

## Chapter 12

# Sustainable Development and Climate Change

*Human-induced greenhouse gas (GHG) emissions are growing and are chiefly responsible for climate change. Being a global public good, greater effort at collective action to limit the increase in global average temperature to below 2°C above pre-industrial levels is required. Emerging and developing countries in South Asia and Africa, where there are greater needs for adaptation, particularly in view of the nature of livelihoods, are most vulnerable to the adverse impacts of climate change. The sustainable development path has economic implications. There is immense pressure on governments to act through two new agreements on climate change and sustainable development, both of which will be new global frameworks for action to be finalized next year. India has accommodated sustainability concerns in its development path but is constrained in its efforts as many needs are competing for a small amount of resources. The UNFCCC process must gather momentum for securing the global public good.*

### INTRODUCTION

12.2 Sustainable development is an imperative for achieving inter-generational equity and as a public good has a large global dimension. There has been significant progress on the development front with 116 countries so far meeting the millennium development goal (MDG) target for drinking water, and 77 meeting the sanitation target (Progress on Sanitation and Drinking Water- 2014 Update, WHO and UNICEF 2014). Energy intensity has declined worldwide including in many developing countries owing to technology changes and efficiency improvements. About 700 million fewer people lived in conditions of extreme poverty in 2010 as compared to 1990. The global goal of halving poverty was achieved in 2010. Remarkable gains in access to improved sources of water, the fight against malaria and tuberculosis, improved conditions for slum dwellers in cities, enrolment in primary education, and the advancement of women have been achieved. India too has made significant progress, which is detailed in Chapter 13.

12.3 The progress, however, is uneven, insufficient, and threatened by prospective future losses. Weather chronicles show each passing year being marked by some disasters or catastrophic events and increasing weather variability. A warming climatic system is expected to impact the availability of basic necessities like freshwater, food, and energy. This year, according to various

forecasts, the odds of an El Niño occurring are very high. A stronger-than-usual El Niño could trigger floods and droughts in different parts of the world, threaten food supplies, and create price volatility. This is particularly likely in South Asian countries with greater adaptation needs in view of the large population, vast coastline, and dependence of livelihoods on agriculture.

12.4 Emissions continue to rise and currently are crossing historic thresholds. GHG emissions grew on average 2.2 per cent per year between 2000 and 2010, compared to 1.3 per cent per year between 1970 and 2000 (IPCC WG III 2014). Clearly, the world is not on track for limiting increase in global average temperature to below 2°C above pre-industrial levels. Science in fact is repeatedly warning that the world is on a 4-6° C warming pathway. Mitigation is getting its fair share of attention in global efforts, but more urgent adaptation issues remain neglected for poor vulnerable countries to tackle as they are the ones most affected.

12.5 In the backdrop of non-achievement of MDG 7 (to ensure environmental sustainability) and growing GHG emissions, global sustainable development and climate change agendas are snowballing, hopefully towards a path-breaking climax in the agreements in 2015. Following the Rio+20 mandate, the global community is working to develop a set of sustainable development goals (SDGs) possibly to be integrated with the unfinished MDGs when they end in 2015. Simultaneously the global climate community faces a deadline for reaching an agreement in 2015, bringing in more than 190 countries to pledge emission cuts for the post 2020 period. This will be a first-ever global pact of its kind. While 2015 will be a landmark year for sustainable development and climate change policy, 2014 is the last chance for all stakeholders to introspect to be able to wisely choose the world they want post 2015.

12.6 While the debate goes on, India like many developing nations has not even utilized its fair share of the earth's carbon space, nor has it achieved basic minimum standards of living for its entire population. Per capita energy use in developing countries is only about 25 per cent that in developed economies on average (IPCC, WG III 2014). Besides, there is the issue of access to clean fuels for a sizeable proportion of the rural population. About 400 million Indians still do not have electricity in their homes and about 800 million use some form of biomass as their primary or only energy source for cooking, which is worrisome (Ministry of Statistics and Programme Implementation [MOSPI], Energy Statistics 2013 and World Bank).

12.7 The essence of sustainable development is meeting the needs of the present without jeopardizing the ability of future generations to meet their needs. The goals of economic and social development must be defined in terms of sustainability in all countries and the present and future consumption balance within nations has to be seen in relation to historical patterns of consumption. The key question, therefore, is whether countries like India are prepared to accommodate more global targets, given their domestic obligations of basic development including minimum necessary needs of the poor. The bottom half of the world can do its bit but it cannot be

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The world is not on track for limiting increase in global average temperature to below 2°C. GHG emissions grew on average 2.2 per cent per year between 2000 and 2010, compared to 1.3 per cent per year between 1970 and 2000.

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Two new global deals on climate change and sustainable development to be finalized in 2015 are being negotiated.

