within which these national contributions will sit. The Paris Agreement makes India to formulate necessary policies to address energy requirements, environment and development. As mentioned earlier, each member states need to submit periodically about their progress. To do the same, India must collect quantitative data rigorously to show the progress. Qualitative data may be helpful to recognize the impact of policies on vulnerable. Although, India was able to reduce poverty among vulnerable considerably over plan period, it needed to take further measures to address poverty and vulnerability in certain geographical areas. The measure taken at this issue must be in a right direction. India has responsibility at the international level too. With regard to reducing GHG emissions to bring temperature at certain levels, countries must share burden equitably. Countries like India must give voice in this direction.

14.7 NATIONAL ACTION PLAN ON CLIMATE CHANGE

National Action Plan for Climate Change (NAPCC) was formulated and released on 30th June, 2008. The guiding principles for NAPCC are given below:

- Formulation of inclusive, climate change policies by protecting the rights of the poor and vulnerable;
- Achieving national growth objectives by taking measures in a definite direction that must address ecological sustainability which further address greenhouse gas mitigation;
- Devising efficient and cost effective strategies for end use demand side management;
- Developing and deploying appropriate technologies for both adaptation and mitigation of greenhouse gases emission extensively at an accelerated pace;
- Encouraging all stakeholders to develop a new and innovative forms of market, regulatory and voluntary mechanisms to promote sustainable development;
- Ensuring effective implementation of programme through unique linkages, including with civil societies and local government institutions and through public-private partnership;

- Encouraging international cooperation for research, development, sharing and transfer of technologies enabled by additional funding and a global IPR regime that facilitates technology transfer to developing countries under UNFCCC.

Based on the above mentioned guiding principles, the Government of India has developed eight National Missions.

1. National Solar Mission (NSM);
2. National Mission for enhanced energy efficiency (NMEEE);
3. National Mission on Sustainable Habitat (MNSH);
4. National Water Mission (NWM);
5. National Mission for sustaining the Himalayan Ecosystem (NMSHE);
6. National Mission for a Green India (GIM);
7. National Mission for sustainable agriculture (NMSA); and
8. National mission on strategic knowledge for climate change (NMSKCC).

These missions will be implemented through different ministries based on their subject matter. Apart from ministries assigned to the task, Ministry of Finance, Planning Commission, experts from industry, academics and civil society will be part of the mission. The institutional structure depends upon task allocated for particular mission. Each ministry implement the mission by formulating necessary policies and programmes and develop detailed mission document which will be placed in the individual ministry website. We will discuss mission goals, strengths and weaknesses.

National Solar Mission

Mission has ambitiously targeted to generate considerable percentage of solar power by each state in India individually and country as a whole. The Mission's Renewable Purchase Obligations (RPOs) and auction process has brought fair degree of transparency and accountability to the process. According to the reports, the mission could able to achieve a substantial amount of work in the Phase I. The Mission has failed to recognize the potential off-grid generation which might helpful for poor and vulnerable. India is implementing various sustainable development programmes from first five year plan period onwards. The success of solar water heater scheme of Ministry of Non-Conventional and Renewable Energy in 1990s in the State of Karnataka and Maharashtra might be notable example for emulation.

National Mission for Enhanced Energy Efficiency (NMEEE)

The mission has introduced innovative measures like Perform, Achieve and Trade (PAT), Super-Efficient Equipment Programme (SEEP), and Market Transformation for Energy Efficiency (MTEE). The mission has made available necessary funds to achieve targets like Partial Risk Guarantee Fund (PRGF) and Venture Capital Fund for Energy Efficiency (VCFEE). The mission target was not holistic rather it targets only sub-sectors. It concentrates only on large scale industries.

Conventions on Climate Change National Mission on Sustainable Habitat (MNSH)

Mission plan was integrated with already existing plan Jawaharlal Nehru Urban Renewal Mission and tried to bring smart cities with energy efficient components. Mission must integrate their ideas by using bottom up approach to the planning and all its planning should be from stakeholders' perspective.

National Water Mission (NWM)

Mission affirms to bring comprehensive data base on the existing water sources. Study must be conducted on the relationship between water and climate change. Identifying existing water sources and restoring and rejuveting with the help of communities are significant.

