

Contemporary World Impact: Green Technology

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Abstract:

Technology that is seen as environmentally beneficial because of its supply chains or manufacturing methods is referred to as "green technology." Green technology seeks to protect the environment and, in certain situations, repair ecological harm that has already occurred. Over the past 20 years, the greenhouse effect has intensified, natural ecosystems have been disturbed, and global warming has been exacerbated due to the abuse of energy and pesticides, among other causes. This has fueled the development of green technology. When the planet's natural resources run out, green energy seems to be the only brave protector that can save it. The history of technology and green technology, green technology efforts, its objectives across several social domains, and its effects on multiple industries are all covered in this research. Recycling, biodegradable materials, alternative energy sources, and the building of sustainable constructions are all aided by environmental technology. Additionally, it is essential for lowering carbon emissions, mitigating global warming, and protecting wild resources. The term "green technology" refers to a broad category of gadgets that inspire people to live more sustainably. As a result, it is anticipated that this technology will consistently offer improved solutions that are used in incredibly effective ways. Addressing environmental challenges could help stabilize international movements that seek to improve social prosperity and individual well-being.

Keywords: Food, Green, Nanotechnology, Resource, Technology.

I. Introduction

In order to solve problems, improve existing explanations for problems, accomplish goals, preserve functional productivity relationships, or accomplish particular purposes, technology is defined as a collection of processes pertaining to the creation, transformation, use, and interpretation of tools, machinery, techniques, systems, and approaches. The lives of both humans and other animal species have been profoundly impacted by technology. It has had a significant impact on human civilization and its environment in many different fields. Many industrialized countries have benefited economically from it, yet it has also helped to create a leisure class and the sluggishness and complacency that go along with it. Biotechnology research has brought many useful advancements to society, raising living standards and bringing comfort. These inventions include internet technology, nuclear technology, nanotechnology, aerospace technology, and green energy technology.

However, looking at the flip side of this modern world exposes a number of needless consequences that come from using these technologies excessively, which damages the planet's ecology, wastes the environment, and depletes natural resources. The impact of new technology on cultural norms and values gives rise to ethical concerns. Parallels to a future-envisioned system, known as "ideal systems," which stand for systems with perfect qualities, are frequently used to reformulate a society's current structure. It has been observed that, with the goals of these hypothetical technologies in mind, scientists have continuously improved the functionality of real-world technology. The possibility for renewability and the lack of greenhouse gas emissions are features of ideal technology that are consistent with the idea of green technology [1].

1. History of Technology:

Technology has been around for a lot longer than we can remember. For the majority of humanity throughout history, it seems to have existed in some capacity. When it comes to technology, there is no clear beginning point. Technology in the Prehistoric Era includes fire, weaponry, and hunting implements. Later times, it included tools and weapons made of metal. One of the most important technical advances, the wheel's creation in 9500 BCE allowed operators to improve the way they transported commodities. The Egyptians were known for their technical skill, especially when it came to building pyramids. Suspension bridges, printing presses, cast iron, paper, black powder, and several more inventions that are still in use today were among the many things that the Chinese were praised for. Asian Greeks are recognized for their development of the watermill. But the most significant development was the Aeolipile, the Greeks' vapor-powered engine. The Renaissance and the Primitive Age are two other noteworthy historical periods that saw substantial advancements in technology. Glasses, automated clocks, and upright windmills were created during this period. The development of cast metal type for printing made it possible to produce more paper.

One of the most important modern periods is the Industrial Revolution. During this period, consumers started making larger purchases, which forced established businesses to boost output in order to keep up with the growing demand. One of the main causes of the industrial revolution was the extensive use of coal, a resource that was inexpensive and appeared to be plentiful. In the 19th century, steamboats and railroads were propelled by mist locomotives. Telecommunication systems were developed to improve rail safety by enabling sites to communicate and avert mishaps. With the introduction of assembly lines, mass manufacturing, and the development of the vehicle, the 20th century was arguably the most revolutionary.