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expected to shoulder the bulk of the world's development, sustainability, and climate crisis burden. It would therefore be instructive to look at sustainable development in the context of historical, spatial, and other dimensions.

## SUSTAINABLE DEVELOPMENT

12.8 Environmental issues have for long been an integral part of Indian thought and social processes. India, a large and diverse country with only 2.4 per cent of the world's land area, accounts for 7-8 per cent of the recorded plant and animal species of the world. It is estimated that India is home to about one-sixth of the entire plant species of the world and of the 12 biodiversity hotspots of the world, 2 are in India (Compendium of Environmental Statistics in India, CSO 2013). Compared to 2009, there has been a net increase of 23.34 sq. km in India's mangrove cover (Brief Statement on Activities and Achievements, Ministry of Environment and Forests [MOEF] 2013). The country has enacted a number of legislations on conservation of forests and ecosystems, waste management, and pollution control. Recently President of India as well as the Prime Minister emphasized the need for sustainability and announced the launch of a "Swachh Bharat Mission" for ensuring hygiene, waste management and sanitation across the nation. While addressing Parliament after the formation of the new government, the President emphasized that the government strongly believes that environmental conservation can go hand in hand with development and assured that while putting the country on a high growth path, the government will keep sustainability at the core of India's planning process. The Twelfth Five Year Plan (2012-17) along with other national policies aims at addressing many such concerns. The government (centre and states) expenditure on social services as a proportion of GDP increased from 5.49 per cent in 2005-06 to 7.09 per cent in 2012-13 (budget estimates) (SAARC Development Goals: India Country Report 2013). While extensive efforts are being made by the government at home, India is equally engaged with the global community in drawing up an inclusive roadmap for sustainable development.

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The President and the Prime Minister announced the launch of a 'Swachh Bharat Mission' for ensuring hygiene, waste management, and sanitation across India.

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## Thematic Areas for SDGs

12.9 India's progress in meeting the various targets under the MDGs in 2014, the penultimate year, is assessed in Box 12.1 (Chapter 13 contains details of the key individual indicators). With the MDGs due to end in 2015, international deliberations on a post 2015 development framework have commenced. There is also urgency to turn the vision for sustainable development into a set of goals and integrate the unfinished MDGs into the post 2015 development agenda. With the formulation of SDGs currently underway, a number of thematic focus areas for SDGs have been identified by the Open Working Group (OWG), which is a 30 member group tasked with the mandate of preparing a proposal on SDGs for consideration by the United Nations General Assembly. The major focus areas identified so far are: poverty eradication; food security and nutrition; health and population dynamics; education; gender equality and women empowerment; water and sanitation; energy; employment; sustainable cities and human settlements; sustainable production and consumption; and the means of implementation.

### Box 12.1 : MDGs and Targets : Summary of Progress Achieved by India

Indicators	MDG Target 2015	Likely Achievement 2015	
<b>MDG 1: Eradicate Extreme Poverty and Hunger</b>			
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day			
Proportion of population below poverty line (per cent)	23.9	20.74	
<b>MDG 2: Achieve Universal Education</b>			
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling			
Net enrolment ratio in primary grade (per cent)	100	100	
Literacy rate (15-24 years)	100	100	
<b>MDG 3: Promote Gender Equality and Empower Women</b>			
Target 4 : Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015			
Gender parity index (Ratio of boys to girls in primary education)	1	1	
Share of women in wage employment in the non-agricultural sector (per cent)	50	23.1	
<b>MDG 4: Reduce Child Mortality</b>			
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate			
Under five mortality rate (per 1000 live births)	42	50	
Infant mortality rate (per 1000 live births)	27	41	
<b>MDG 5: Improve Maternal Health</b>			
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio			
Maternal mortality ratio (per 100,000 live births)	109	139	
Proportion of births attended by skilled personnel (per cent)	100	62	
<b>MDG 7: Ensure Environment Sustainability</b>			
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation			
Households with sustainable access to an improved water source (per cent)	Urban Rural	93.56 79.47	97.5 96.3
Households without access to sanitation (per cent)	Urban Rural	15.84 46.64	12.14 61.11

**Source:** Millennium Development Goals, India Country Report 2014, MOSPI.

**Note:** Some of the major indicators have been included for this analysis for which data was available under targets with base year 1990.

