

SUSTAINABLE DEVELOPMENT, ENVIRONMENT PROTECTION AND GREEN ECONOMY

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Abstract

Sustainable development may be defined as development that not only meets the needs of the present generations but also fulfills the need of future generations without compromising the capacity of them to meet their own needs. Natural resources should be used sustainably. Utilization of resources should create minimum impact on the environment which includes all spheres i.e. air, water, land etc. In the same line it has to be ensured that they must be able to regenerate themselves. For improving the quality of life of citizens, economic development of a country is must. For this purpose, natural resources needs to be harvested which sometimes start to decay due to over utilizations or use of hazardous materials directly or indirectly. Although historically India utilizes its available natural resources sustainably such as water which can be seen in traditional practice of katas, madakas baolis etc. but due to improper and overutilization of resources environment gets polluted. For example over use of coals in energy production air gets polluted while using renewable energy resources as solar and wind, air pollution may be minimized. This study covers the requirement of sustainable development in line of India prospective. It will cover the challenges India currently faces while utilizing the natural resources, its carbon emission contribution in different sector like energy, industry etc., steps already taken by India to protect the environment as well as resources and also the futuristic step India needs to take to minimize the decay of resources. If India is able to reduce environment risks while utilizing the available resources in sustainable way its economy will become green economy itself. This will not only improve the quality of life of its citizens but also futuristic generations too.

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Gandhiji once said that ‘**There is a sufficiency in the world for man’s need but not for man’s greed.**’ This truly fits in the current era as well. In the present industrial era, every nation in the world want rapid economic growth. For this purpose, resources available on the earth is harvested tremendously. Due to people greed and for maximizing monetizing benefits, people does not hesitate to overharvest the available resources. Due to this the capacity of auto generating of resources also gets decayed. In future this may create the scarcity of resources resulting future generations will only be able to read about it instead of utilizing them. Also resources takes many years sometime more than thousand years to generate. Considering these factors, United Nation General assembly set up sustainable development goals (SDGs) in 2015 for the period of 2015-2030. Sustainable development may be defined as development that not only meets the needs of the present generations but also fulfills the need of future generations without compromising the capacity of them to meet their own needs. A total of 17 SDG having 169 targets were prepared. To fulfill these targets limiting period was set for 15 years so that quality of life of people can be improved in sustainable way. Also all future generations may also be able to utilize as per their own need. Sufficient time should also be given to resources to self propagate them.

India being a developing nation has also started to gain rapid growth to fulfill its citizen needs as well as improving the standard of life of its citizens. Either India has to use its available resources or import the materials from other nations. Due to rapid industrialization, high number of automobile users, mining, and slenderness to obey environment rules and regulations, environment of India

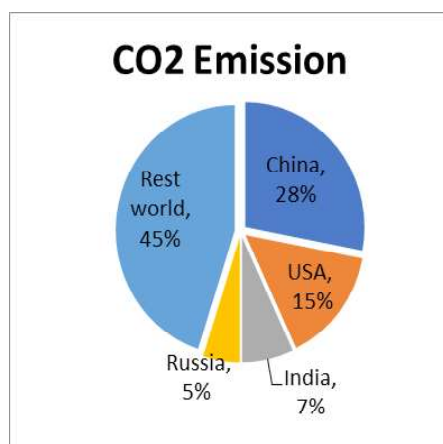


Figure 1: Carbon Emission statistics in world

started to get polluted. Report titled world air quality report published by IQ Air, a swiss group indicates that India is among the top carbon emitter countries in the world. Although per capita carbon emission of India very less in comparison to other countries thanks to its huge population but in overall carbon emission India ranks only 3rd after China and USA. Figure 1 shows some of the top carbon emission country in the world:

As per data from **GHG platform India**, Energy sector, Industrial process and Product use (Except agriculture) are major contributor. Figure 2 shows emission from different sectors from India:

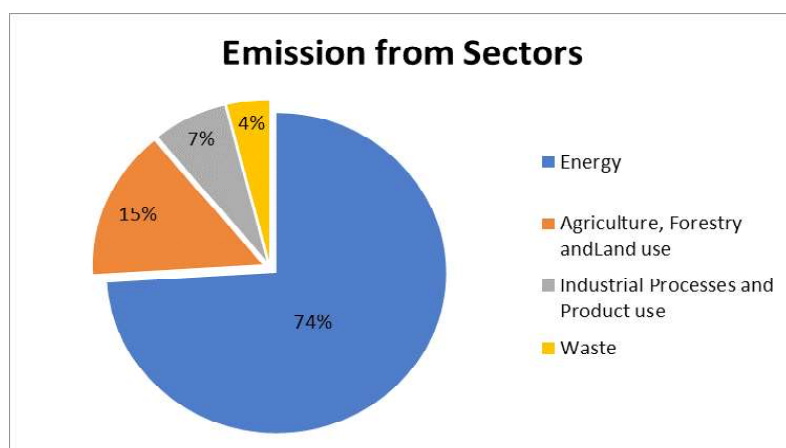


Figure 2: Emission from Different Sectors in India

In energy sector, Electricity, Industry and automobile sectors are the major contributor. While in Industrial process sector, Iron and steel industry, Cement industry etc are major contributor.

The sector indicated above not only pollutes the air but they also create water pollution, soil pollution, noise pollution etc. Different industry uses water in different phases of production and operation. Sometimes these get directly flown in rivers or nearby water body. Same way fertilizers used in agriculture sector and hazardous waste left from industrial activities etc also grounded creating soil pollution. Sometimes these industry and loudspeakers etc. creates enough sound in surrounding areas disrupting the nearby ecosystem which are main cause of noise pollution. Further, improper and overuse of plastic specially single use plastic also causes pollution directly in all the forms as plastic does not decay in environment itself. For example if it is burnt causes air pollution, if it is thrown in water body it chokes the drainage systems also harmful for marine life, if it buried into soil due to chemicals soil also get polluted. Pollution impacts all sphere of human as well as flora and fauna life directly and indirectly. Future generations are also impacted as can be seen that sometimes newborn babies is boned diseased. Also fresh air, water and many time natural resources is not available for utilization of future generations.

If we are able to gain economic growth in sustainable way we may leave a good place for future generations. Green economy provides a solution to this. A green economy is defined as low carbon, resource efficient economy which should be socially inclusive. In a green economy, growth involves such economic activities, infrastructure and assets that allow reduced carbon emissions and pollution, enhanced energy and resource efficiency, and prevention of the loss of biodiversity and ecosystem services. It involves to improve production processes and consumption practices efficiently to reduce resource consumption, waste generation and emissions across the full life cycle of processes and products. India ranks at 120th in sustainable development index prepared by teams of independent experts at the Sustainable Development Solutions Network (SDSN) and the Bertelsmann Stiftung. India's score in SDG index from 2015-2021 is shown in fig 3:

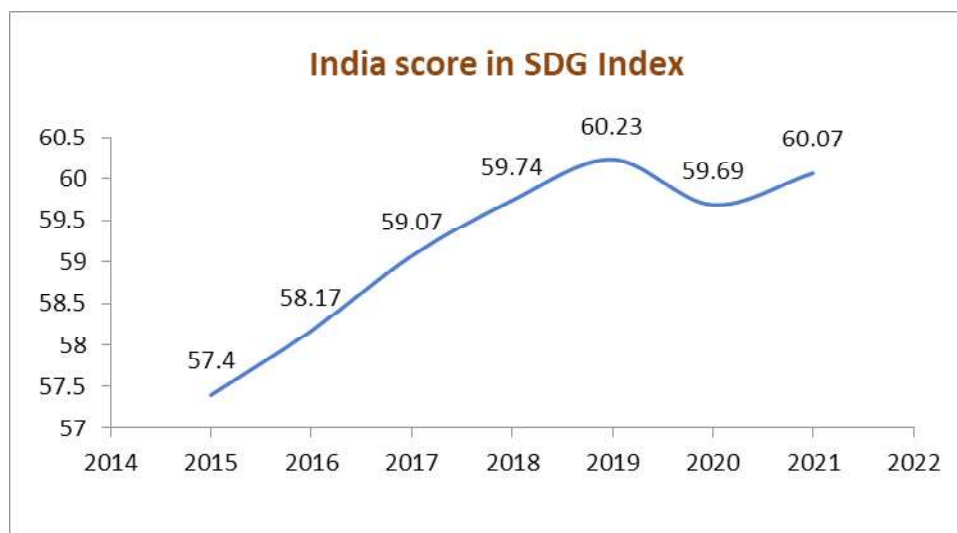


Figure 3: India score in SDG Index (2015-2021)

Above figure shows although India is improving its score in SDG index and moving towards achieving SDG goals by 2030 but its pace is very slow and needs consistent efforts for improving its rank. Subsequently NITI Aayog also started to publish SDG index for Indian states for better monitoring and achieving the target in well bound time.

