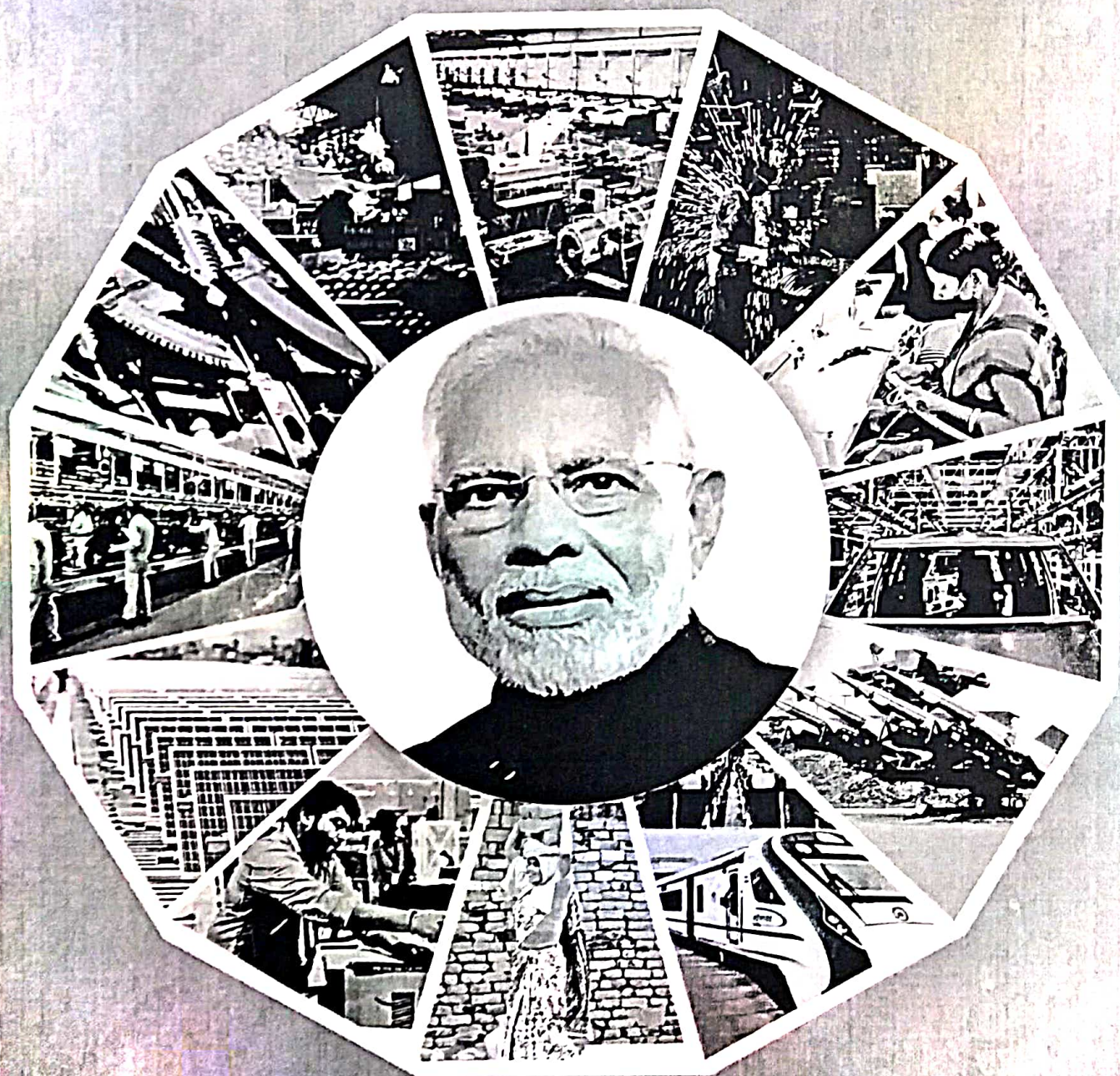


Atma-Nirbhar Bharat: Attaining Sustainability by Making India Self Reliant



— Dr. Musheer Ahmed —
— Raghvendra —

Contents

1. **A Road of Rural India to become Atmanirbhar** 1
— *Prof. (Dr.) Tulika Saxena & Raghvendra*
2. **Industry, Innovation, an Infrastructure in India during the Decade 2011-2021** 12
— *Dr. Samar Sagundha & Naveen Singh*
3. **National Education Policy 2020: Making India Self Reliant by Blending Education and Technology** 25
— *Dr. Faizanur Rahman & Ms. Priyansha Badoni*
4. **Fostering Entrepreneurship Through Atmanirbhar Package** 40
— *Dr. Ram Singh & Harendra Pal Singh*
5. **Impact of MSME on Employment Sector: Analytical Study** 51
— *Junaid Ahmed & Prof. Deep Kishore Srivastav*
6. **Assessing the Environmental Performance of the Major Indian Pharmaceutical Firms** 63
— *Adnan Ahmed Siddiqui*
7. **Prospects of Renewable and Green Energy to Make India Energy Independent** 76
— *Dr. Manish Kumar & Dr. Zubair Ahmed*