India's achievement with respect to MDGs is a mixed bag. For some indicators, India has already achieved or surpassed the target well ahead of the deadline, for example halving the percentage of population below the poverty line, well beyond the MDG target of 23.9 per cent, and is likely to achieve the target of 20.74 per cent people below the poverty line in 2015; in terms of Target 10, i.e. to halve the proportion of people with sustainable access to an improved water source, urban and rural outcomes have already surpassed the target levels of 93.56 per cent and 79.47 per cent respectively in 2012. MDG 2, of achieving universal primary education, is well on track. With respect to some targets, like the gender parity index and under five mortality rate, goals are likely to be reached by 2015. India is unlikely to reach the targeted level of maternal mortality rate of 109 per 100,000 live births by 2015. The other areas of concern relate to the share of women in wage employment in the non-agricultural sector, proportion of births attended by skilled personnel, and proportion of population with access to improved sanitation, where India is lagging by a huge margin.

## Sustainable Development Financing

12.10 Sustainable development implies higher input cost per unit of outcome or output at least in the short run (as compared to the business-as-usual path). Additional investment needs of developing countries for sustainable development are at about US\$ 1 trillion per year in the coming decades (World Economic and Social Survey, United Nations 2012). In recognition of the need for mobilizing these large resources in order to follow a sustainable development growth trajectory, member states at Rio+20 established an Intergovernmental Committee of 30 experts on Sustainable Development Financing for assessing financing needs and evaluating additional initiatives for an effective sustainable development financing strategy.

12.11 The developing countries including India have been stressing that Common but Differentiated Responsibilities (CBDR) and equity must continue to be the bedrock of ongoing and future sustainable development financing. Subsequently, the financial flows and the means of implementation thus strategized for pursuing a sustainable development trajectory must ensure that the provisions with regard to new and additional resources are both adequate and predictable. Some of the widely debated economic instruments/sources are very critical to India's development path and are discussed in the following sections.

12.12 **Official Development Assistance (ODA):** ODA has shown volatile growth over the years, and has not kept pace with the economic growth of the donor countries. The Organisation for Economic Cooperation and Development (OECD) Development Assistance Committee (DAC) donors' ODA represented 0.29 per cent of their gross national income in 2012, well short of the UN target of 0.7 per cent. By one estimate, shortfall of the past 30 years adds up to US\$ 3.1 trillion at 2005 prices (International Development Cooperation Today, Emerging Trends and Debates 2008). Clearly the shortfalls in delivering ODA commitments over the past decade are lost resources and opportunities that could have significantly contributed to development work.

12.13 **Non-ODA sources:** It is widely acknowledged that no single source will be sufficient for meeting the financing needs of sustainable development, given the enormity of resources required. Therefore, apart from ODA, various other sources are being assessed for their potential for contributing to sustainable development. In this context, a lot of emphasis is being placed on sources such as domestic resource mobilization (DRM), innovative international sources of financing, South-South cooperation, and private finance. There is a lot of pressure on countries to raise resources internally; however, DRM depends upon factors such as fiscal performance of the country, natural resource base, and size of tax base. While mobilization of domestic resources in developing countries has increased as a result of subdued consumption and a culture of high savings, the needs for even basic development far exceed available domestic finance, capacity, capability, and technology. The caution with regard to innovative financing sources is that, in identifying

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CBDR and equity must continue to be the bedrock of ongoing and future sustainable development financing.

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new and innovative sources, it should be ensured that any new measure to raise revenues should not have any net incidence on developing countries. Also many of these innovative sources are technically and politically complex and need a coordinated process of further deliberation. South-South cooperation—a partnership among equals and an effort of the countries of the South to deal with their common problems voluntarily—has also emerged as an oft-cited solution. However, South-South cooperation can supplement not supplant North-South flows. For the South to do more, it is important that it grows within its own space. The private sector can also play only a supplementary role. Private-sector funding would demand a well-defined risk/reward profile for its investments. The extent to which private capital can be mobilized would itself depend on the amount of public sources available for playing the required catalytic role in attracting and leveraging private capital.

12.14 All options being debated have costs and have to be seen in the context of the size of the developing economies in comparison to the need for achieving a threshold level of development and simultaneously making development sustainable. More importantly, reforming the financial architecture, which could incorporate design criteria and principles such as accountability, transparency, country ownership, effective stakeholders' engagement, scalability, and flexibility, is critical to delivering the global sustainable development agenda. The extant global institutional architecture needs urgent reforms in the decision-making structure with respect to greater voice and participation of developing countries. Once the world recognizes that sustainable development is a common but differentiated responsibility and translates this responsibility into specific obligations along several fronts of sustainable development, a more evenly balanced architecture wherein each affected party is an equal stakeholder could emerge to deliver the commitments and monitor and track progress along the desired path.

