

Tremendous Changes in India after Paris Climate Change Conference

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Abstract

India is the first Nation in the Earth to have made provisions for the conservation, preservation and protection of environment in its constitution .On 5th June 1972 environment was first discussed as an item of U.N Conference on human environment development in Stockholm and thereafter our country took legislative steps for environmental protection. The Paris Climate Change Conference was successfully concluded with the Paris Agreement, which is a Turning Point for the world in Inclusively Oppose climate change. By Engage in **IPCC (Intergovernmental panel on climate change)** assessments, adopting new methods and conducting national climate change assessments, India has been increasing its understanding of the issue. Moreover, this participation indicates India's dedication to including climate changes in its ecological balance program, sustainable development and conducts a low-carbon Group and Affluence. The constructive involvement in global governance shows that India is a responsible power to both developed and under developing nations.

Keywords: Paris Climate Change Conference; Paris agreement; Carbon emission; sustainable development; Indian Government

1. Introduction

“Climate change is the average weather conditions like seasonal variations and extremes of weather in a region-at least 30 years of an area”.

The Paris Agreement That Was Adopted On 13Th December 2015.

The negotiators of the Agreement however stated that the NDCs and the 2 °C depletion goal were inadequate, instead, a 1.5 °C Goal is required, noting "with concern that the estimated aggregate greenhouse gas emission levels in 2025 and 2030 resulting from the Calculated governmentally decided beneficications do not fall within least-cost 2 °C scenarios but rather lead to a projected level of 55 gig tonnes in 2030", and Identify moreover "that much considerable discharge reduction performances will be needed in order to hold the increase in the global average temperature to below 2 °C by reducing emissions to 40 giga tonnes or to 1.5 °C".

Although not the sustained temperatures over the long term to which the Agreement addresses, in the first half of 2016 average temperatures were about 1.3 °C (2.3 degrees Fahrenheit) Over the mean in 1880, when World data-keeping began. “**India would Conform The Paris Conference concern on October 2, 2016 the birth anniversary of Mahatma Gandhi** “declare by our Prime Minister Narendra Modi. Currently the earth is disturbed about global Warming, Ozone layer depletion, Climate Change, and natural disasters. Human competition has only now fulfilled the tragic effect of our material development on the nature, Prime minister said.

2. Major challenges in India promotion towards climate change

The Earth future will be shaped by Six countries in the world, it produce more than **60%** of the carbon emissions namely **China(29.51%),USA(14.34),EU(9.62%),India(6.81%),Russia(4.88%) and Japan(3.47%)**.The Paris agreement , as accord upon by major countries, sets the planning for carbon emission depletion after 2020.India is the 4th country in the world to release carbon emissions, this guidelines puts more pressure and responsibility on developing and underdeveloped nations to immensely cut their carbon discharge and provide the required fund, technology and potential construction for growing economies to reduce and adapt to climate change.

Here are some key features of India;

2.1. Population Explosion

Climate change plays a key role in underdeveloped, developed and developing countries like India to face major challenges related to climate aspects. Population wise India (**nearly 130 cr**) is the IInd

Highest nation in the earth and covers only **2.4%** geographical area. Now we can say that population of India is equal to 17.86% of the total world population. Population growth generating serious resources (like forest, land, air, water, fossil fuels, minerals etc) depletion and over usage of resources causes environmental degradation and effects on climate change. It has been related to both to increase in population size and generating waste matter into environment to deplete the resources. This is one aspect to change Indian climate.

Country	India	China	USA	Japan	Canada
Population (In Cr.)	134	139	32.6	12.6	3.6
Area (Million Square KM)	3.28	9.6	9.63	0.378	9.98

