Sustainable Development and Climate Change

PM Narendra Modi (2018)— **"You know that India is one sixth of the global community. Our development needs are enormous. Our poverty or prosperity will have direct impact on the global poverty or prosperity. People in India have waited too long for access to modern amenities and means of development. We have committed to complete this task sooner than anticipated. However, we have also said that we will do all this in a cleaner and greener way"**

I. Introduction

THE 2030 Agenda for Sustainable Development and its 17 SDGs adopted by World leaders in 2015 presents a roadmap for future development trajectory to all nations with focus on poverty eradication, environmental sustainability, peace and prosperity. The achievement of these goals is an imperative for, not just, any particular country but the global community as a whole. The need for global cooperation in helping the developing countries in achieving the spurred the demand for natural resources, exerting pressures on the environment and raising sustainability concerns. Resource efficiency can be a major tool to meet the resource needs of the country at the least possible cost to the environment. Air pollution has emerged as a serious issue in India. National Clean Air Program (NCAP) has been launched by the Government as a pan-India, time bound, national level initiative to address the country-wide issues of air pollution in a comprehensive manner.

II. ACHIEVING THE SDGs

1.2 The SDGs are global goals, built upon the erstwhile Millennium Development Goals. They are exhaustive, universal and integrated and emphasize on core areas of poverty and inequality, economic growth, innovation, sustainable consumption and production, climate change, peace and justice and partnerships.

1.3 Estimates suggest that US 5 Dollars to US 7 trillion Dollars per year is required for financing these goals worldwide and US 3.9 trillion Dollars per year in developing countries. However, the current investment in developing countries is around US 1.4 trillion Dollars leading to a shortfall of US 2.5 trillion Dollars per year (UNCTAD, 2014). Global action of this scale requires strong coordination between different governments, development institutions, private sector and financial institutions for the effective financing and implementation across the globe.

III. India's Progress towards the SDGs

1.4 Sustainable development requires every nation to prioritize their targets and carefully implement various schemes/programmes in accordance with local challenges, capacities and available resources. India follows a holistic approach for achieving the SDGs climate targets cannot be overstated. India's development agenda has for long been based on principles that are closely related to those that have been propounded in the 2030 Development Agenda. Climate change requires concerted global efforts and India has been preserving to address the climate challenges along with other developmental imperatives. The country has been making substantial additions to its installation of renewable power capacity. Increasing growth rate and rapid urbanization in India have by implementing a comprehensive array of schemes. Current flagship policies and programmes of Government of India such as Swachh Bharat Mission (SBM), Beti Bachao Beti Padhao (BBBP), Pradhan Mantri Awas Yojana (PMAY), Pradhan Mantri Jan-Dhan Yojana (PMJDY), Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY) and Pradhan Mantri Ujjwala Yojana (PMUY) have substantially contributed to India's progress in this regard.

1.5 In the federal context of India, programmes and schemes are basically implemented at the level of States and Union Territories. Tracking of progress on different SDGs, therefore, is important for appropriate policy actions and building up a competitive spirit among the States and UTs. NITI Aayog has come up with a single measurable index to track the progress of all the States and UTs across 13 out of 17 SDGs (excluding Goal 12, 13, 14 and 17 on account of unavailability of comparable data across States/UTs). This SDG index provides an aggregate assessment of India's progress. This index helps in informed policy formulations as it captures status of both national and state-level social, economic, and environmental parameters across a set of 62 select indicators. The score varies from 0 to 100. States with scores equal to/greater than 65 are considered as Front-Runners (in Green); as Performers (in Yellow) in the range of 50-64 and as Aspirants (in Red) if the score is less than 50. States with an index score of 100 are classified as Achievers (in Blue) i.e. the states have achieved the national target set for 2030. A score of 0 denotes worst performance. The SDG Index Score ranges between 42 and 69 for States and between 57 and 68 for UTs and is presented in Table 1 below.