## CLIMATE CHANGE

### Global Greenhouse Gas Emissions

12.15 Emissions have grown despite the efforts of a wide array of multilateral institutions as well as national policies aimed at their mitigation. The use of energy is by far the largest driver of emissions. The energy and industry sector in upper middle income countries accounted for 60 per cent of the rise in global GHG emissions between 2000 and 2010 (IPCC WGIII, 2014). Apart from sectors, countries too have made differential contributions to emissions. The developing countries particularly have contributed least to the problem but are the most exposed to the impacts. Though India's per capita CO<sub>2</sub> emissions increased from 0.8 to 1.7 metric tons from 1990 to 2010, it was well below that of the major economies of the world like the USA (17.6), Canada (14.7), China (6.2), and Brazil (2.2) and even substantially below the world average of 4.9 in 2010 (World Bank Database).

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No single source will be sufficient for meeting the global financing needs of sustainable development, given the enormity of resources required. All options being debated have costs and have to be seen in the context of their impacts on the developing economies.

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India's per capita CO<sub>2</sub> emissions increased from 0.8 to 1.7 metric tons from 1990 to 2010, however was well below the world average of 4.9 metric tons in 2010.

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12.16 Even in terms of absolute contributions to historic stock of emissions, the Annex I countries (industrialized countries and economies in transition) by far lead the Non-Annex I (mostly low income and developing countries) ones. India's contribution to global emissions since 1850 to 2010 was only 2.7 per cent, while that of the USA was 27 per cent. Annex I countries account for nearly 70 per cent and Non-Annex I countries around 28.5 per cent of cumulative global emissions (The Final Report of the Expert Group on Low Carbon Strategies for Inclusive Growth, Planning Commission 2014). However, if recent growth rates in emissions are looked at, particularly after 1990, then emission growth in Non-Annex I countries has been faster as opposed to slow or declining growth in Annex I countries. Per capita emissions, even though high in absolute value, are steady or declining slowly in Annex I countries and in its sub-groups like the OECD countries and economies in transition (EIT), while steadily rising in non-Annex I countries, particularly Asia and many other economies, owing to rising income and population growth. Yet, according to projections, even two decades from now India's per capita GHG emissions will be well below the global average of 25 years earlier. Its per capita GHG emissions are estimated to be 2.1 tonnes of CO<sub>2</sub> eq. (carbon dioxide equivalent) in 2020 and 3.5 tonnes of CO<sub>2</sub> eq. in 2030. These figures compare favourably with the 2005 global average per capita GHG emissions of 4.22 tonnes of CO<sub>2</sub> eq. (India's GHG Emission Profile, MOEF 2009). In fact, India has already committed that its per capita emissions will not exceed those of the developed countries under any circumstances.

### Analysis and Stocktaking of Domestic Plans

12.17 As a responsible country, India has taken several measures on the environment front to the extent its capacity permits. India has continually improved the efficiency of its economy and reduced CO<sub>2</sub> emissions per unit of GDP by 20 per cent between 1990 and 2011. India's renewable power capacity continued its strong growth, reaching 23 GW in January 2012, nearly 12 per cent of total power capacity (CO<sub>2</sub> Emissions from Fuel Combustion Highlights, IEA 2013). India's core plans for addressing climate change are outlined in the following sections.

#### *Status/Progress on National Action Plan on Climate Change*

12.18 The salient features of the national missions under the National Action Plan on Climate Change (NAPCC) have been discussed in previous Economic Surveys. This Survey looks at revised cost estimates, status of implementation, and progress so far.

12.19 **National Solar Mission:** Financial outlay allocated for the Twelfth Plan Period is ₹ 8795 crore. Table 12.1 reports targets and progress achieved so far.

12.20 **National Mission on Enhanced Energy Efficiency:** The total fund requirement assessed for the Mission for the Twelfth Plan Period is ₹ 190 crore. Notable progress achieved includes:

- Commencement of the first commitment period of PAT (Perform Achieve and Trade).

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India's per capita GHG emissions are estimated to be 3.5 tonnes of CO<sub>2</sub> eq. in 2030, which compares favourably with the global average per capita GHG emissions of 4.22 tonnes of CO<sub>2</sub> eq. in 2005.

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India has already committed that its per capita emissions will not exceed those of the developed countries under any circumstances.

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India is making progress in implementing national plans on climate change. It has reduced its CO<sub>2</sub> emissions per unit of GDP by 20 per cent between 1990 and 2011.

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Mission deliverables	Target for 2013-17	Target for 2013-14	Achievement in 2013-14
Grid-connected solar power projects	9000 MW (3000 MW with central support and 6000 MW under state initiative)	1100 MW	522 MW
Off-grid solar power projects	800 MW	40 MW	22.7 MW
Solar heating – 70 lakh sq. m of collector area	70	5	5

Table 12.1 : National Solar Mission

- Expansion of the energy efficiency financing platform through memorandums of understanding (MoU) with public-sector banks.
- Implementation of the Compact Fluorescent Lamp Programme.
- Operationalization of the Partial Risk Guarantee Fund / Venture Capital Fund for Energy Efficiency.