Electricity, which had previously been too expensive for widespread usage and only accessible to the wealthy, became increasingly inexpensive during this period. Lastly, it is still unclear how much advancement mankind can make with its equipment as we reach the twenty-first century. Compared to the previous century, most individuals today own computers and mobile phones, which are become more reliable and efficient. Quantum computers, drones, nanotechnology, alternative fuels, virtual reality, and many more breakthroughs are being focused on in today's society [2].

2. Green Technology Initiatives:

Countries must use technologies and methods for economic operation that are less harmful to the environment and conserve natural resources in light of growing global challenges like climate change, population growth, environmental degradation, and inefficient use and depletion of natural resources. Reduced ecological impact is linked to sustainable development, which is governed by thorough and rigorous local and global programs that include the requirements of future generations. Renewable technology adoption is encouraged by several plans. Threats such as the depletion of natural resources, changes in climate brought on by overcrowding, and the fast economic growth of contemporary industrialized regions—all of which have negative effects on the environment—are well known.

To address these issues, new commercial development strategies that prioritize non-renewable resources must be implemented in order to lower natural resource consumption and enhance human well-being. Long-term progress is facilitated by green technology, which includes finding environmentally friendly manufacturing sources, setting up eco-friendly marketplaces, and adding additional machinery and jobs. The creation and use of resources, instruments, and systems that help preserve the environment and resources by reducing and mitigating the negative consequences of human activity is referred to as "green technology." Green technology refers to goods, instruments, or systems that satisfy the requirements listed in Figure 1 [3].



Figure 1: Requirements that must be met for a technology to be classified as green

Stated differently, green technology (GT) is an environmentally advantageous field that reduces the environmental costs associated with machinery and chemicals for the benefit of people. Green systems prevent greenhouse gas emissions while maintaining the usage of renewable carbon-based energy. Green technologies don't cause environmental damage of any kind. Green technology help solve both simple and complex public policy issues. The role of green technology in some of society's most creative and basic domains is illustrated in Table 1[1]. The history of green energy is longer than most people realize. Green technology was first developed thousands of years ago.

As early as 7000 years ago, the Egyptians employed wind to move their ships across the ocean. The main renewable energy sources in antiquity were anthropological endeavors, water power, animal power, wind, and wood. Since 5000 B.C., ships have been propelled down the Nile River using wind power, and this practice is still common today. Because it requires complex and unique panels that can retain the sun's energy, solar power is a relatively new technology. Houses and flat areas that receive a lot of sunlight, like deserts, are frequent places to use solar energy. The energy is either exchanged or saved for a future use. Utilizing the force of flowing water, hydropower produces electricity.

S. No.	Area	Objectives of Green Technologies
1.	Aircraft & Space Travel	Use of green energy and green materials and environmental friendly processes in air and space travel
2.	Agriculture	To avoid environmental degradation in agricultural processes.
3.	Health	Use of green technology and green processes in all health and medical services.
4.	Food Processing	To eliminate poisonous contents in food and to avoid green gas emission and environmental degradation in all food packaging processes.
5.	Education	Use of green technology in all education services.
6.	Potable water	To large scale filter used water and sea water through green processes without environmental degradation.
7.	Computer and Information Communication	To develop and utilize environmental friendly, recyclable electronic and computer components which uses renewable energy and efficient performance
8.	Sustainable Energy	To develop technologies for harvesting potential natural energy sources to generate required energy to human civilization without degrading environment
9.	Industrial Automation	To develop industrial processes which are environmental friendly, no green gas emission, recyclable waste products using green energy.
10.	Consumer products	To produce variety of new generation consumer products without side effects and without degrading environment in any production, packaging and in actual use by consumers.
11.	Construction	To build environmental friendly, energy efficient, smart buildings.
12.	Automobiles	To produce energy efficient, zero emission automobiles using renewable energy processes.

