

# Green Technology and Its Effect on the Modern World

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**Abstract:** Green technology refers to a type of technology recognized as eco-friendly due to its production methods or supply chain management. The primary aim of green technology is to safeguard the planet and, in certain instances, to reverse past environmental damage. The excessive use of pesticides and the overuse of energy, among other factors, have led to an escalation of the greenhouse effect, disruption of ecosystems, and global warming over the past two decades, leading to the creation of green technologies. Green energy appears to be the sole heroic force capable of rescuing the world as the planet's natural resources diminish. The current study has elaborated on the history of technology and green technology, initiatives in green technology, objectives across different sectors of society, and its impact on various industries. Environmental technology supports alternative energy sources, biodegradable materials, recycling, and the development of sustainable buildings. It also significantly aids in carbon reduction, mitigation of global warming, and conservation of natural resources. Green technology includes a wide range of devices, encouraging individuals to be more environmentally conscious in their daily lives. Therefore, this technology is expected to continue offering improved solutions and implementing them in highly effective ways in the future. **Keywords:** Food, Green, Nanotechnology, Resource, Technology.

## 1. INTRODUCTION

Technology is defined as a collection of processes for creating, transforming, utilizing, and interpreting tools, machinery, processes, skills, systems, and methods to address a problem, enhance a prior explanation of issues, achieve an aim, maintain a functional contribution/production relationship, or fulfil a specific purpose. Technology has significantly influenced the lives of humans and other species. Additionally, technology has had a profound effect on humanity and its environment across various domains. It has contributed to the growth of many advanced nations 'economies and has assisted in the emergence of a leisure class, along with their associated lethargy and complacency. Research in biotechnology, including internet technology, nuclear technology, nanotechnology, aircraft technology, and green energy technology, has introduced various beneficial innovations to society, thereby enhancing people's quality of life and providing comfort. Looking from a different perspective of this technological world, there are certain unnecessary derivatives produced by employing such technologies excessively, which lead to environmental waste, depletion of natural resources, and damage to the Earth's ecosystem. The ethical dilemma emerges due to the influence of new technology on values and society. To change a society's current framework, it is typical to compare it to a future, anticipated system referred to as "ideal systems," which denotes systems that possess ideal characteristics that are perfect in every way. It has been ascertained that scientists have consistently enhanced the features of practical devices to improve their functionality by envisioning those hypothetical devices. One characteristic of ideal technology is its capability to be renewable and release zero greenhouse gases into the atmosphere; ideal technology signifies green technology.

## 2. HISTORY OF TECHNOLOGY

Technology has existed for much longer than we can recall. It appears to have already been present, in some shape or form, for the majority of humankind. It is impossible to determine when technology first began. In the Prehistoric Era, technology comprised hunting tools and weapons, as well as fire. In later times, technology

included metal-forged weapons and utensils. The wheel was invented in 9500 BCE and is also regarded as one of the most significant technological advancements ever created, as it enabled its users to be more innovative in their transport of goods. The Egyptians were renowned for their technical expertise as well as their capability to construct pyramids on slopes. The Chinese were famous for their numerous inventions, including suspension bridges, printing presses, cast iron, paper, black powder, and various other innovations that continue to be used today. A watermill is an invention credited to the Greeks, who are recognized for that creation. However, the Greeks' vapour-powered engine, or Aeolipile, represented the most substantial innovation. The primitive age and the Renaissance are two other notable historical phases. The industrial revolution is among the most recent significant epochs. Consumers began to buy more during this time, prompting existing companies to manufacture more stock to satisfy demand. The utilization of coal, an inexpensive resource that appeared to be abundant, was one of the driving forces behind the industrial revolution. Steam locomotives were utilized in steamboats and trains during the nineteenth century. To ensure trains operate safely, telecommunication was established so that locations could connect with each other and avoid accidents. The twentieth century was possibly the most transformative, with mass production, assembly lines, and the invention of the automobile occurring at the beginning of the century, marking a significant advancement.