12.21 **National Mission on Sustainable Habitat (NMSH):** The total fund requirement assessed for the Twelfth Plan Period for implementing the activities for the Mission is ₹ 950 crore, which is to be met from the existing budget of the Jawaharlal Nehru National Urban Renewable Mission. Notable progress achieved under the mission includes:

- NMSH standards developed for six sub-sectors, namely (a) solid waste management, (b) water and sanitation, (c) storm water drainage, (d) urban planning, (e) energy efficiency, and (f) urban transport for integration in developmental activities in the state.
- Energy Conservation Building Code 2007 made mandatory for new as well as old buildings and incorporated in the Central Public Works Department (CPWD) general specifications for electrical works in 2013.
- Green Building norms made mandatory for the CPWD since 2009 and incorporated in the CPWD Works Manual 2012.

12.22 **National Water Mission:** The total fund requirement assessed for the Mission for the Twelfth Plan Period is ₹ 89,101 crore. Proposals for ₹ 196 crore only have been approved. The status of implementation so far is as follows:

- Preparation of state-specific action plans on climate change underway.
- A pilot study of basin-wise water done for two basins, viz. Godavari and Brahmani-Baitarani. The studies are being extended to all the basins.
- An MoU signed between the Ministry of Water Resources and Asian Development Bank for technical assistance with the objective of undertaking operationally relevant research for identifying and testing integrated flood mitigation and flood plain management strategies.

**12.23 National Mission for Sustaining the Himalayan Ecosystem:** The total fund requirement assessed for the Mission for the Twelfth Plan Period is ₹ 1,500 crore. Proposals for ₹ 500 crore have been approved. Some of the important deliverables and targets for the Twelfth Five Year Plan are given in Table 12.2:

Mission deliverables (in numbers)	Target for for 2013-17	Target for 2013-14	Achievement in 2013-14
Networking and strengthening of knowledge institutions	12	4	4
Start of new centres relevant to climate change in existing institutions in Himalayan states	10	3	4
Development of observational network for monitoring the health of Himalayan ecosystem	1	1	1
Regional cooperation with neighbouring countries in glaciology	All neighbours	1	1

Table 12.2 : National Mission for Sustaining the Himalayan Ecosystem

**12.24 National Mission for a Green India:** The total fund requirement assessed for the Mission for the Twelfth Plan Period is ₹ 45,800 crore. An amount of ₹ 13,000 crore has been approved for implementation of various activities under the Mission. About 10 states have already submitted their perspective plans to be taken up in 33 landscapes over a working area of around 0.85 lakh ha.

**12.25 National Mission for Sustainable Agriculture:** The total fund requirement assessed for the Mission for the Twelfth Plan Period is ₹ 1,08,000 crore and proposals for ₹ 13,034 crore have so far been approved. Given the availability of funds, 15 deliverables are proposed for implementation under the Mission. Some of the important deliverables and targets are given in Table 12.3.

Table 12.3 : National Mission for Sustainable Agriculture: Activities in which major progress has been made

Mission deliverables	Mission activities	Target for 2013-17	Target for 2013-14	Achievement in 2013-14	Achievement in percentage 2013-14
Horticulture	Horticulture area expansion (lakh ha)	11	1.2	1.04	86
Seed	Seed processing (lakh qtl)	10	2	3.64	182
Agriculture supply chain management	Agri market creation of storage (lakh mt.)	230	45	42.93	95
Livestock & fisheries	Increase in fish production (fingerling production) mt	220350	37818	37132	99

**12.26 National Mission on Strategic Knowledge for Climate Change:** The total fund requirement assessed for the Mission for the Twelfth Plan Period is ₹ 2,500 crore. However, the expenditure to undertake these activities will be met out of the budget allocation of the existing scheme of the Department of Science and Technology. The deliverables and targets for the Twelfth Five Year Plan Period are given in Table 12.4.

Mission deliverables (in numbers)	Target for 2013-17	Target for 2013-14	Achievement in 2013-14
Thematic knowledge networks	10	2	2
Regional climate models	4 to 6	2	3
Specially trained high quality CC professionals	200	50	25
Technology watch groups	11	5	2

Table 12.4 : National Mission on Strategic Knowledge for Climate Change: Activities in which major progress has been made

### *State Action Plans on Climate Change and Current Progress*

12.27 As a follow up to the NAPCC, State Action Plans on Climate Change (SAPCC) were introduced, to identify state-specific priorities and strategies to combat climate change at sub-national levels. As of April 2014, 26 States/Union Territories have prepared their SAPCCs. Of these, SAPCCs of nine states, Arunachal Pradesh, Rajasthan, Madhya Pradesh, Sikkim, Tripura, Manipur, Mizoram, West Bengal, and Andhra Pradesh, have been endorsed by the National Steering Committee on Climate Change.