Table.1

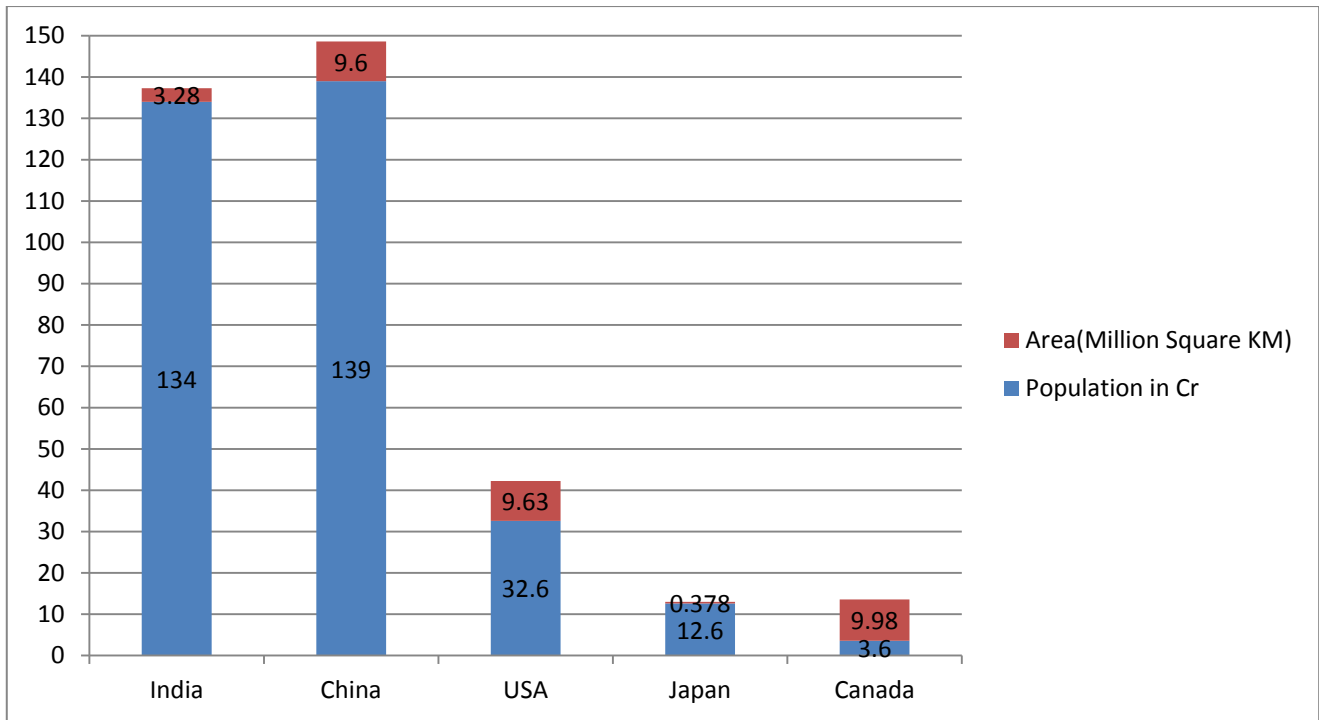


Fig.1. Comparison of Highest Population size countries in the world against geographical area.

2.2 Carbon depletion targets

India is one of the major coals producing country in the world, the existing coal resources in India are enough to meet our energy needs at least for more than 100 years and 63% of energy requirements in India fulfil by coal. Major countries in the world to use coal for developmental activities and releasing carbon dioxide by the following manner...

Tons of coal consumed per country per year

Table.2

S.NO	COUNTRY	COAL CONSUMPTION (IN TONS)*	CO ₂ EMISSION (%)
1	INDIA	339,000,000	6.81
2	CHINA	1,310,000,000	29.51
3	USA	1,060,000,000	14.34
4	JAPAN	149,500,000	3.47
5	CANADA	67,000,000	1.71

