

# An Overview on Green Technologies

Nutan Sharma

**ABSTRACT:** Climate change, energy depletion, global warming, as well as other worries about the environment have prompted the development of green technology in recent years. According to researchers, as the degree of sustainable development rises, so will the economy and society. It will also have a significant effect on long-term sustainability. Human creativity and invention are marked by technological advances in contemporary civilization. However, these technologies have wreaked havoc on the environment on a local, regional, and global scale. Green technologies have a bright future when it comes to fulfilling the demands of long-term economic viability. However, reciprocal reinforcement of environmental and social sustainability aspects is required. Before a technology is implemented, its environmental and economic effect, as well as its efficiency, should be assessed. When economic and long-term development is strongly prioritized, it should be a win-win scenario. This article addresses the difficulties of developing and adopting green technology, as well as the tendencies that contribute to sustainability. Regulatory regulations and financial problems are also discussed in the study.

**KEYWORDS:** Clean Technologies, Green Technologies, Sustainability, Sustainable Development.

## I. INTRODUCTION

Green technologies are those that are environmentally benign and result in long-term economic and social viability. Green technologies may seem to be a fancy term, but it simply means "clean technology." Green technologies used to be referred to as "environmental technology." Green technologies, from the standpoint of information systems, refer to ecologically friendly goods that decrease greenhouse gas emissions (GHGs). They had previously been seen as a more expensive alternative to the less expensive, unsustainable technology that has been in use. Green technologies enable sustainability by developing nature-friendly or eco-friendly technology that not only satisfy human requirements but also reduce waste production and support life now and in the future[1], [2]. As a result, all three aspects of sustainable development, namely social, economic, and environmental, must be addressed.

**Manuscript received July 23, 2020**

**Nutan Sharma**, Associate Professor, Department of Chemistry, Vivekananda Global University, Jaipur, India (Email: nutan.sharma@vgu.ac.in)

Green technologies are discussed in this article. The difficulties of developing and adopting green technology, as well as contemporary sustainability trends, are addressed. This study also discusses financial problems and regulatory regulations[3]–[6].

### A. Treatment of Water

Water is a vital component of all living things. Water pollution and shortage are problems in many parts of the globe. The act of eliminating pollutants from water is referred to as water treatment. Biological, chemical, and even physical contaminants are examples of undesirable substances, making it suitable for usage in other applications. Many developing nations choose water treatment as a method of alleviating water scarcity. Contingent upon applications, for example, modern and human exercises, this arrangement might be centered on different perspectives[7]–[9].

### B. Cleaning Up the Environment

Environmental remediation is a key component of green technologies that seek to ensure long-term viability. This section focuses on green technologies that assist with waste treatment, reuse, and elimination or reduction of hazardous waste in the environment. Since the turn of the century, our understanding of environmental remediation has grown. The removal of pollutants or other contaminants from soil and water is referred to as environmental remediation. These contaminants may build up in living creatures, causing cancer and other forms of damage. Following an evaluation of human health and the overall economic circumstances of the environment, remediation measures may be required by law[10]–[12].

### C. Conservation of Energy

Energy protection alludes to the effective age of energy that fulfills current requests while without imperiling future stockpile. Green advancements have started interest in creating elective energy sources, for example, renewables, to supplant petroleum derivatives. With green innovation, the energy issue has never been a worry. In all actuality, they have made ready for the improvement of low-energy contraptions. All in all, energy preservation is otherwise called energy proficiency, and it is a critical part of long haul development[13], [14].

### D. Energy from Renewable Sources

Every country's economic and social progress has grown dependent on energy. Rapid energy consumption has become a global problem, prompting the development of alternative and energy-saving technologies. Fossil fuels have been used as a source of energy for millennia. Fossil fuel is described as a resource that is obtained from the sun,

turned into chemical energy, and stored in long-dead plants and animals. When plants are operated on to make energy, they produce greenhouse gases (GHGs). GHGs have a harmful impact on the environment as well as future generations.

#### **E. Technology for Capture and Storage**

Carbon capture and storage (CCS) aims to minimize greenhouse gas emissions. Carbon capture and storage (CCS) is a technique that captures carbon dioxide from the atmosphere as well as stores it on a practical surface. This is a three-step process. The process includes capturing carbon dioxide from power plants, transporting carbon dioxide through pipelines, and storing carbon dioxide. CCS technology is used to deposit carbon dioxide in oil and gas recovery sites or unmineable coal sites for future generations[15]–[17].