12.28 A new central-sector scheme titled Climate Change Action Programme has been approved during the Twelfth Five Year Plan. The objective of the scheme is to build and support capacity at central and the state levels for assessing climate change impacts and formulating and implementing adequate response measures. Implementation of the SAPCCs is one of the eight approved components of the scheme, which has been allocated ₹ 90 crore by the Planning Commission.

### *Low Carbon Strategies and their Financial Implications*

12.29 India has voluntarily committed to an endeavour to reduce the emissions intensity of its GDP by 20-25 per cent, in comparison with 2005 levels, by 2020. A lower emissions pathway entails deployment of energy-efficient technologies, increased use of renewable alternatives for power production, sustainable waste management, and conservation of forests. An Expert Group was set up by the Planning Commission for evolving Low Carbon Strategies for Inclusive Growth and it has recently submitted its final report (Box 12.2).

### **International Negotiations: Conference of Parties 19**

12.30 Mainstreaming climate change in the development process as a global public good has costs especially for developing economies with unmet basic needs. Such a process has to be anchored under the principle of CBDR, which requires international cooperation through negotiations. The 19<sup>th</sup> Conference of Parties (COP) to the UNFCCC and 9<sup>th</sup> Meeting of Parties to the Kyoto Protocol took place in Warsaw, Poland, in November 2013. COP 19 did not result in any path-breaking outcomes. (Box 12.3 outlines some of the important ones). A critical deliverable from Warsaw related to the work of the Durban Platform, which is a negotiating process for finalizing agreements on emission cuts for the pre- and post 2020 periods. Another issue high on priority for many countries was capitalization of the Green Climate Fund (GCF). To arrive at

### **Box 12.2 : Findings : The Report of the Expert Group on Low Carbon Strategies for Inclusive Growth**

- According to projections of the model used in the report, pursuit of low carbon strategies will bring down the average GDP growth rate by 0.15 percentage point, while per capita CO<sub>2</sub> emissions (in 2030) will fall from 3.6 tonnes per person in the BIG (baseline, inclusive growth) scenario to 2.6 tonnes per person in the LCIG (low carbon, inclusive growth) scenario. However, in both scenarios, total carbon emissions will continue to rise up to the year 2030.
- The cumulative costs of low carbon strategies between 2010 and 2030 have been estimated at around US\$ 834 billion at 2011 prices.
- This will divert resources from other needs and may not be possible to sustain if growth is not fast enough. The total GDP loss caused by the additional energy investment in the LCIG scenario has been quantified at US\$ 1344 billion at 2011 prices. International support, in both finance and technology, would therefore be critical.

**Source:** The Final Report of the Expert Group on Low Carbon Strategies for Inclusive Growth, Planning Commission 2014.

### Box 12.3 : Key Warsaw Outcomes

- Governments decided to either initiate or intensify domestic preparations for their nationally determined contributions towards the 2015 agreement.
- A loss and damage mechanism to help vulnerable developing countries cope with severe climate impacts has been established, but without a clear mandate of adequate financing.
- With respect to the US\$ 100 billion commitments, clarity from developed countries was sought by asking them to prepare biennial submissions on their updated strategies and approaches for scaling up climate finance from 2014 to 2020.
- The GCF Board has been urged to finalize the essential requirements for receiving, managing, and disbursing financial resources after the completion of which the capitalization process will start.
- Developed countries met the target capitalization of US\$ 100 million for the Adaptation Fund which can now continue funding priority projects.
- The Warsaw Framework for REDD+ (Reduction in Emission from Deforestation and Degradation) was backed by pledges of US\$ 280 million dollars funding from the US, Norway, and the UK.

decisions in these areas was challenging and progress on any one issue invariably depended on progress in another.

12.31 As with all international negotiations, in the run-up to the global climate agreement to be finalized in 2015 in Paris, COP 19 saw intense exchange of views between Parties. Finally it was agreed that countries will intensify domestic preparation to determine their ‘intended nationally determined contributions’. This is an essential pre-requisite for Paris next year where a new global pact for reducing emissions, bringing in all countries, will be negotiated. This will be the first-ever such agreement in the history of the UNFCCC, bringing in all countries under one framework, which means that 2014-15 will be crucial. All Parties are required to plan by the first quarter of 2015 the amount of emission cuts they will pledge. Thus India needs to make an assessment of its ‘intended nationally determined contributions’ by this time.

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All countries including India needs to make an assessment of their ‘intended nationally determined contributions’ by the first quarter of 2015 for the 2015 agreement.