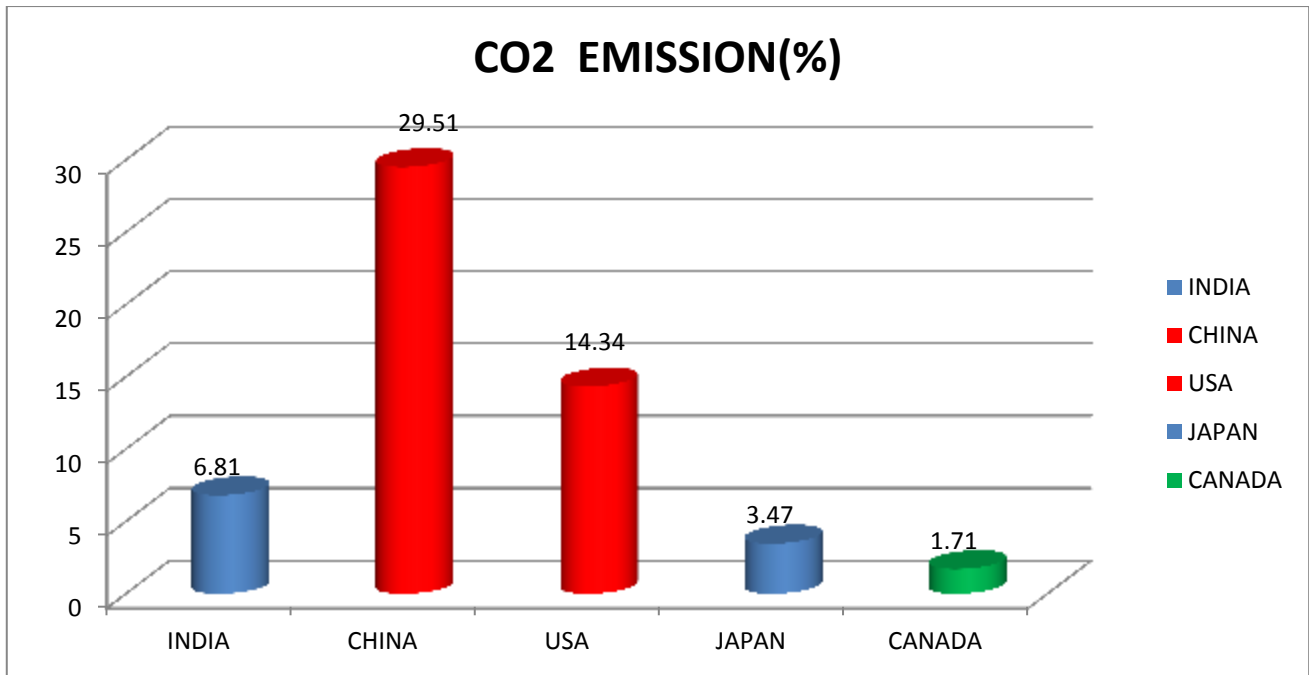


Fig.2 *Latest available data from Indian coal energy

The carbon dioxide emissions of a country only an indication of major greenhouse gas and influence of Climate change .The data indicate the massive producers of energy related CO₂ emissions in 2016. **China** was the biggest carbon emitter and followed by **USA**. India usage of coal is more to generate electricity but per capita releasing of CO₂ compared to other developed and developing nations it is less. The Paris agreement builds upon the bottom up approach of voluntary commitments from both developed and developing countries. The correspond advise group to increase their pre-2020 emission cuts and acknowledges the significant gap between current pledges and what is required to be uniform with holding temperature rise to 1.5 degrees.

2.3 Climate Economics

Climate economics—a stable bone of argument at the conferences—failed to see any scale of determination. Developed countries accept to increase \$100 billion yearly by 2020, with a commitment to increased finance thereafter. An OECD(The Organisation for Economic Co-operation and Development) report earlier this year protect that climate commerce had reached \$62 billion in 2014 but the numbers were quickly dismissed by India’s environment minister Prakash Javadekar. The United States of America will take diversions on climate change and pull out of a universal deal to cut discharges. In future it may influence some other countries to withdraw from the Paris agreement.