#### **F. Green Construction Techniques**

Conventional constructions are the primary source of GHG emissions. On the other side, this business has focused on constructing green constructions. As a consequence of climatic changes such as global warming, green building practices (GBPs) are gaining international awareness. GBPs are both environmentally and economically sound. Industries have created a new approach of building ecologically and environmentally friendly dwellings. The GBPs are a new technology in both emerging and developing countries. There is still more study to be done in order to determine how GBPs contribute to environmental sustainability. Developing countries, especially the least developed, have embraced technology as a source of long-term prosperity since they are economically productive [18]–[20].

#### **G. Industries that is environmentally friendly**

The phrase "clean industry" refers to businesses that work to reduce pollution. Green technology in product manufacturing, as well as long-term actions that result in sustainability, are included in clean industries. The terms "clean industry" and "green industry" are interchangeable terms that refer to businesses that work to address environmental issues. It's difficult to estimate the global distribution of green technology since various nations are competing to be the clean energy champion.

Fuel Cells and Hydrogen: What Is the Difference?

In the universe, hydrogen is an incredibly unprecedented component. Coal, unrefined petroleum, flammable gas, and water are for the most part great wellsprings of hydrogen. Water, then again, is the main contamination free source known. Most vehicles' gas powered motors might be changed over to work on an assortment of energizes, including hydrogen powers, on account of current innovation. Vehicles controlled by hydrogen cells are multiple times more proficient than those controlled by vaporous energizes. In 1842, William Robert Grove, a Welsh researcher, found hydrogen fuel interestingly. NASA later used energy components to impel the space transport out traveling into space. Most countries' modern and social constructions have been changed by hydrogen and energy components[21].

#### **H. Technology for Agriculture**

The environment suffers as a result of traditional farming practices. GHG emissions, water contamination, and the

use of physical resources are all factors to consider. Drip irrigation, decreased water use, mechanized farming, and natural insecticides are all examples of clean agricultural technology. Cost-effectiveness, customer needs, regulatory requirements, and public interest are all likely to affect investment in agricultural industries[22], [23].

#### **I. Green Technologies' Obstacles include**

Technologies have had a wide range of effects on our society and environment, as well as assisting in the development of more sophisticated economies like the global economy of today. Green technologies are those that aid in the recovery of the environment. They help to reduce the environmental harm caused by human-made technology. Green technologies, on the other hand, have faced obstacles that have made achieving their objectives more difficult. Marketing issues, economies of scale, finance issues, as well as legal and technical issues, are all examples of such difficulties. The following are some of the challenges:

#### **J. Issues in Development**

Unpredictability and disruptions in fuel resource supply have plagued green technology. Because many small renewable energy projects lack palm oil farms and mills, it is difficult to secure a long-term fuel contract. Other power suppliers' interconnections with green technology are insufficient to provide them access to renewable energy sources. The price point has hampered the adoption of renewable. The cost of renewable energy materials is higher than the cost of fossil fuel energy. Furthermore, the availability of natural gas poses a serious threat to the development of green technologies.

#### **K. Challenges in the Marke**

The difficulties faced during trade growth make expanding the occupation of green technology in emerging nations the most difficult. There is a lack of understanding of the many environmentally friendly technology and services offered on the market across the globe. Due to a lack of global knowledge about green technology providers, the production of environmentally friendly green goods is slowed. Environmental and industrial issues and perspectives are also taken into account while developing international environmental and trade policy.

#### **L. Technology Obstacles**

Professionals with the skills and expertise to match green technology and the ideals they represent are in short supply across the globe. Green building experts, for example, do not value all aspects of green buildings. These include climate, temperature, and lighting management, as well as energy-efficient techniques that reduce environmental harm.

#### **M. Financing Obstacles**

Financing renewable energy projects has proven to be difficult. Small renewable energy project developers must have a strong financial position to be able to finance their initiatives. And, rather of relying only on commercial loans, they should be financially capable of doing so via equity infusion. As a result of a lack of sufficient money to support their initiatives, they begin to stall. The government could consider providing a low-interest loan

to support renewable energy projects as national initiatives.

#### ***N. Regulatory Obstacles***

Managing worldwide regulatory compliances for green technology is a roadblock that is slowing down their development. While huge investments are being made in the United States, there are many renewable energy project possibilities in other nations. It has been difficult to get such nations to comply with green technology standards.

#### ***O. Green Technology Markets Possibilities***

Green technologies are a collection of complex and costly yet easy technological advances. They meet fundamental human requirements and may open up new avenues for investigating and enhancing human comfort and pleasure. Green technologies provide up new and exciting possibilities in the design and development of extra-durable, energy-efficient materials that may be used to create a dependable energy source. New eco-friendly goods and services may be developed with the goal of boosting growth rates while consuming fewer resources and creating less environmental harm.