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## Climate Change Finance

### *Global Climate Finance Landscape*

12.32 Ever since the developed countries committed to providing US\$ 100 billion per year to developing countries by 2020, there are unanswered questions and uncertainties centering on this goal. The answers to key questions regarding flows and sources that would constitute the US\$ 100 billion; the eligible instruments; and the division of responsibilities amongst Annex II countries remain elusive.

12.33 The global climate finance landscape continues to be ambiguous and complex, operating through a patchwork of multilateral/bilateral channels, development banks, and national institutions lying both within and outside the ambit of the UNFCCC. The multitude of channels adds to the complexity and fragments a small amount of finance across more institutions than the number of countries they serve. The United Nations Development Programme (UNDP) estimates that there are already more than 50 international public funds, 45 carbon markets, and 6000 private equity funds providing climate change finance (Human

Development in a Changing Climate: A Framework for Climate Finance, UNDP 2011). Further each institution is different in its governance structure and objectives. Bilateral institutions that currently channel the majority of climate finance often operate with limited transparency, impeding country ownership and priorities. In the struggle to align ownership with national priorities, a new trend of countries setting up their own national climate funds is also emerging.

12.34 There is no comprehensive system for tracking climate finance. Different studies compile estimates from disparate sources, using different assumptions and methodologies, and are replete with gaps and occasional duplication. The amount reported is quite likely to be the amount committed and not the actual amount disbursed. According to the OECD, North-South flows were in the range of US\$ 70-120 billion annually in 2009-10. Other estimates put the figure differently (Tracking Climate Finance: What and How, OECD 2012).

12.35 Most of the studies estimating climate finance flows do not capture climate finance arrangements as reflected in the Articles of the Convention, which direct developed countries to provide new and additional financial resources, including for the transfer of technology, to meet the agreed full incremental costs of climate change measures to be implemented by developing countries. If one was to go by these Articles for defining and setting the boundary of climate finance, then the global climate change finance flows as claimed by many studies would be slashed manifold, and only a meagre amount (new and additional grant equivalent of public flows from developed countries) would actually qualify as climate finance. Of the climate finance flows of US\$ 359 billion in 2012, estimated by Climate Policy Initiative, the share of grants was only about 3 per cent (Global Landscape of Climate Finance, 2013). According to the reports submitted to the UNFCCC, Annex II countries (OECD members of Annex 1 excluding EIT countries) provided around US\$ 15 billion each year in 2011 and 2012. Over 80 per cent of the finance was provided bilaterally and the balance through multilateral channels. It is not encouraging to see that bilateral and multilateral channels remain the preferred choice for contributions over the dedicated funds under the UNFCCC. If these figures are any indication of developed countries' efforts at scaling up to the US\$ 100 billion annual goal by 2020, then certainly climate negotiations will be extremely challenging, going forward.

12.36 While different studies provide varying figures for current climate finance flows they are unanimous about the enormity of funds required to deal with climate change. According to the International Energy Agency (IEA), US\$ 44 trillion additional investment is needed to decarbonize the energy system in line with the 2°C goal by 2050 (Energy Technology Perspectives-Harnessing Electricity Potential, IEA 2014). In 2012 the IEA estimated it at US\$ 36 trillion. The longer we wait to take action on climate change, the more it will cost.

12.37 Climate finance continues to be beset by gaps in terms of actual money needed vis-à-vis availability, lack of transparency in

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Annex II countries provided around US\$ 15 billion each year in 2011 and 2012 to developing countries as climate finance, well below the target US\$ 100 billion annual goal by 2020 committed by them.

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According to the IEA, US\$ 44 trillion additional investment is needed to decarbonize the energy system in line with the 2°C goal by 2050.

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flows, proliferation of funds, and lack of coordination. This makes understanding the true volume and nature of financing available challenging. Monitoring, accounting, and transparency of climate finance need to be more firmly institutionalized under the UNFCCC. For this, efforts are underway in the Standing Committee on Finance under the UNFCCC.

### *The GCF and Country Preparedness for Accessing GCF Resources*

12.38 The GCF is expected to channel a significant share of the US\$ 100 billion of annual climate finance. For this, efforts are underway by the GCF Board to urgently finalize pending decisions. The Fund is likely to be operational by 2015. This means that developing countries have an equally tight window for building the institutional infrastructure to access the GCF resources.

12.39 In this context, the GCF Board has made progress in many areas. Some of the breakthrough decisions adopted by the Board include the aim for a 50:50 allocation for mitigation and adaptation over time. It has also reserved a minimum half of all its adaptation spending for vulnerable countries like small island developing states and least developed countries. The Board members have also agreed to country ownership as the core principle for the GCF. National governments or their nominated institutions called National Implementing Entities (NIEs), will receive international climate funds and disburse them to relevant projects. The Board has already invited countries to appoint a National Designated Authority (NDA) which will review proposals of the NIEs, to ensure that such proposals are consistent with national plans and priorities.