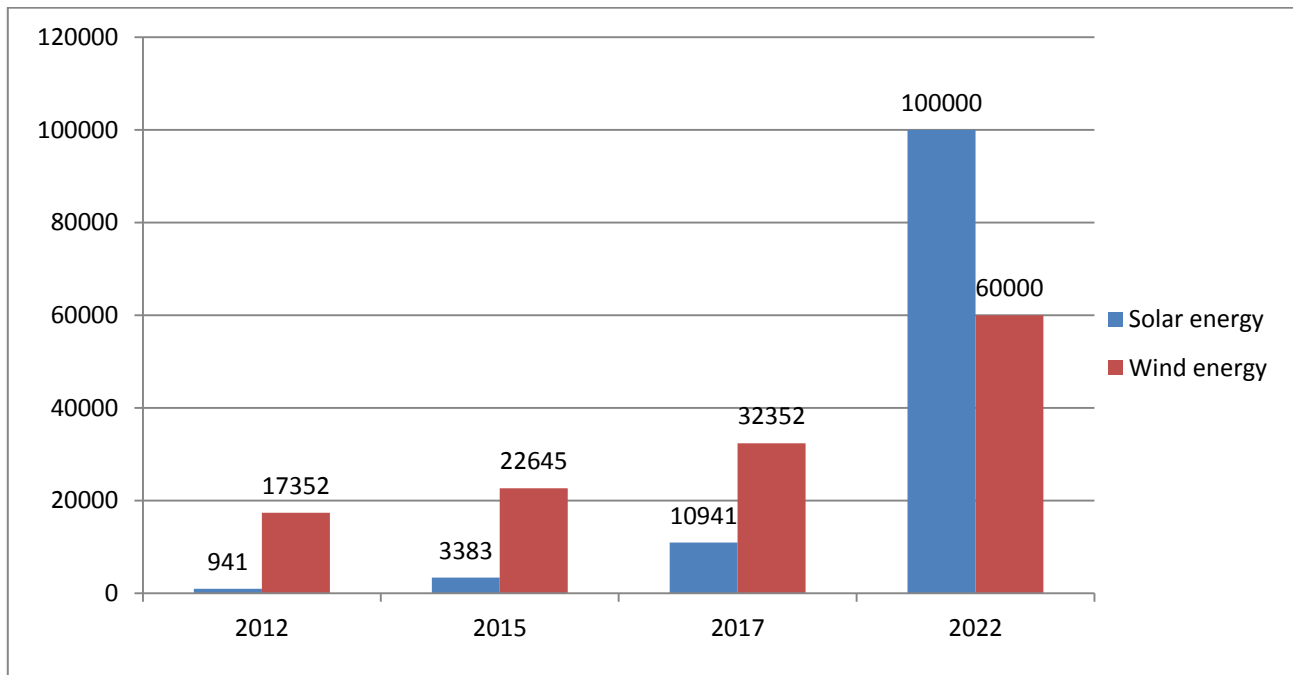
3. Mitigation Targets In India Towards Paris Climate Change

3.1. Usage of Renewable energy recourses like solar and wind energy

Renewable resources like Solar and wind energy are those which are not exhaustible and which can provide continuous supply. In India government plan to establish wide range of solar panels, wind mills to generate energy and changes the environment. As per the latest reports of “Ministry of new and renewable energy “solar power generation as on January 31,2017 is 9235 MW. **India proposal to establish as much as 100 GW of electricity generation capacity through solar energy by 2022**, of which 40 GW would be through independent rooftop structure. Wind energy is unstoppable and zero pollution, India had plans for setting up of 60 GW of wind energy by 2022 and achieve NAPCC (National Action Plan on Climate Change) target of 15% from renewable energy by 2020.

Capacity in MW

	Installed capacity (March 2012)	Installed capacity (March 2015)	Target as per 12 th plan (March 2017)	Revised targets (Till 2022)
Solar energy	941	3383	10941	100000
Wind energy	17352	22645	32352	60000

Table.3**Capacity in MW****Fig.3. Renewable energy generation capacity in India**

* Latest available data from “Ministry of new and Renewable Resources”

3.2. Home Appliances

In India 25% of the energy resources used for domestic activities. Bringing in greater efficiency in the way energy is produced and consumed in domestic areas Prime minister of India launched “prakash path-way to light “a scheme for LED bulb distribution .Under the scheme **more than 3 cr. households have switched over to energy efficient LED bulbs and 3,96,18,115 kWh of energy saved per day**, cost saving of Rs 15,84,72,462 per day, avoided peak demand of 2,895 MW and reduction of 32,091 tonnes of CO₂ per day crucial to fulfilling one of India’s main commitment towards climate change .As per the government figures More than 16.5 cr. LED bulbs are in use in these houses.