GREEN TECHNOLOGY'S IMPACT IN DIFFERENT SECTORS

1. Nanotechnology : Materials at the molecular, atomic, and extremely complex levels are the focus of nanotechnology. Basic human wants and expectations must be met by the developing area of nanotechnology. For an improved quality of life, these needs—which include food, clean water, clothes, energy, housing, health, and the environment—need to be met in every way. Nanotechnology that is produced with intention and under control helps protect the environment and is thus categorized as green technology. By offering better, safer, more resilient, smarter, and healthier goods for homes, electronics, medicines, transportation, agriculture, and industries, green nanotechnology has the potential to have a big influence on practically every area and facet of civilization. Nanotechnology has the potential to become a renewable technology that promotes a sustainable society if it is appropriately managed for sustainability.

2: Green Technology in Agriculture and Food: Choosing a suitable approach to capital creation via sustainable agriculture presents a number of difficulties, including assessing the effects and suggesting national guidelines for the use of efficient technology. The goal of agricultural innovations that make use of sustainable green technology is to improve agricultural productivity and address issues facing the food industry. In order to address the increasing need for food and healthy nutrition, green technology will offer answers through precision farming methods, nanopesticides, and affordable decentralized water purification.

3: Green Technology for Drinkable Water: By giving everyone access to sustainable, clean water, innovations in green technology for reasonably priced water purification are anticipated to address the world's drinking water issue. It is predicted that in order to accommodate an extra 2 billion people by 2030, the demand for water would rise by 60%. According to present trends in population, growth, and consumption, shortages will impact two-thirds of the global economy by 2050. Green technology will solve this problem by identifying pollutants at the molecular level, improving purification systems, and providing affordable localized water purification. This helps purify saltwater into large amounts of drinkable water at a reasonable cost and turns rainfall into safe drinking water.

4: Green Technology for Sustainable Energy: It is anticipated that natural fuels would account for the majority of the 50% growth in global energy consumption by 2025. 2.2 billion people rely on biomass, plants, or agricultural wastes for heating and energy, whereas another 1.4 billion people do not have access to energy. By reimagining the energy matrix through enhanced efficiency lighting, energy storage, solar cells, hydrogen preservation, decentralized power supply, and localized development and distribution, green technologies will meet the need for energy sources. Nanotechnology is a green technology that promotes a clean energy strategy by enabling large-scale renewable solar and wind energy generation and delivery at affordable prices without causing further environmental impact.

5. Green Technology in Building Construction: Green technology opens up exciting new possibilities in the building industry, such as the creation of building materials that are incredibly lightweight, long-lasting, and energy-efficient. By altering the fundamental structure of cement components, it is now possible to track concrete's characteristics, including its look and hardness. Additionally, nano-modification offers vital information for more precise lifespan prediction and suggestions for improving the material.

6. Green Technology in Aircraft and Space Travel: Space exploration may provide information about the state of the Earth, a source of energy, and an opportunity for human creativity. Humans will be able to live more sustainably in space thanks to green technology. Green technology may have an impact on space exploration through applications like as life-support systems, smart suits, sensors, fundamental materials, propulsion fluids, and coatings. In comparison to existing components, green nanotechnology is expected to provide parts that are more effective, durable, self-repairing, and lightweight.

7. Green Technology in Medical and Healthcare Settings: One important and basic use of green nanotechnology is in human health. Green nanotechnology research offers a plethora of prospects for progress in the medical domain. Green technology uses in this industry include quicker drug manufacture, creative drug delivery methods, and easily accessible diagnostics. Long-lasting and more accurate developments in green nanotechnology have the potential to change medication treatments and repair biological damage and DNA (deoxyribonucleic acid). According to certain theories, people may live for a thousand years if they received the right rejuvenation treatments. Microscopic devices might move through our bodies in the next 30 to 40 years, fixing damaged tissues and cells and essentially curing illnesses.