8. Corporate Social Responsibility in India 87
— *Ms. Bushra Fatima, Mohd. Shandar Abbas & Fatima Amin*
9. Gender Responsive Budgeting:
The Way Forward 103
— *Dr. Tauseef Fatima & Mr. Shafey Anwarul Haque*
10. Scope of Agritourism in India for
attaining Rural Development 114
— *Supriya Singh, Dr. Alka Lalhall & Alok Kumar*
11. Incorporation of Workplace Sprirituality
in Educational Institutue Manodarpan-
Atma-Nirbhar Bharat Abhiyan 133
— *Priyanka Mishra*
12. Employment Generation & Poverty Reduction
through Entrepreneurship Development
and Export Promotion in India 149
— *Vishal*
13. 'Manodarpan' Scheme: Key Highlights 161
— *Gulshiya Rizvi*
14. Swapping Clothes: Consumer Becoming Sellers 175
— *Farah Tazeen & Monizah Parwez*
15. Digital Economy as a booster to
Self Reliant India 187
— *Aliza*

7

Prospects of Renewable and Green Energy to Make India Energy Independent

DR. MANISH KUMAR

*Assistant Professor
Faculty of Commerce
Kiwaja Moinuddin Chishti
Lalugangr University, Lucknow*

DR. ZUBAIR AHMED

*Assistant Professor
School of Management
BBD University, Lucknow*

ABSTRACT

In order to fulfil rising energy needs and combat climate change, renewable energy is a critical component, yet its potential drawbacks are frequently ignored. Given the close relationship between ecology and climate, it is essential to consider complete range of global environmental concerns when evaluating the effects of energy technologies. Here, we examine the ecological repercussions of the three main renewable energy sources—hydro, solar, and wind energy—and emphasise potential methods for reducing their adverse effects. In some situations, each of the three can have a negative impact on the environment. The impacts of solar energy are comparable to benign if constructed and managed appropriately, whereas the impacts of wind power are the fewest and easiest to minimise. The largest risks are undoubtedly associated with hydropower, particularly in specific geographical and biological contexts. Given that all of these “green” energy technologies are developing at a rapid pace on a global scale, more research is required to evaluate

their effects on the environment. This paper discusses the various types of energy sources including the green and renewable energy sources which can be developed to save the environment by reducing our dependence on non-renewable energy sources. It also emphasizes on the need for focusing on green & renewable energy sources.

Keywords: Green Energy; Renewable Sources; Energy Independence; Atma-Nirbhar Bharat

1. Introduction

“The future of human civilization will either be green or not at all.”

These lines written by Bob Brown very sensitively describe the plight of every living being on the earth suffering from climate change. Dependence on carbon fuels to meet the energy needs of the growing population and the greenhouse gases generated from them are responsible for the environmental crisis and India is no exception to this. Due to technological development and increasing electrification, the energy demand in India is increasing rapidly and this demand can be met through various green energy options. Therefore, India has to explore its possibilities in green energy for better health of the people, increasing cost of importing crude oil, protecting the environment by reducing acid rain and carbon emissions.

Numerous nations are developing incentives to ensure that they are producing energy devices as they are aware of the potential of a green energy economy. Discussions of prospective energy futures have increasingly included the green energy economy. The foundation of a new paradigm might potentially be built by investment in a green energy economy. The supply chain is shortened by using domestic energy resources like solar radiation in green energy

methods, which also reduces the likelihood of environmental impact, political reliance, and security concerns. Powerful political and economic actors that thrive within the contemporary energy regime perceive such social change as a costly threat—both in political and economic terms. When understood as a problem of political economy, the structure of social valuation in place in the contemporary energy regime clarifies that the transition to a green energy economy will not occur simply because of the recognition of its potential social, environmental.

2. Various Types of Renewable & Non-Renewable Energy Sources

Solar energy, geothermal energy, ocean energy and wind energy are some of the important sources of green energy which can help in meeting the energy needs as well as preventing climate change. So let's know about these sources of green energy-

a. Solar Energy-

India is a tropical country and considering its geographical location, there are immense possibilities of solar energy. Solar energy is the most popular alternative to green energy. At the same time, there are about 300 solar days in most parts of the country, from which 3000 hours of sunlight is received, and if this sunlight is converted into electricity, it is equal to several thousand trillion kilowatts. Due to which the increasing energy problem in India can be solved.