3.3. Promoting Green Buildings

A green building refers to “uses minimum amount of energy, less usage of water, preserves natural resources, produces less wastage and creates scope for healthier life and sustainable living. Green building construction is not only useful for environmental benefits, but also Economical & Social benefits to people.

The Indian Green Building Council (IGBC), as a part of the Confederation of Indian Industry (CII) was formed in the year 2001. The intuition of the council is, "To enable a sustainable built environment for all and facilitate India to be one of the global leaders in the sustainable built environment by 2025". The council mingles with some State & Central Governments, World Green Building Council, to promoting green buildings in Industries, green SEZs, Green campus, Green villages, and green hospitals etc. concepts in the country. In India at present 2,204 green buildings are there and by 2025 estimate to establish **1 Lakh** buildings to promoting **Green India**.

3.4. Less carbon emission from Transport

Solar and Electric cars usage slowly increased and E-rickshaws have become popular in many Indian cities in place of petrol/diesel cars. Now Indian government promoting less carbon emission vehicles in Private and public transportation includes metro. With India advancing the implementation of Bharat VI (Emission norms for vehicles) selected in the 63 cities and Bharat III norms in rest of the country. Recently in Delhi, government introduced Odd/Even number system for four wheelers to reduce Air pollution. For better improvement of environment government took legislative steps and implementing successfully.

3.5. Adopting afforestation

The best way of carbon reduction is capable of absorbing carbon dioxide (CO₂) through planting trees. It is not only for carbon sink but also releasing oxygen which is useful for environment. As per the national forest policy every country should maintain 1/3rd of land area covered by forest, but in India forest area is only 22.5%, However, it will be hard to quickly develop the forest cover, especially because more forest area will be cut for industrial or developmental activities. Government of India introduced "NATIONAL MISSION FOR GREEN INDIA" it covers 1.8 million hectares (mha) non forest land into forest area, and 4.9 mha predominantly forest lands. In the previous Parliament session, the government managed to get the landmark CAMPA (Compensatory Afforestation Fund Management and Planning Authority) bill passed to make up for every bit of forest destroyed for any cause. crores of rupees are accessible for afforestation drives through CAMPA, or Green India Mission. The government has also spoken about planting trees along with railway lines and road sides, rivers and canals. According to the latest reports of forest survey of **India (FSI) forest and tree cover has increased by 3,775 sq. km in 2015 as compare to 2013 assessment.**

Year	1990	2000	2007	2008	2009	2010	2011	2012	2013	2014	2015
Forest area (%)	21.5	22	23.1	23.2	23.3	23.5	23.5	23.6	23.7	23.7	23.8