5.6 India's growth trajectory for achieving SDG 10 (Reduced Inequality) and SDG 15 (Life on Land) is impressive as compared to the other SDGs as several states have achieved 100 in these SDGs. This may be due to performance in worthy initiatives such as PMJDY, Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), the National Environment Policy, National Agro-forestry Policy and Green Highways Policy. India is struggling to achieve its targets of SDG 5 (Gender Equality) and SDG 11 as large number of states are in the 'Aspirants' category'. Goa, a front runner among all the States and UTs in SDG 11, has been doing exceptionally well in waste management.

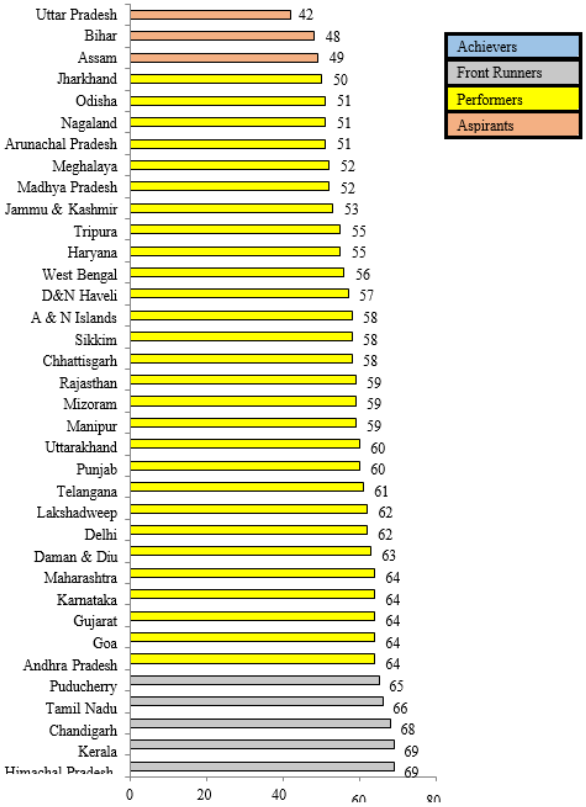

Fig. 1: Performance of States and UTs on SDG Composite India Index

IV. GANGA – THE LIFELINE OF INDIA

1.6 A key policy priority of the Government towards achieving the SDG 6 (Ensure availability and sustainable management of water and sanitation for all) has been the cleanliness of mighty River Ganga through Namami Gange Mission. The mission was launched as a priority programme with a budget outlay of ‘20,000 crore for the period 2015-2020. During the period 2014-15 to 2018-19, a total amount of ‘6,106.25 crore has been spent on the programme indicating a substantial jump over earlier similar programmes (Figure 2).

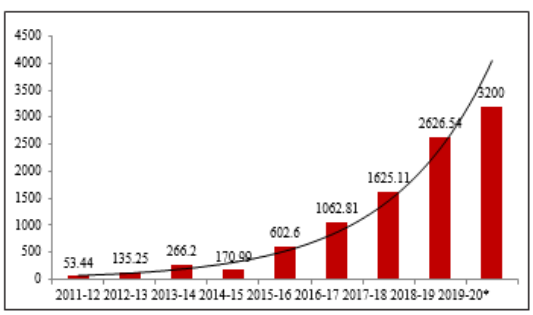

Fig. 2: Financial Progress of National Mission for Clean Ganga (Actual Expenditure in ‘ crore)

1.7 For effective implementation and proper synchronization with the State and Local Bodies, National Mission for Clean Ganga (NMCG) was empowered as an Authority under the Environment (Protection) Act, 1986 for fast track implementation and to formulate policies for long term sustainability of the Ganga rejuvenation efforts.