To promote the use of solar energy, India along with France established the International Solar Alliance in the year 2015. And to meet its energy needs, it is developing power projects through Solar Energy Mission, PM-KUSUM scheme and more than 40 solar parks. Indian states like

Andhra Pradesh, Bihar, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan and West Bengal have vast potential for solar energy based on their geographical location. But, it is also true that solar products are very expensive and not accessible to everyone. For this, technological investment has to be increased so that by the year 2030, India can achieve its ambitious target of 280 GW of installed solar capacity.

b. Wind Energy-

Wind energy generated by windmills on open windy places of the earth is also a good alternative to green energy. Wind energy has emerged as the most successful renewable energy option in India. Wind power projects in India are being widely developed in onshore and offshore parts. According to the Annual Report 2021-22 of the Ministry of New and Renewable Energy, India is the fourth largest producer of wind power in the world with an installed capacity of 40.08 GW. Whereas, the country has a potential of about 60 GW of wind power. Being surrounded by the sea from three sides, India has a long sea coast of 7600 kilometers, in which there is immense potential for electricity generation from wind energy.

c. Hydropower -

Water being an important natural resource, is also a major source of green energy and includes tidal, wave energy and hydroelectricity. In India, water energy is known as hydroelectricity. The International Energy Agency (IA) in a report called hydroelectric power the 'forgotten god of clean energy' and urged nations to include it as their energy source in their efforts to reach zero emissions. Keeping in mind the displacement and environmental damage caused by dams, if hydro energy is

used appropriately, India can achieve the goal of net-zero carbon emissions by the year 2070.

d. Geothermal Energy-

The electricity generated using heat from the interior of the earth is called geothermal energy. There are hundreds of hot water springs in India, which can be used to generate electricity. About 340 geothermal hot springs have been identified in the country by the Geological Survey of India. These are grouped into Himalaya, Sahara Valley, Khambhat Basin, Sone-Narmada-Tapti Lineament Belt, West Coast, Godavari Basin and Mahanadi Basin geothermal provinces. The power generation capacity at these sites is about 10,000 MW. The lack of deep drilling equipment and high initial cost have hindered the development of geothermal energy in the country. Geothermal energy has immense potential to meet the country's energy requirements but due to the high cost of technology, it has not been properly utilized. Investment in the field of geothermal energy through public-private partnership is giving impetus to its development.

e. Tidal Energy -

Electricity is produced from the tides coming in the oceans. It is inexhaustible as it is pollution free. The total potential of tidal energy in India is 9000 MW. Tidal energy can be harnessed from the Sundarbans delta along the Gulf of Kutch and Khambhat in India.

f. Biofuels -

Any hydrocarbon fuel that is produced from organic matter over a short period of time (days, weeks or months) is considered a biofuel. Like ethanol, biodiesel, green diesel and biogas etc. Compared to conventional fossil fuels,

biofuels do not contain sulfur and also have less carbon monoxide and toxic emissions. Being an agricultural country, India has a large amount of agricultural residues available, so there is a strong potential for the production of biofuels in the country. Biofuels help in rural and agricultural development as new cash crops and also help in reducing pollution.

g. Landfill Gas-

Landfill gas (LFG) is a natural by-product formed from the decomposition of organic matter of wastes filled in a landfill area. Instead of releasing the LFG into the atmosphere from the growing landfill waste in cities, it can be collected and converted and used as an energy source. LFG helps reduce odor and other hazardous emissions from landfills and prevents methane from escaping into the atmosphere.

In debates of the economic, social, and ecological aspects of sustainable development, energy is an important topic (Dincer, 1999). Fossil-based energy, which often consists of coal, oil, natural gas, etc., is another source of energy. Green energy is yet another form. Fossil fuels are not, as is common knowledge, renewable. The primary adverse consequences of fossil fuels should be initially introduced in order to clarify and determine the necessity of sustainable energy methods for the supply and advancement of green energy.

3. Need for Focusing on Green & Renewable Energy Sources

The development and exploitation of these readily accessible non-renewable energy sources should be the government of India's main priority. By doing this, we can lessen our reliance on foreign sources of energy while

simultaneously increasing India's level of energy independence. At the global level, buildings account for around 40% of all yearly energy usage. The majority of this energy is used to provide heating, cooling, lighting, and air conditioning. A revived interest in ecologically friendly cooling and heating systems has been sparked by growing awareness of the negative environmental effects of CO₂, NO_x, and CFC emissions.

In the recent years, these intricate chemical compounds have been put to a variety of useful purposes, including the production of plastics, textiles, fertilisers, and other petrochemical sector end products. These gadgets are being used more and more every decade. Natural resources like coal, oil, and gas are non-renewable yet will undoubtedly be very valuable to future generations as they are to ours. Since it is already or soon will be technically and economically viable to provide all of man's needs from the most plentiful energy source of all, the sun, the rapid depletion of non-renewable fossil fuels need not continue. Not only is sunshine an endless source of energy, but it is also the only one that emits no pollution at all.