Although Indian policy is designed sighting the traditional polices for use of natural resources as well as using modern technologies to minimize the environment decay but in spite of efforts and possibilities of huge developments in green economy and great scope for utilization, our polices could not be able to achieve the desired result yet resulting India is counted in one of the polluted country in world. It is found that although as

a consumer Indian prefers to use durable products but they buys products which are manufactured which causes huge pollutions which makes the prices of commodity less. Further, Indian policies are made in such a way that production of green products should be done but these lacks the consumptions of green product. If we are able to understand the consumer behavior and makes the product accordingly in a sustainable way, than the sustainability and environment production can be achieved.

Indian measures:

To make Indian economy a green economy, many steps are being taken and results can also be seen. A brief idea taken by India is given under:

Electricity sector is the main carbon emitter in energy sector. As approximately more than 70% of electricity is generated by coal and fossil fuels. Currently India has started to move towards renewable energy resources e.g. Solar energy, wind energy, hydro energy etc. A comparative chart indicating use of renewable and non renewable energy resources has been prepared as fig. 4:

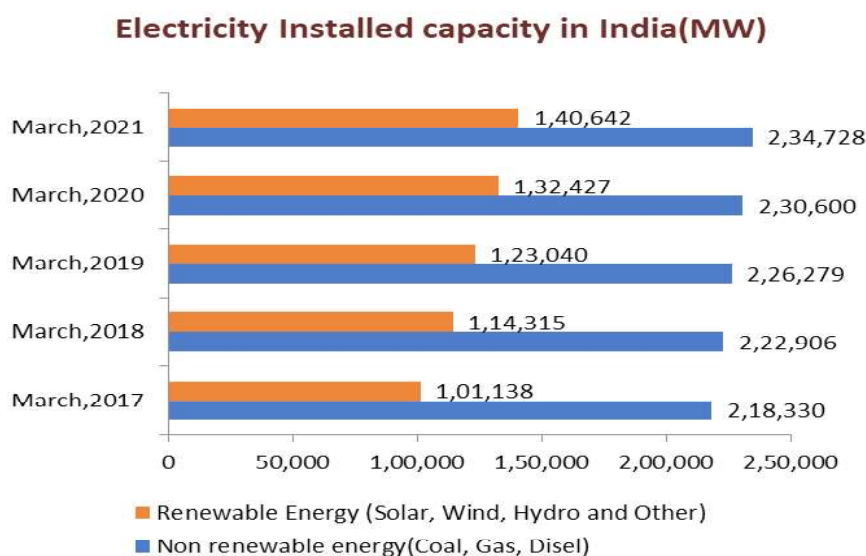


Figure 4: Electricity Generation growth in India

Also Indian railway has set a target of using electricity for all Train operation on BG Line by the end of 2023 eliminating the need of diesel etc. which will be cleaner than traditional fuels. Under KUSUM scheme, Indian farmers are encourages to use solar pumps and solar light etc instead of traditional electricity. Also generation and use of biofuel energy is encouraged in rural areas. Under this scheme now available extra electricity generated by renewable resources such as solar energy can also be sold to power distribution companies or states which supplies it to power grid which not only is a extra income source for consumer but also helpful to make environment clean in comparison to electricity generated by traditional resources such as coal etc. Also India has set a target of 500GW electricity generation by 2030 by renewable energy resources.

Further, India imports approximately 80% of crude oil to fulfill its energy needs. Automobile sector is major sector to use petroleum product. India has set a target of 20% bioethanol mixture in petroleum product by 2025. This is not only environment friendly but will also be a good source of income for farmers as raw material necessary for bio ethanol production is taken from agriculture sector. Also National hydrogen policy has been frame to increase the use of hydrogen in place of crude oil as a fuel.

Currently Indian core sector comprises of 8 industrial core sector i.e. Refinery product, Electricity, Steel, Crude oil, coal, natural gas, cement and fertilizer which contributes 40% in Indian GDP. But due to use of traditional and old practices these sector creates high pollution. For example India is second largest producer of Cement. In 2010, Cement industry contribution in India CO₂ emission was approximately 8%. But due to Indian policies like using fly ash, a waste generated from thermal plant in cement industry, and other latest technology CO₂ contribution has come down by 6000-700kg/ton in comparison to global average of 900kg/ton.

Further, India is using waste plastic, fly ash etc. in road construction where load of such wastes in Indian economy is not only gets minimizes but it is also a sustainable solution while maintaining the road quality.