Major Components of Namami Gange Mission:

i. Sewerage Project Management: For sewerage projects, the policy decision to use Public-Private Partnership (PPP) approach of Hybrid Annuity Mode (HAM) and 15 years long-term Operation Maintenance (OM) included in the project cost and improved governance through ‘One City One Operator’ approach ensured competitive and positive market participation along with synergy in implementation.

ii. Urban Sanitation: A report prepared by the Consortium of 7 IITs identified 10 cities that contributed more than 60 per cent pollution load in Ganga. The Mission extended a comprehensive coverage of these cities with construction and rehabilitation of Sewage Treatment Plants (STPs) for a prospective year of 2035, inception and diversion of drains, solid waste management through cleanliness drives on ghats and deployment of skimmers for river surface cleaning.

iii. Sewerage Infrastructure: 150 sewerage projects (111 on Ganga stem 39 (intributaries) at sanctioned cost of 23,130.95 crore has been approved for creation of new STP capacity of 3,729.92 Millions of Litres per day (MLD), 1,114.39 MLD rehabilitated STP capacity and laying of around 4,972.35 km sewerage networks (Figure 3).

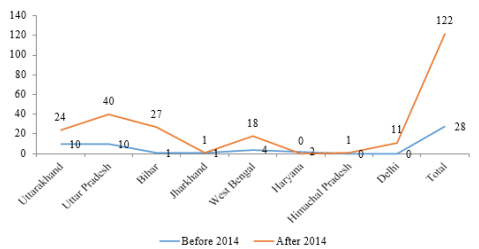

Fig. 3: Number of Sewerage Projects before and after 2014 taken up in Namami Gange Program)

As of May 2019, 43 of these projects have been completed, which has resulted in laying of 2,645.6 km sewer networks and of 575.84 MLD of STP capacities in Ganga basin (Figure 4).

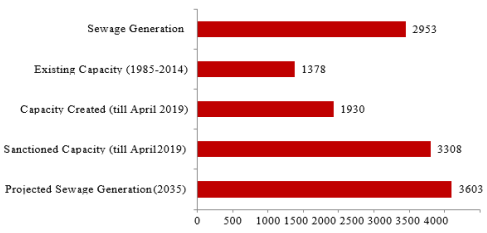

Fig. 4: Sewage Generation vs. Treatment Capacity in 97 Ganga Towns)

iv. Industrial Pollution: To ensure proper inventorisation and inspection of point source pollution from industrial units, 1,109 Grossly Polluting Industries (GPIs) were identified and surveyed independently by 12 Technical Institutions. The compliance of the operational GPIs in 2017 as against 2018 improved from 39 per cent to 76 per cent (Figure 5).

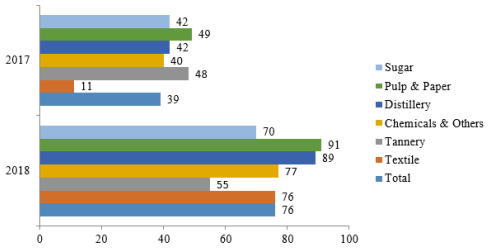

Fig. 5: Percentage Compliance of GPIs (as of May 2019))

Online Continuous Effluent Monitoring Systems (OCEMS) of all operating GPIs have been connected with Central Pollution Control Board (CPCB) State Pollution Control Board (SPCB) servers and a system of SMS alerts have been initiated to non-complying GPIs, district officials and State Project Management Groups (SPMGs).Besides, zero black liquor discharge has been achieved in Paper and Pulp industry and in distillery.

v. Water Quality: 36 Real Time Water Quality Monitoring Stations (RTWQMS) are operational under Namami Gange Programme (Figure 6).

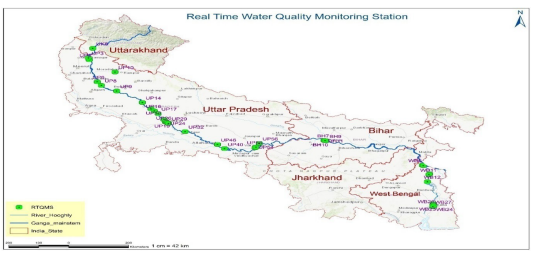

Fig. 6: Real Time Water Quality Monitoring Station (as of May 2019))

Manual water quality monitoring is carried out at 94 locations. Dissolved Oxygen levels being the indicator of the river health improved at 36 locations, Biological Oxygen Demand (BOD) decreased at 42 locations and coliform bacteria count decreased at 47 locations (2017 vs 2018 data) (Figure 7).