8. Green Technology in Food Processing and Consumption: One of the biggest problems confronting civilization is striking a sustainable balance between the supply and demand for food, which is essential for humanity's long-term existence. The food and food processing industries have the challenge of reducing the production of pollutants during processing, which calls for professional assistance. Techniques include electromagnetic wave heating, electrical fields, non-thermal technology, and biological preservation. Within the broad fields of nanotechnology and biotechnology, there are significant opportunities to remove process-induced toxins from foods and reduce the environmental impact of food production and storage [1].

9. Green Solutions: Although there are many factors that contribute to air pollution and the depletion of natural resources, consumer daily routines and purchase habits are the most important. Even small changes may have a big impact. For example, we could save 120 tons of metal a day if every office worker used one fewer staple. Every year, more than 14 billion pounds of trash—mostly plastic—end up in the country's waterways, endangering marine life. Numerous choices that are made without taking production into account directly contribute to the deterioration of ecological quality. Although these numbers are indeed startling, people can make a difference in the globe; in fact, around 75% of landfill garbage is biodegradable.

Customers have a special power to change the world; in spite of appearances, they basically control how companies function [2]. The development and adoption of green technology can sometimes be hampered by the lack of a defined categorization scheme. To promote and strengthen sustainable development and investment,

China created the Green Technology Bank (GTB) in 2016 as a digital repository for green innovations. Using a mixed strategy that incorporates both top-down and bottom-up tactics to produce a logical metric for classifying various technologies, this study suggested a level three classification framework for green technology (CSGT). Customers have a special power to change the world; in spite of appearances, they basically control how companies' function [2]. The development and adoption of green technology can sometimes be hampered by the lack of a defined categorization scheme. To promote and strengthen sustainable development and investment, China created the Green Technology Bank (GTB) in 2016 as a digital repository for green innovations. Using a mixed strategy that incorporates both top-down and bottom-up tactics to produce a logical metric for classifying various technologies, this study suggested a level three classification framework for green technology (CSGT).

II. LITERATURE REVIEW

J. Charles Rajesh Kumar et al. addressed the noteworthy accomplishments, predictions, assessments, and power generation that are now occurring in India, as well as the challenges, conjecture, and job opportunities associated with the expansion of renewable green energy. The author acknowledges that the renewable energy industry faces several obstacles. Two ways to support sustainable green energy development are to promote renewable green energy and to provide fair, dependable, sustainable, and contemporary energy access. India is now at the forefront of the most promising green energy industries in the world because of strong government investment and an improving economic environment. To entice international investment and hasten the country's entry into the renewable energy industry, the administrations have developed plans, strategies, and a conducive atmosphere. In the future years, it is expected that the green energy sector would provide a significant number of local employment. The references pertaining to the analysis results were useful to modernizers, lawmakers, project developers, researchers, companies, investors, property owners, agencies, and academics.

Mahesh Kumar examined how green energy resources affect society, the economy, and the environment. According to the author, traditional energy sources like coal, oil, and gas are essential for any country's economic growth, but they also have negative environmental effects. As a result, the overuse of conventional resources has decreased, and there has been a shift toward sustainable green natural resources. Because renewable fuels are environmentally beneficial and don't emit greenhouse gases like carbon dioxide, sulfur dioxide, or carbon monoxide, using them can help address economic, social, and environmental problems. One of the most promising clean energy sources is wind energy, which is closely followed by solar energy, hydroelectric power, and photovoltaic solar cells. Local jobs, improved health, job creation, company growth, consumer alternatives, lifestyle improvements, community bonding, income generation, demographic impact, and public development will all result from the appropriate deployment of renewable energy systems.