Traditionally, India utilizes its available natural resources sustainably such as water storage practices which can be seen in traditional practice of kattas, madakas, baolis, pokhars etc. used in various parts of India as Karnataka, Rajasthan, Gujarat. Now due to encroachments, high pressure on existing water bodies due to increasing population and improper and overutilization of water resources there has become a big question on existence of these resources. Further, not only water level gets lowered but also underground as well as surface water got polluted creating diseases like cholera etc. due to poor water quality. Also waste generated from industry is directly poured into the water body. Government has taken various efforts for Improving the quality such as under Jal jeevan mission provision of functional tap water has been done by end of 2024 so that every household in country get water in all areas. Also industries and municipalities has been directed strictly to use sewage treatment plant before pouring water directly into the water body.

Use of excess fertilizer is the main cause of soil pollution. Now soil health card is being distributed to farmers to get them idea of soil conditions scientifically so that only required fertilizers is used. Further organic farming is also encouraged which is itself an eco friendly and sustainable practice to improve the soil health.

Also Bureau of Indian Standard has been set up in 2016 which standardizes the specification of every sector considering environment in a sustainable way. Now organizations and households are been ranks as per their carbon emissions and use of natural resources. A green rating is given to sector based on their utilization of resources. For example in house construction, use of eco friendly material, adoption of design of building use of natural resources like proper ventilation, sun light etc so that green building may be made and energy consumption is minimized.

Futuristic goals

Although various steps are being taken by India still India is counted in one of the top polluted country in world. As per World Air Quality Report released by IQ Air, India is the fifth most polluted country among 117 countries, regions and territories around the world. Further, 63, Indian cities dominate the list of 100 most polluted places as per report. Therefore, in sighting the need of India's development and to make development more sustainable and eco-friendly following steps may be taken:

- a) Subsidy should be reduced on the products which are manufactured using hazardous items. So that prices of such item may go high and people has to be shift towards green product. Due to reduction in subsidy real price of such item will also be seen to public.
- b) Prices of green product is high may be due to less R&D activity in technical field. Firstly R&D activity in green technology should be encouraged which will not only lower the price of green product but will also be pocket friendly for consumers.
- c) Dependency on coal and fossil fuel should be discouraged. Alternative renewable energy sources should be encouraged so that they will be under reach to common citizens.
- d) People should be made aware about the benefits of green product. If people starts to purchase green product more manufacturers and industries will come in green economy field resulting large investment in green economy which will down the price of product.
- e) Although environment impact assessment has been made compulsory for certification of industries but it is seen that sometime these rules and regulations are diluted resulting huge impact on surrounding area and ecosystem. EIA should be strictly implemented. For growth of industry monetized benefits in terms of subsidy on green product and process or productivity linked incentives for adoption of green process may be given so that industries move towards using green products.
- f) Use of electric vehicle should be encouraged. Although currently Lithium ion batteries are used for energy storage but it has also to be ensured that in future they may not be a problem at the time of

disposal. Proper waste management methodology should be framed including the future prospects and growth.

- g) Government should focus to use green product and adopt green technologies on priority basis. So that private investors as well as common citizens will also see its benefits and will adopt such process.
- h) Although plastic was introduced to solve the problem of paper, jute. Main reason of its adoption was its non decaying property and recyclable ability. But today it has become one of the main contributors of pollution in all spheres of environment. Also as it does not decay, it is everlasting and future generations will also see the littering of this generations. Therefore producer responsibility should be fixed and they should be made responsible to take it back from consumer and recycle it and make it fit for reuse. Instead of making new plastic, adoption of recycled plastic will be a better approach and environment friendly. Government should incentivize such steps. Single use plastics should be eliminated completely.
- i) Organic farming in agriculture should be encouraged. As agriculture sector is major water consumer sector as free flow irrigation is prevailed in India therefore more advanced technologies like drip irrigation or sprinkler irrigation should be encouraged. Farmers adopting eco friendly technologies and farming may be incentivized for of purchasing their produce on priority basis, more return on such produce etc. This will encourage other fellow farmers as well.

Conclusion

To convert Indian economy into Green economy, Balance should be made between Demand and supply of Green product. As of now, some green products are available in market but due to high prices majority of populations are reluctant to purchase it. Government should also focus on Research & Development field in green sector so that new eco-friendly technologies can be made. At the Same time it should also be pocket friendly. By the joint effort of Government and people of country, if we are able to make India a green economic hub. it will not only cater the problem of pollution but it will also be helpful for future generations and a more pleasant place will be left for coming generation. At the same time it will be a major step towards sustainable development.

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