Governments agreed to phase out compounds used as refrigerants that have the potential to harm stratospheric ozone under the terms of the 1997 Montreal Protocol. Therefore, it was deemed desirable to limit energy use, the rate of depletion of global energy supplies, and environmental damage. An extensive analysis of energy sources, the environment, and sustainable development is included in this article.

Future sustainable energy scenarios are anticipated to heavily rely on green energy technology. Energy demand will probably be the main determinant of the precise function of green technology and energy. Therefore, it will be feasible to generate green energy from renewable energy

sources like hydraulic, solar, wind, geothermal, wave, biomass, etc. in order to offset the energy need. If so, a variety of application sectors can make use of green energy and technology.

Because non-renewable energy sources are limited and increasing population and industrialization, is creating extra pressure on these resources. It is not sustainable to use these non-renewable energy sources in long term, and we will soon lose our non-renewable energy reserve. So, there is an immense need to focus on green and renewable energy sources.

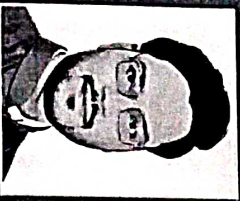
Due to their pervasive usage in several industrial and non-industrial sectors, fossil fuels have contributed to certain serious issues with human health and wellbeing. These issues are described elsewhere. In actuality, it is believed that human people alone, who have governed communities, nations, and ultimately the entire planet for millennia, are the primary cause of these issues due to their massive use of fossil-based technology and techniques.

We have reached a point where it is intolerable. The development of green energy methods for a sustainable future devoid of any detrimental effects on the environment and society is urgently required in this respect. Let's define green energy in this context! It may be characterized as an energy source that produces energy from solar, hydro, biomass, wind, geothermal, and other ecologically benign and sustainable sources with no or little negative effects on the environment. This kind of green energy lessens the negative effects of fossil fuels and the overall emissions from the generation of electricity, lowers greenhouse gas levels, provides a way for people to actively contribute to the improvement of the environment, and satisfies the demand for clean energy in both industrial and non-industrial applications.



Dr. Mushbeer Ahmed
Associate Professor
Department of
Business Administration
Kiwajia Moinuddin

Christif Language University Lucknow,
226013 (U.P) India



RAGHVENDRA
Research Scholar
Department of
Business Administration
Mahatma Jyotiba Phule
Rohilkhand University
Bareilly (U.P) India

Advantages of green energy, advancement of sustainability is thought to be a crucial link between nature and civilization. Energy supplies that are affordable, have adverse effects on society, and are available is necessary for sustainable development that certain energy supplies, like fossil and hence do not meet the criteria while other resources, like green energy are available for a reasonably long time (Dincer). The most important tool for raising the standard of living while promoting sustainable development and industrial productivity is low-carbon. Consequently, it is important to advance successful sustainable green energy plans.

On this basis, we can say that along with being a limited, conventional energy resources are available for climate change. Therefore, India has a need for its growing population only energy. But green energy technology and energy expensive, due to which people's energy less. These can be made accessible to all. Hence in technology. With the right geographical diversity and technological, in increase its green energy potential, its dependence on non-fossil fuel energy a greener India to future generations. Energy strategies appear to be crucial for development in order to develop and apply technology and applications in a developed country. It is evident that they are a chance for people due to challenges with

the environment worldwide, the supply and security of green energy, and technological advancements.

The development of green technology and energy is based on long-term green energy plans for potential future scenarios. The primary variable that will determine how exactly green technologies and energy will be used most likely be the need for energy. Sustainable green energy sources and technologies need unquestionably be taken into consideration to boost the sustainable development of a nation in order to balance the energy demand now and in the future.

In conclusion, green energy policies can significantly boost the economies of nations where green energy is produced in large quantities. Governments and other authoritative entities that want a green alternative to fossil fuels should therefore support investments in the green energy supply for the sake of the future of world nations.

The Government of India should focus on developing and harnessing these non-renewable energy sources which are widely available in nation. In this way, our dependence on other countries for energy can be reduced and India can also become very much independent in the field of energy.

References & Bibliography

- <https://www.india.gov.in/>
- <https://education.nationalgeographic.org/resource/nonrenewable-resources>
- Barreto, L., Makihira, A., Riahi, K., 2003. The hydrogen economy in the 21st century for a sustainable development scenario. *International Journal of Hydrogen Energy* 28, 267-284.
- Bockris, J.O., 2003. On hydrogen futures: toward a sustainable energy system. *International Journal of Hydrogen Energy* 28, 131-133.
- Brown, M.A., 2001. Market failures and barriers: a basis for clean energy policies. *Energy Policy* 29, 1197-1207.