National Mission for Sustaining the Himalayan Ecosystem (NMSHE)

The mission recognises the importance of the Himalayas in sustaining large number of people and serves as an opportunity to promote a mountain-driven rather than plains-driven approach. But, the mission inadequately recognizes the significance of research to understand entire Himalayan ecosystem. Poor and vulnerable people are directly affected by the deforestation, depletion of natural resources and the construction of dams.

National Mission for a Green India (GIM)

Mission has ambitious plan to regulate and institutionalize local community level institutions. Mission will identify best practices and same will be used as learning sites. It failed to address the issues of reducing forest density.

National Mission for Sustainable Agriculture (NMSA)

Mission understood the problems faced by country especially agriculture sector with regard to climate change. But mission failed to understand the problems of marginal and small farmers. Identifying and scaling up of agriculture based on agro-climatic zone is important. The mission fails to address fuel and fertiliser shortages. In the era of post-globalization and mechanization of agriculture, the sector altogether faces different kinds of problem.

National Mission on Strategic Knowledge for Climate Change (NMSKCC)

It is significant to encourage all stakeholders to do research on long-term consequences of climate change. Knowledge gap and the impact of socio-economic changes must identified through research.

Check Your Progress 3

- Note:** 1) Use the space given below for your answers.
2) Check your answers with those given at the end of this unit.

1. What is GIM? Explain its key features.

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2. What are the eight missions under National Action Plan on Climate Change (NAPCC)?

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14.8 LET US SUM UP

Through this unit, we have discussed that India has taken a firm and reasonable stand towards climate change negotiations. At international level, it mobilized likeminded countries to take appropriate decisions with regard to climate change. You can see that India is firmly committed for sustainable development and at the same time not compromising with its economic growth to reduce poverty. The final section of this unit has shown the measures taken by India towards renewable energy sources.

14.9 KEYWORDS

- Annexure 1 Countries** : Annexure 1 countries are industrialised countries and economies in transition.
- LCA** : Life Cycle Assessment (LCA) is the broadest indicator under internationally standardized method to evaluate the impact of climate change. It also assess acidification potential, eutrophication potential, ozone depletion potential and ground level ozone creation.

14.10 SUGGESTED FURTHER READING/ REFERENCES

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14.11 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1. The key issues discussed at Copenhagen summit are as follows:
 - a. Continuing negotiations of Kyoto protocol.
 - b. Making governments to commit midterm GHG emissions reduction.
 - c. Developing, monitoring, reporting and verification methods.
 - d. Funding for adaptation and mitigation.
 - e. Transferring technology to the developing countries.
2. In Copenhagen green fund was established to support mitigation, adaptation, technology transfer and reducing emissions from deforestation. The accord also agreed to transfer technology by establishing a mechanism to transfer.

Check Your Progress 2

1. India's expectation from Copenhagen summit
 - a. International cooperation should be there to combat climate change.
 - b. The outcome of the negotiations in the Copenhagen should be fair and equitable. It must be in accordance with the principle of common but differentiated responsibilities and respective capabilities as per 1992 Rio declaration.
 - c. Summit should provide a space to accelerate socio-economic development in order to eradicate poverty through ecologically sustainable manner.

Check Your Progress 3

1. GIM means Green India Mission. Key features of GIM include:
 - a. Increasing the quality of our forest cover by increasing the cover and density of our medium density and degraded forests.
 - b. Taking a holistic view of forestry, and not merely focus on plantations to meet carbon sequestration targets.
 - c. Focusing on decentralization and involving existing local governance institutions. Forests are the main source of livelihood to over 200 million people in India and hence GIM will actively try to secure the participation of local communities.
2. The eight National Missions under National Action Plan on Climate Change are as follows:
 1. National Solar Mission (NSM);
 2. National Mission for enhanced energy efficiency (NMEEE);
 3. National Mission on Sustainable Habitat (MNSH);
 4. National Water Mission (NWM);
 5. National Mission for sustaining the Himalayan Ecosystem (NMSHE);
 6. National Mission for a Green India (GIM);
 7. National Mission for sustainable agriculture (NMSA); and
 8. National mission on strategic knowledge for climate change (NMSKCC).