Chet Narayan Acharya talked on how green energy planning, governance, and policies may help Nepal achieve long-term prosperity and reduce poverty. As a result of enhanced conventional living conditions and rising worldwide economic development, carbon consumption has skyrocketed. Investigating other energy sources has become necessary due to the sharp increase in the use of fossil fuels and the resulting effects. As the name implies, green energy is a renewable energy source. Ironically, Nepal is well-positioned to benefit from renewable energy, even if it is having difficulty accelerating its efforts to grow and expand. The purpose of this effort is to investigate and comprehend the use of green energy, efficient management, and Nepal's economic potential. The findings of the study showed that using green energy instead of fossil fuels helps to reduce poverty and ensure sustainability over the long run.

The material resource criteria and their implications as a workable evaluation tool were studied by Usman Umar et al. The need for building projects that reduce adverse environmental effects while preserving living standards is growing along with understanding and awareness of ecological and sustainability challenges such as resource depletion, biodiversity reduction, and climate change. In response to this demand, resource suppliers, inventors, and builders have created methods and tactics that reduce greenhouse gas emissions, use less water, power, and raw materials, and maintain or improve the local environmental infrastructure and amenities. To improve the efficiency of the building industry, a number of governmental and non-governmental groups have worked together to create green grading systems that can be used to evaluate the sustainable value of both new and existing structures.

In their study, Vardeep Singh Dhillon et al. described how the healthcare industry's green hospital activities are impacting climate change. The resources required for contemporary healthcare are severely limited. Hospitals run around the clock using cutting-edge medical equipment to carry out intricate treatments that need proper lighting and temperature, which cannot be achieved without more energy. Modern healthcare not only addresses but also exacerbates the critical issue of climate change, which is an unavoidable truth. In order to offer high-quality treatment, hospitals, which are resource-intensive establishments, have been shown to use significant amounts of food, water, electricity, and building materials. It was also shown that by

implementing simple, long-term, sustainable practices, many healthcare professionals might drastically reduce their environmental impact.

III. DISCUSSION

Green technology is described as environmentally sustainable technology that is created and applied in a way that preserves natural resources and does not negatively impact the environment. Other names for it include sustainable energy and sustainable technology. Meeting societal expectations without depleting or harming the planet's natural resources is the aim of green technology. Currently, the focus is on creating materials that can be fully recycled or reused in order to meet current demands without sacrificing quality. Initiatives are in place to change production and consumption patterns in order to decrease waste and emissions, which is a major issue of green technology. In order to analyze further health-related disruptions and weigh the advantages and disadvantages of green technology, alternative solutions must be developed. This study looked at the adoption of green technology and how it affects different industries. The paper emphasizes the significance of sustainable development for the future and offers a number of strategies for advancing it. Based on the results, it is impossible to overestimate the importance of green technology as a component of the sustainable technology movement's clean energy sector, and implementing green practices would lessen the difficult circumstances that are now prevalent. In order to address this situation before it becomes worse, it is imperative that green technology be acknowledged.

IV. CONCLUSION

The globe and civilization have been profoundly impacted by technology, which has helped to create more developed economies, such as the modern banking system. Technology in the fields of aviation, automobiles, biotechnology, electronics, communications, the internet, clean energy, nuclear and industrial technology, nanotechnology, and space technology are just a few of the innovations that science has contributed to civilization. These technological advancements have brought comfort and changed people's lives. People must pay attention to environmental health in order to preserve their social well-being. In order to guarantee a clean world for future generations, we suggest in this article how innovations can become more successful by incorporating renewable components, halting environmental damage, and transferring them into new technologies. The study also looks at the benefits and drawbacks of green technology in 21st-century fields such as agriculture, drinking water, solar energy, building, space exploration and aviation, education, food production, manufacturing, and healthcare. Countries need well-defined action plans and metrics to track green growth and sustainable development. While reducing any possible negative impacts, the shift to green technology could help stabilize global trends that aim to improve people's welfare and social prosperity. The ability to live a more ecologically responsible lifestyle is one of the most alluring features of green technology. Green technology includes a broad range of gadgets that allow for increased environmental consciousness in daily life.

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