Table.4

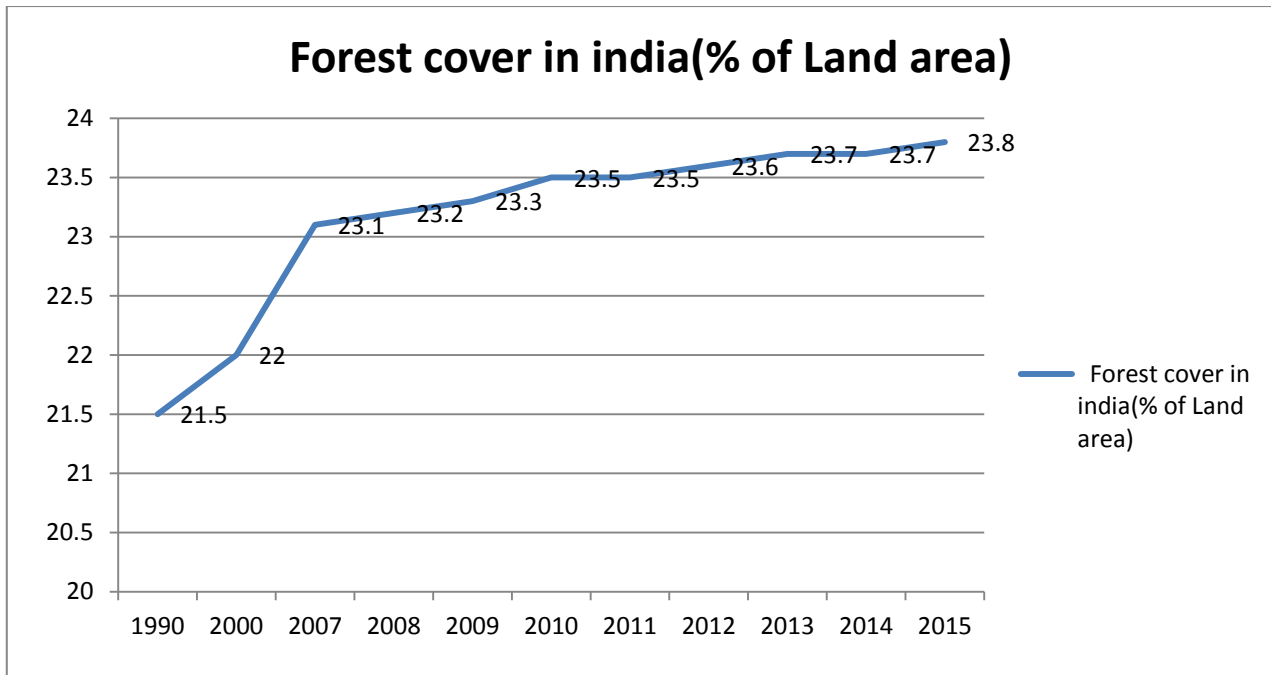


Fig.4 .Comparison of India forest cover from 1990 to 2015

*World Development Indicators

3.6. Water conservation

Climate change convinces a plenty of unreliability in water availability due to industrial and developmental activities. Government of India provides technical and financial assistance to State Governments to encourage sustainable development and efficient management of water resources through various schemes and programmes. Government of India has launched National Water Mission with the objective of conservation of water, minimizing wastage and ensuring more equitable distribution both across and within states through integrated water resources development and management. One of the objectives of the Mission is to increase the water use efficiency by 20%. To arrest decline of ground water levels, Central Ground Water Board has implemented demonstrative projects on rain water harvesting and artificial recharge during the XI Plan for replication by the State Governments under similar hydro geological environments.

3.7. Enhancing Energy Efficiency In Industries

Energy demand in India is expected to twin by 2030. In the face of its current energy limitations, the nation required to use its energy as effectively as possible. The Industrial sector accounts for 40% of the nation's total power utilization. Introducing energy effective methods and other power saving measures can bring about significant savings for the nation. Infrastructure sectors, viz. electricity, coal and cement have seen a growth rate of 4.5% in the year 2013-14. The recent initiatives like **Make in India, Digital India**, creating **National Industrial Corridors**, streamlining environment and forest approvals, labour reforms and undertaking other measures for the ease of doing business have also fuelled the erupt in their growth rates. During all this,

policies to authorize industries reduce their energy consumption play a critical role as an instrument for sustainable development through various interventions like:

- 1) **Perform, Achieve and Trade (PAT):** The perform achieve trade(PAT) is an market based trading scheme introduced by the Indian government in 2008 under National Mission on Enhanced Energy Efficiency (NMEEE) in National Action Plan on Climate Change (NAPCC). a market based energy efficiency trading mechanism, at present covers 478 plants (designated consumers) in eight power-through industrial sectors accounting for 1/3 of total power utilization in the country. The mandated decrease in the specific energy consumption under PAT programme has led to a reduce of 4 to 5% in their specific energy. Energy Saving Certificates (ESCerts) are issued to consumers who over-achieve the target. The plan is to be extended and strengthen to include additional sectors like railways, electricity distribution and refineries in the next cycle and would cover more than half the commercial energy consumed in India.
- 2) **Zero Effect, Zero Defect (ZED): The scheme launched in 2015, coverage of about 1 million Micro, small and medium enterprises.** ZED is a policy initiative the Micro, Small and Medium Enterprises (MSMEs) of India, to manufacture goods in the country with "zero defects" and to ensure that the goods have "zero effect" on the environment and quality control & certification for power waste.