## **II. DISCUSSION**

Green innovation, frequently known as green tech, is an expansive expression that alludes to the utilization of science and innovation to limit human consequences for the climate. Energy, environmental science, horticulture, material science, and hydrology are for the most part areas of logical review that are covered by green innovation. Green innovation helps with the administration and reusing of trash. It empowers it to be effectively utilized. This procedure is used in an assortment of utilizations, including waste administration, rubbish cremation, and that's only the tip of the iceberg. Individuals have utilized an assortment of recyclable materials to make plant compost, figures, fuel, and even furnishings. While living in a harmless to the ecosystem way is an advantageous objective, Green cycles and innovation might have a few disadvantages, including high execution costs, an absence of data, no known elective substance or unrefined substance inputs, no known elective interaction innovation, and vulnerability about execution. Green engineering has the capacity to chop down metropolitan asset use significantly, and making metropolitan development maintainable. Green engineering takes into consideration structures to be developed as it were, that they utilize existing regular light and guarantee satisfactory protection, in order to diminish energy utilization. Such development rehearses, will decrease energy use in lighting and by diminishing how much hotness lost to the outside, dispense with the requirement for warming. Additionally, the development materials will be obtained from metropolitan waste and landfills. This innovation, sooner rather than later, will take into consideration all structures to be "uninvolved", not needing critical extra emanations for their creation and use. Engineers at Oregon State University have concocted a half and half power generator, which includes utilization of waste water. They have had the option to consolidate

two unmistakable power age advancements - microbial energy components and converse electro dialysis, to deliver a framework that utilizations squander water to create power. The generator has the ability to deliver sufficient power to control water treatment, yet additionally fundamentally add to the principle power framework. All things considered, when increased, this innovation will shape the premise of energy-water maintainability, which is significant with the heightening shortage of regular assets. Thermal power has tremendous potential, however because of the perils related with radioactive waste, the energy source has not been taken advantage of to its true capacity. At present, uranium - atomic power reactors utilize just 1% of the potential energy accessible in Uranium, and the rest stays as radioactive waste. Be that as it may, different materials, for example, Thorium exist, which can supplant Uranium and permit atomic ability to arrive at its true capacity. There is less waste related with Thorium based splitting, as all of the thorium mined is in the isotopic structure required for the reactor. Moreover, thorium is additionally more plentiful in earths outside layer. The justification for why it has not supplanted uranium is cost. In any case, R&D in this area is building up speed, and researchers are confident that the innovation will become financially savvy sooner rather than later. We are consistently lurking in the shadows for more intelligent ways of reusing our rubbish, and I think any reasonable person would agree, that I think we tracked down it. Innovation is presently ready to turn biomass waste, for example, paper, grass or wood chips into gas and in the long run ethanol. The cycles for transformation, additionally utilizes significantly less water and has a more modest carbon impression than conventional ethanol creation. A few pilots are to be sent off soon in the UK and Canada and Australia, with organizations building normalized, simple to introduce plants that will ultimately permit districts all over the planet to start transforming trash into cleaner biofuel. Plants are critical stores of carbon, and deforestation is a tremendous supporter of ozone depleting substance discharges and subsequently environmental change. Timberlands can in any case be continued to stand, however horticultural and food crops can't. All things considered, an interaction called PYROLYSIS has been concocted, which takes into consideration counterbalancing a portion of the carbon discharge related with horticulture. On the off chance that horticultural buildup is scorched in a controlled, low-oxygen climate, not exclusively would you be able to decrease ozone depleting substance emanations, however it brings about a finished result of charcoal. The capability of this innovation is tremendous, particularly because of its double advantages.

## **III. CONCLUSION**

Understanding the challenges of green technology is assisting in the development of more sustainable and competitive solutions. Green technology advancements, especially in the agricultural and industrial sectors, alleviate or mitigate problems. The majority of these difficulties might be resolved by taking the necessary steps

to halt the spread of green technology. Governments might offer to fund renewable energy projects if the owner is unable to do so due to financial constraints. Alternatively, the government might provide specific monetary incentives. Two examples are lowering local government tariffs to encourage the import of renewable energy suppliers and boosting market adoption of green buildings. Furthermore, by removing fossil fuel subsidies, financial incentives for green technical breakthroughs will be increased. People working with green technology breakthroughs may benefit from public education and training in order for technologies to operate properly. Green technology may be utilized for a number of reasons, including waste management, incineration via recycling, water and air purification, and the use of energy-saving equipment, if humans can overcome the problems that green technologies provide. They will offer people with the comfort they need to live in peace. From the above, we may deduce that green technologies are required in today's society. Green technologies should be deployed to maintain the environment's long-term viability, since conventional technology presents a danger to the environment's long-term existence. Even if there are some errors in the application of clean technology, the long-term advantages will surely benefit us and future generations. Furthermore, technology will contribute to the conservation of our scarce resources. As a consequence, the most straightforward approach to assure economic, environmental, and social sustainability is via education.

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