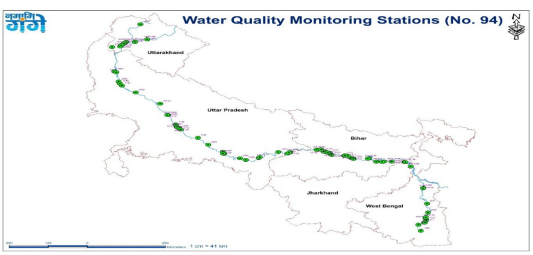

Fig. 7: Real Time Water Quality Monitoring Station (as of May 2019))

vi. River as Public Space: 143 ghats have been taken up under the Mission out of which 100 have been completed. Under the Mission, 54 crematories have also been taken up for ensuring safe crematory rituals. Supporting the sanitation initiative during Kumbh 2019, NMCG sanctioned financial assistance of 116.6 crore for the construction of 27,500 toilets, 20,000 urinals and 16,000 dustbins and lining bags. Innovative campaigns of 'Paint My City' and other exhibitions to connect people with the city and the river were also organized.

vii. Rural Sanitation: Under Namami Gange, 4,465 villages on the Ganga stem have been declared ODF with completion of construction of about 11 lakh independent toilets. Support is also being extended to 1,662 Gram Panchayats along Ganga for solid and liquid waste management.

viii. EcosystemConservation: Afforestation along banks of Ganga has been taken up scientifically with the help of Forest Research Institute, Dehradun. Local communities have been involved in massive afforestation drive undertaken in the five Ganga States with total plantation of 96,46,607 leading to increase in forested area of 8,631 hectares.

ix. Urban River Management: NMCG, in partnership with National Institute of Urban Affairs (NIUA), is preparing an Urban River Management Plan to protect and enhance the status of river health within the city, to prevent their deterioration and to ensure sustainable use of water resources. A comprehensive survey for generating high-resolution Light Detection and Ranging (LIDAR) maps of the entire Ganga stretch to create a baseline of its spatial status has also been initiated.

x. Water Use Efficiency: A market for reuse of treated wastewater is being developed and the reuse of 20 MLD of treated wastewater in Mathura Refinery is a milestone in propagating this waste-to-wealth approach as well as saving the water-stressed Yamuna river.

xi. Clean Ganga Fund: Clean Ganga Fund has been set up for encouraging and facilitating corporates and individuals to join the efforts of rejuvenation of Ganga by contributing to this Fund and sponsoring certain projects. A total of '371 crore has been received in the Clean Ganga Fund as of April 2019 of which, '101.59 crore has been received in 2018-19.

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The organic pollution load on the river has decreased from 263 kg/MLD in 2011-12 to 65.24 kg/MLD in 2018-19 due to the various constructive steps taken in this direction such as implementation of Charters for water recycling and pollution prevention in the respective sector, adoption of cleaner technologies and practices and regular inspection of the compliance status. This can be seen in the data on the effluent generation and pollution load from the GPIs on the main stem of river Ganga and its major tributaries before and during the implementation of the Namami Gange Programme as given in Table 1

Tabla I: Data on the effluent generation and the pollution load before and during the implementation of the Namami Gange Programme

Year	2011-12	2016-17	2018-19	2011-12	2016-17	2018-19	2011-12	2016-17	2018-19
Pulp/Paper	67	90	85	201	173	87	76	8.9	5.7
Distillery	35	48	50	37	9.6	3.59	22.2	2.9	0.06
Sugar	67	88	85	96	61.5	63.18	12.5	8.4	5.41
Textile	63	242	193	11	28.2	22.97	0.5	2.3	1.21
Tanneries	442	489	409	22	17.8	10.52	6.4	2.9	3.08
Chemicals	90	152	139	134	378.5	133.73	13.6	41.8	5.45
Total	764	1109	961	501	669.1	321.87	131.7	67.2	21.00