3.8. Solid waste disposal

The Union Ministry of Environment, Forests and Climate Change (MoEF&CC) recently notified the new Solid Waste Management Rules (SWM), 2016. These will replace the **Municipal Solid Wastes (Management and Handling) Rules, 2000**, which have been in place for the past 16 years.

These rules are the sixth category of waste management rules brought out by the ministry, as it has earlier notified plastic, e-waste, biomedical, hazardous and construction and demolition waste management rules.

India recognizes the dual benefits that can arise from efficient waste disposal leading to enhanced environmental benefits along with conversion to energy. Incentives are being granted to cities to take up waste to energy conversion projects.

- Indian Government is also encouraging conversion of waste to compost through **vermiculture, pyrolysis and incineration** etc. Government has spent outstandingly in solid waste management methods and invest 2500cr.as a grant to state and other local bodies.
- India Government has launched on 2 October 2014 a one-of-its kind '**Swachh Bharat Mission'(Clean India Mission)** with the target of making the country clean and litter free with scientific solid waste management in about 4041 towns covering a population of 306 million. It aims to construct 10.4 million individual household toilets and 0.5 million Community and Public Toilets.
- **National Green Tribunal** imposed fine on open burning of waste to reduce the impact of toxic emissions being released through open burning.

Some of the following Indian programmes striving hard along with local and regional non-governmental organisations towards meeting the commitments of Indian government to fulfil the above said agreement.

Mitigation Strategies

- Promoting renewable energy resources in India: Increase Renewable energy Capacity from 37 GW (up to March 2016) to **175 GW by 2022** and **350 GW by 2030**.
- **National Solar Mission** set up to increase more than five times from **20 GW to 40 GW by 2018 and 100 GW by 2022**. In India Kochi international Airport is the World's first airport to completely run on solar power.
- Nationwide Campaign for **Energy Conservation** launched with the target to save **10% of current energy consumption** by the year 2018-19.
- Launched **Smart Cities Mission** a step towards smart India to develop new generation city (Improvement and extension) by building a clean and sustainable environment to promote towards climate change.
- **National Heritage City Development and Augmentation Yojana (HRIDAY)** and **Atal Mission for Rejuvenation and Urban Transformation (AMRUT)** is a new urban renewal missions for planning, development and implementation of heritage sensitive infrastructure over 500 cities across India.
- Introduced **Green Highways (Plantation, Beautification & Maintenance) Policy** to spend 1000 crs every year and develop 140,000 km long "tree-line" along both sides of national highways and provide employment to local people.
- Government of India introduced FAME India (Faster Adoption and Manufacturing of Hybrid & Electric Vehicles) to support faster adoption and fabricating of hybrid and electric vehicles.
- Indian railways have decided to promote to use **5% bio-diesel in** traction fuel in locomotives engines, which is currently consumes 2 billion lts of diesel per year and reduce carbon emission.
- **National Air Quality Index** is a tool for effective statement for air quality data of various pollutants into a number, nomenclature and colour to give the status of air pollution in a particular city.

4. India's Role in the International Climate Negotiations

For almost a quarter-century, the world has placed its faith in international agreements to address the threat of climate change. As the season goes a binding global treaty, to control green house gas emissions and cap

them at a low level so as to ensure the prevention of hazardous climate change. The effect to home a global command on setting an emission limit, when the United Nations Framework Convention on Climate Change (UNFCCC) was first signed. This become as universal as a treaty can be with more than 190 signatories. But the argument put forward by most of the developing countries: that rich and the highly developed nations should shoulder the entire burden of minimizing emissions weakened the momentum that set binding emissions limit for individual countries in the year 1992. This divided argument us from ratifying the Kyoto protocol, the main mechanism for reducing global from ratifying the Kyoto Protocol, the main mechanism for reducing global emissions. The U.S. Senate reformed & reasoned that an international agreement would not be possible until china and other large developing nations agreed to limit their emissions.

