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CURRENT SCENARIO OF INDIA IN RENEWABLE ENERGY AND SUSTAINABLE DEVELOPMENT

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Abstract: In recent years the increasing prices of fissile fuels and increase of greenhouse gas emission scientist have increase their interest in development of alternative renewable energy sources. The main objective of installing renewable energy in India is to improve energy security, improve access to energy, improve economical development and minimize climate change. Sustainable development is possible only with the use of renewable and sustainable energy sources they are affordable to use. In these days we are facing many environmental changes and that requires long term potential actions and sustainable development. For that renewable energy is the most effective and efficient solutions. Therefore there is big linkage between sustainable development and renewable energy. In this paper scenario of renewable energy use and environmental impacts is discussed.

1. Introduction: Without electricity or energy the whole system of world will collapse. 24 Hr cutoff of electricity will show us how we are dependent on particular form of energy i.e. electricity. Computers lifts will stop their working, Operation theaters, Industries will stop. As population grows the need of energy more and more will increase. Better lifestyle and energy demand increases simultaneously wealthy industrialized economies contains worlds 25% population and consumes worlds 75% of energy.[1] Coal, oil, natural gas are the sources of electricity production and they have contributed one third of world green house gas emission. Any country has increasing demand to their economical and industrial growth. The National Electricity Plan NEP[2] developed by Ministry of Power. This is 10 year action plan to provide electricity across the country efficiently and in reasonable cost. According to Worlds institute report india is at 4th rank of total global carbon emission next to china.[3] India is one of the largest coal consumer country in the world and imports fissile fuel.[4] Near to 74% of energy demand is of country is fulfilled by coal and oil. According to Centre for monitoring Indian economy the country imported 213 million ton coal in 2017-2018.[5] therefore there is huge and urgent need to search alternative sources for electricity generation. The country will have rapid transitions to renewable energy technologies for achieving sustainable growth and avoiding environmental changes. It is accepted that renewable energy will efficiently cover energy demand sand reduce carbon emission significantly. India has developed new paths and policies for its energy supply and awareness for saving of energy. They have started promotion of renewable energies among Indian citizens to use solar energy, wind energy, biomass energy. This renewable energys are clean and less harm full to society. The estimation of consumption of global energy demonstrate that energy consumption of India is continuously increasing and it will retain its position even in 2040.[6] The increased energy consumption of India will push the share of global energy demand to 11% in 2040 from 5% in 2016.[7]

2. Environment related problems

Since last two decades risk of degradation of environment is increased rapidly. The major areas of environmental issues may be classified as:

- Acid rain
- Green house effect (global warming)
- Water pollution
- Air Pollution
- Depletion of Ozone layer

3. Solutions to Environmental Problems

- Use of Renewable energy
- Energy conservation
- Energy storage technology
- Switching of energy sources from fossil fuels to environment friendly alternative energy sources.
- Use of Public transport
- Making Policies to use of fossil fuels
- Public awareness

We will discuss the most important solution, Renewable Energy Sources, Types and current scenario.

4. Renewable Energy Resources

Since early 1970 oil crises, from then there is active and continuous research and development in renewable energy resources and technologies. In recent times peoples has been realized that renewable energy resources have most positive impact on environmental, political, economical issues of the world. During the past two decades research and development on renewable energy resources is significantly expanded because:

- Maintenance cost is lowered
- Reliability and applicability is increased
- Public awareness

5. Scenario of Renewable Energy in India

By report of Ministry of New and Renewable energy of India, India achieves target of 40% installed electricity capacity from non-fossil fuel energy sources. Total installed non-fossil fuel based capacity stands at 156.83GW. India rank in fourth position on overall renewable energy production.

Solar Energy: Among the various renewable energy resources, solar energy is the highest in the country. In India clear sunny weather is experienced 250 to 300 days a year. The total solar energy potential is about 6000Million GWh of energy per year. The National Action Plan on Climate change points out that “India is a tropical country, where sunshine is available for longer hours per day in great intensity. Therefore solar energy has great potential as future energy source. It also has the advantage of permitting the decentralized distribution of energy at the grassroots level”. With the objective to establish India as global leader in solar energy, by

creating the policy conditions for its diffusion across the country as quickly as possible Government of India launched National Solar Mission. In 2021 the installed solar energy capacity is 47.7GW. The Government had an initial target of 20GW capacity for year 2022. Only 4% of countries power consumption filled by solar energy. Rajasthan is at top in installed capacity of solar energy by MNRE. India rank in fifth solar power generation, China is leader in solar power.

Wind Energy: India is blessed with a coastline of about 7600Km surrounded by water on their sides and has good prospects of harnessing offshore wind energy. Considering this Government of India notified the “National offshore wind energy policy” . MNRE will act as the nodal ministry for development of offshore wind energy in India. Ministry sets the target of 5.0 GW of offshore installations by 2022 and 30 GW by 2030. In recent years wind power generation in India is significantly increased. as of 2021 the total installed wind power capacity was 38.789 GW, the fourth largest installed wind power capacity in the world. Wind power capacity is mainly spread across the southern, Western, and Northern regions of India. Tamilnadu is the largest wind energy producer in India.

Biomass: In India plants like Jatropha, Mahua and neem and some wild plants are identified as the sources of biodiesel. Chattisgarh, Madhy Pradesh, Gujrat, Rajsthan, TamilNadu are the leading states for the biomass power projects. In India total installed capacity of Biomass gasifiers is about 0.17 GW.

Tidal Energy: In India tidal energy is in still R&D phase, commercial scale implementation has not been done. The Gujarat government is set to develop first tidal plant in India.

6. Sustainable Development

Sustainable development means the sustainable supply of energy resources , at long term in low cost and can be used for any application without any hazardous impact on society. Fossil fuels, coal, oil, natural gas they are finite in nature one day they will vanish. Other resources such as solar power means sunlight it is abundant in nature and that will never vanish, wind power, hydro power they are considered renewable energy resources and sustainable resources. Environmental issues are the important while using these sustainable energy resources. There are some activities that degrade environment that are no longer sustainable sources.

Importance of renewable energy for sustainable development:

There are different significant reasons to prove renewable for sustainable development

1. This sources have no impact on environment. They are freely available in nature only cost is required to harness them.
2. This renewable energy resources will not vanish unlike fossil fuels. Fossil fuels and natural gas will vanish after consumption of finite reserves.

Important Factors for Sustainable development

There are various factors described as follows:

1. Information: government should provide necessary information of impacts of fossil fuels, renewable energy
2. Awareness in Public: This is first step to make sustainable program successful.

3. Training: Training facilities to be made available for public.
4. Promotions: Renewable energy sources must be promoted by government .
5. Finance: This is the main and important factor to achieve the goal of implementation of renewable energy. India gives subsidy to every rooftop solar systems for domestic and commercial applications.
- 6. Conclusions:** There are many environmental problems we face today. These all problems will be overcome by the use of renewable energy resources.

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