12.40 Ultimately, the success of the GCF lies in developing countries' readiness and preparedness for undertaking a complete devolution of GCF activities. This gives rise to the question of adequate and enabled domestic capacity for utilizing the resources disbursed through the GCF. A consultation process engaging relevant stakeholders on key issues has already been initiated by the Government of India.

### *Fund Flows from the Global Environment Facility*

12.41 Till date, India has accessed US\$ 477.3 million of Global Environment Facility (GEF) grant of which US\$ 284.2 million is for mitigation projects and US\$ 10 million for adaptation projects. Recently, 30 donor countries pledged US\$ 4.43 billion to the GEF for its sixth cycle (July 2014 – June 2018). As compared to some of the developed countries that have expressed their inability to contribute more to GEF-6 on the grounds of dismal economic conditions, developing countries have made a higher percentage increase in their pledges. India pledged a contribution of US\$ 12 million, which is a 33 per cent increase over its contribution to GEF-5.

### *National Clean Energy Fund*

12.42 The National Clean Energy Fund (NCEF) was created from a coal cess of ₹ 50 per ton. As on 31 May 2014, around 44 projects worth ₹ 16,035 crore have been recommended for funding through

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Government of India has initiated a consultation process to discuss the institutional infrastructure needed to access GCF resources.

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As on 31 May 2014, around 44 projects worth ₹ 16,035 crore have been recommended for funding through the NCEF.

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the NCEF. The amount budgeted through the NCEF has been almost fully utilized. The amount budgeted for 2013-14 is around ₹ 1,313 crore and for 2014-15 it is ₹ 1,078 crore. The NCEF funds eligible projects including innovative schemes like the Jawaharlal Nehru National Solar Mission's installation of solar photovoltaic (SPV) lights and small capacity lights, installation of SPV water pumping systems, SPV power plants, grid connected rooftop SPV power plants, pilot project to assess wind power potential, and generation-based incentive schemes for grid interactive wind power projects.

### *Carbon Markets, Trends, and Instruments*

12.43 India has been proactive in its approach to the carbon market and it represents a significant component of the global CDM (Clean Development Mechanism) market. As of 31 March 2014, 1493 out of a total of 7472 projects registered by the CDM Executive Board were from India, which so far is the second highest by any country in the world. In the second commitment period that commenced in 2013, the number of CDM projects has come down drastically at global level. In 2013, India has registered 115 projects which are the highest by any country. The low emissions reduction targets in developed countries and the unilateral action taken by some developed countries to shut out countries like India and China from their domestic carbon market has dampened the prospects of CDM in recent years. Currently, proposals to augment the demand for carbon credits to help stabilize markets at a reasonable price level are being negotiated.

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In 2013, India has registered 115 CDM projects, the highest by any country.

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### **CHALLENGES AND OUTLOOK**

12.44 The world has to prepare itself for committing to two pivotal global agreements shortly. The issue of how developed and developing countries will be treated under the new architecture is probably most crucial. Prior to this, the Kyoto Protocol brought only the historically responsible polluters (the developed countries) to pay; in contrast the MDGs were framed only for the developing countries. However, the new deals will now apply to all. It is important that any future agreement should fully take into account India's development concerns and requirements. Developing countries should have the discretion to fulfill their domestic goals in accordance with their national circumstances through a legally appropriate regime having binding force at national level. There is a need to ensure that the principles of equity and CBDR remain firmly embedded in the new deals. 'Applicability to all' or universality of application as envisaged should not amount to uniformity of application. Historical responsibility of developed countries and 'equity' in access to global atmospheric resources should continue to be the basis of defining the nature and level of commitments under the international arrangements. The deals must ensure that developing countries be given their fair share of 'carbon' and 'development space'.

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12.45 The next big issue is means of implementation. Raising additional resources for SDGs and non-capitalization of the GCF are matters of serious concern and may threaten the credibility of

the global negotiation process. Developing countries lack the resources to effectively respond to sustainability and climate challenges. The challenges of checking the pace of environmental degradation in India are formidable owing to the necessity of maintaining high economic growth for a large population and its unmet and growing basic needs emanating from urbanization and industrialization. At the same time, the progress made in mitigation and adaptation as part of the sustainable development plan process must continue.

12.46 The global community must stop taking solace in limited progress and move to decisive action. Sustainable development and low carbon trajectories and pathways, although challenging are still feasible and a fast-closing window of opportunities for reversing unsustainability is still open. While in India climate change and sustainability are being mainstreamed in the development process, global cooperation and substantial additional funding are required. If resources of this magnitude are not made available, outcomes in terms of growth, sustainability, and inclusive development are likely to be suboptimal.