So far, India's stand on climate change has blended genuine concern for the issue with a firm refusal to consider limiting its own emissions. On the one hand, India has expressed its concern over the effect of climate change long back by making policies to support renewable energy in its 2008 national climate change action plan. Sri narendra modi, the present PM has been very outspoken in calling attention to the challenge of climate change. When he was CM of Gujarat he promoted efficient policies to expand renewable energy production and to help the state adapt to the effects of climate change. But his positive stand may different with New Delhi's long standing refusal to consider limiting India's emissions through its per-capita emission rate is 1.7 metric tons in 2010, which is below the global average of about 5 metric tons. Former Indian government have made poverty reduction, expanding access to renewable energy not reducing emissions as the countries chief priorities. The same failure is emphasized by Indian government minister at UN climate summit in September.

As the world cannot wait long, it needs robust commitments from India that it will show and eventually peak emissions as part of a comprehensive, post Kyoto agreement on climate change. At the same time it cannot also ignore India's development priorities. The way possible is to establish and expand partnerships in the field of clean energy with the minded nations as after developed nation done in china. The Indian government has stated its desire to dramatically expand production of hydropower, solar and nuclear energy. And developed nations must do everything possible for the developing nations in this regard particularly in shifting India's current reliance on coal to more sustainable energy sources by expanding joint research and development partnerships along the lines of US – China clean energy research centres to addresses shared environmental challenges ,Washington should replicate the successful Eco Partnerships program and create similar links with India, by pairing cities, states, universities and companies in both the countries.

India too should pioneer a low carbon development rejecting that reduces poverty and expands access to energy without depending on excessive use of fossil fuels. Whether others help or not, India must recognize and play in crucial role in minimize the carbon emission, by taking done promising moves, like phase out hydro-fluorocarbons has to significantly increase solar power.

5. Conclusion

The Paris Climate Change Conference is marked as a milestone in global climate cooperation. India's Domestic Strategy for addressing climate change is reflected in many of its social and economic Development Programmes. By participating in international scientific climate change assessments, conducting climate change research on climate change, India has deepened its understanding of the scientific facts and the impact of and response to climate change.

A meaningful climate agreement in Paris will build a better today – and tomorrow. It will help us end poverty. Clean our air and protect our oceans. Improve public health. Create new jobs and catalyse green innovations. It will accelerate progress towards all of the Sustainable Development Goals. India's Environmental guideline for implementing Paris Agreement is meant to enhance the implementation of the Convention and is comprehensive, balanced and ambitious.

References:

Articles

- GAO yun(2016) china's response to climate change issue after Paris climate change conference .Advances in climate change research 7(2016) 238-240

Books

Anubha kaushik, c p kaushik (2016) environmental studies (4th ed) , new age international publishers, new delhi,pp.23-24

Web references:

1. https://www.brookings.edu/search/?s=paris+summit&post_type=&post_type=event&topic=&pcp=&date_range=&start_date=&end_date=
2. <http://newsroom.unfccc.int/cop21parisinformationhub/>
3. <http://indianexpress.com/?s=paris+climate>
4. <https://qz.com/search/paris%20climate>
5. https://en.wikipedia.org/wiki/2015_United_Nations_Climate_Change_Conference
6. http://economictimes.indiatimes.com/industry/energy/power/how-modi-governments-led-programme-hopes-to-emerge-as-a-win-win-from-consumer-point-of-view/articleshow/52592189.cms_june_5,2016
7. <http://www4.unfccc.int/ndcregistry/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf>
8. <http://mnre.gov.in/file-manager/UserFiles/grid-connected-solar-power-project-installed-capacity.pdf>
9. http://timesofindia.indiatimes.com/city/varanasi/NTPC-to-give-fund-manpower-for-cleaning-city/articleshow/51901627.cms_april_20,2016
10. <https://qz.com/992611/from-coal-to-solar-indias-energy-landscape-is-almost-too-hard-to-keep-up-with/>
11. <http://mnre.gov.in/file-manager/UserFiles/Ujwal-Bharat-English/Ujjwal-Bharat-3-Year-Brochure-English.pdf>
12. <http://data.worldbank.org/products/wdi>
13. <http://envfor.nic.in/division/environment-protection>