V. RESOURCE EFFICIENCY

1.8 Resource Efficiency (RE) has emerged as one of the key strategies towards the 2030 Agenda of achieving the SDGs. SDG 12 aims to 'Ensure Sustainable Consumption and Production Patterns' along with the eight other SDG goals (2, 6, 7, 8, 9, 11, 14 and 15) have a bearing on resource efficiency. Sustainable consumption and production is also a priority for the Government of India and is reflected in various policies/programme announcements like Make in India, Zero Effect-Zero Defect Scheme, Smart Cities, Swachh Bharat, and Ganga Rejuvenation Mission. A resource efficient development approach essentially means a transition of the management of natural resources with a progressive minimization of waste in both consumption and production processes through various policies and measures.

1.9 Economic growth and urbanization in India have spurred the demand for natural resources. This growing demand has resulted in high imports, in particular, imports of fossil fuels and metals. Against this background, the availability and accessibility of primary raw materials have become major concerns. Integrated, concerted and collaborative policy of resource efficiency could be a suitable response strategy to address resource security and the growing demand with the limited supply of the materials and at the same time ensures environmental sustainability.

1.10 The International Resource Panel estimated that efficient resource policies in G7 countries could reduce the global use of natural resource by 28 per cent, diminish greenhouse gas (GHG) emissions by an additional 15 to 20 per cent and deliver annual economic benefits of US 2 trillion globally by 2050 relative to existing trends (UNEP, 2018). Around the world, several countries have introduced various policies specific to the different stages of material life cycle. Iceland and United Kingdom have focused on reducing the use of primary raw materials and impact of material extraction respectively in the stage of 'Extraction of Raw Materials'. France has introduced the strategy of integrating the environmental aspects into designing of the products whereas Ireland has tried to extend the lifespan of the products. Both the strategies were introduced with respect to the stage of designing. Waste prevention and recycling are the most common strategies adopted worldwide. For instance, Croatia has stressed on collection of metal and bio-waste to improve recycling rates and Poland has initiated the Transform waste into resources (UNEP, 2018).

VI. Current and Future Projections for India

5.14 In 2010, India accounted for 7.2 per cent consumption of globally extracted raw materials. India's average share of material cost in the total production cost was estimated to be more than 70 per cent and rate of recycling is very low as compared to other developed economies which siginifies an urgent need for improving productivity and efficiency (TERI, 2019). The consumption of key natural resources by the major countries in the year 2010 has been showcased in Figure 6. As per the NITI Aayog's Strategy Paper on Resource Efficiency 2017, India consumed 5 billion tonnes of biomass, fossil fuels, minerals and metals in 2010 and was the third largest consumer after China (21.5 billion tonnes) and USA (6.1 billion tonnes). It is projected that India's demand for total material will more than double by 2030 under the assumption of continued economic growth of 8 per cent till 2030 and possible slowing down to 5 per cent thereafter till 2050 and medium growth in population. India would be requiring around 6.5 billion tonnes of minerals in order to sustain the demand of growing population (Figure 8).

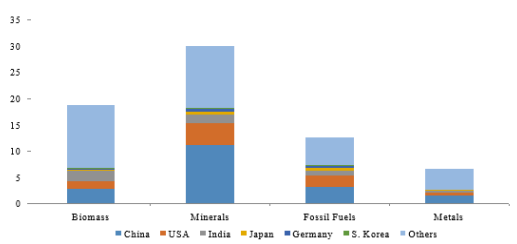

Fig. 8: Consumption of key natural resources (in billion tonnes in 2010)

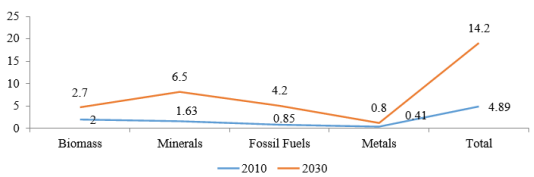

Fig. 9: Projections for the consumption of key natural resources in India (in billion tonnes)