#### **3. GREEN TECHNOLOGY INITIATIVES**

Regarding increasing global threats such as climate change, population growth, environmental damage, and inefficient usage and depletion of natural resources, countries must adopt machines and methods for economic operation that are less harmful to the environment and conserve natural resources. Sustainable development is associated with reduced ecological harm and is guided by strict and inclusive strategies, both global and local, that consider the needs of future generations. Many of these initiatives advocate for the adoption of renewable technologies. The well- documented risks include natural resource depletion, climate change due to overpopulation, and the rapid economic growth of modern developed nations linked to negative environmental effects. They require the establishment of new commercial development and transformation policies that prioritize non-renewable resources to reduce the consumption of natural resources while improving human living conditions. Green technology promotes sustainable progress, which involves identifying environmentally responsible sources of production, establishing eco-friendly markets, and generating additional jobs and equipment. Green technology refers to the development and use of resources, tools, and systems that aid in protecting the natural environment and resources by minimizing and reducing the harmful impacts of human activities. In other words, Green Technology (GT) refers to environmentally friendly expertise that reduces the ecological costs associated with chemicals and machinery for humans 'benefit. Green systems support the utilization of renewable carbon-based energy while preventing greenhouse gas emissions. Green innovations do not contribute to any type of environmental harm. Green technologies assist in addressing both basic and complex public policy issues. The Egyptians harnessed wind to navigate ships across the sea as early as 7000 years ago. In ancient times, anthropological efforts, water power, animal power, wind, and logs served as the primary sources of renewable energy. Wind power has been utilized to move vessels down the Nile River since 5000 B. C. and it remains widely used today. Solar power is a comparatively newer method because it requires intricate and specialized panels capable of capturing the sun's energy. Solar energy is frequently utilized in homes and on flat lands that receive abundant sunshine, such as deserts. The energy can either be stored or sold to someone in need of it. Hydro-power captures the energy of flowing water to generate electricity.

#### 4. EFFECT OF GREEN TECHNOLOGY IN VARIOUS SECTORS

**Nanotechnology:** Nanotechnology involves the investigation of materials at the molecular, atomic, and densely intricate levels. As nanotechnology evolves, it is essential that it meets humans' fundamental needs and expectations. Requirements for humans include food, safe drinking water, clothing, electricity, shelter, health, and a stable climate, necessitating automation across all sectors, increased lifespan, and so forth. Nanotechnology production that is designed and managed contributes to ecological preservation and is thus categorized as green technology. Green Nano technology has the potential to significantly impact nearly all sectors and fields of society by offering better-constructed, safer, more durable, smarter, and healthier products for homes, electronics, pharmaceuticals, transportation, agriculture, and industries. Therefore, if developed responsibly for environmental sustainability, nanotechnology can be regarded as a renewable technology for a sustainable future.

## **5. GREEN TECHNOLOGY IN AGRICULTURE AND FOOD**

Recognizing an appropriate methodology suitable for capital production through sustainable agriculture, investigating the consequences, and proposing national standards for approving the advancement of suitable technology represent challenges for green technology in agriculture and food. Innovations in farming that are based on sustainable green technologies are expected to address issues in the food sector and enhance agricultural production. Green technologies will provide solutions through precise cultivation, nano-pesticides, and low-cost decentralized water purification, especially as the demand for food and adequate nutrition continues to grow. Of ecological quality is a direct consequence of millions of choices made without consideration for the repercussions on creation. These figures are undoubtedly alarming, yet individuals possess the ability to transform the world; after all, around 75% of the waste found in landfills is biodegradable. Many individual sunder value the power of the individual, particularly their influence regarding issues that matter to them. Consumers are the sole entities that have the potential to impact the world; despite it not feeling that way, consumers essentially dictate how companies operate. The absence of a universally accepted classification scheme for green technology occasionally hampers its progress and uptake. In 2016, China established the Green Technology Bank (GTB), a digital repository of green technologies, to enhance and safeguard sustainability growth and investment. This research proposed a level three classification system of green technology (CSGT) employing a hybrid approach that integrates bottom- up and top-down strategies to provide a unified metric for categorizing these capabilities. Green technologies are categorized into five primary classes, which include ecological quality, resource use, energy consumption, safe living, and environmental protection, along with 30 subordinate categories and 87 tertiary categories, based on the proposed CSGT. The CSGT enabled the examination of 2453 specific instances of renewable energies. The results offered valuable data for decision-makers and green stakeholders to understand the development of green technology from various perspectives, sectors, implementation phases, and geographical distributions.

#### 6. GREENTECHNOLOGY FOR DRINKABLE WATER

Innovations in green technologies for cost-effective water purification are anticipated to tackle the global drinking water crisis by providing every one with sustainable access to potable water. By the year 2030, water demand is projected to increase by 60% to accommodate an additional 2 billion individuals. By 2050, two-thirds of the world's economy will be impacted by shortages, according to current rates of consumption, growth, and population. Through affordable localized water purification, detecting contaminants at the molecular level, and significantly advanced purification methods, green technology will offer solutions to this challenge. This aids in the conversion of rainwater into clean drinking water, as well as the large-scale recycling of seawater into drinkable water at a low cost.

## 7. GREEN TECHNOLOGY FOR SUSTAINABLE ENERGY

By 2025, global energy demand is predicted to increase by 50%, with fossil fuels representing the majority of this surge. Approximately 1. 4 billion people lack access to energy, while 2 billion rely on biomass, plant materials, or agricultural waste for energy and heating. By transforming the power grid, green technologies will meet the demand for energy sources through more efficient lighting, energy storage systems, solar panels, hydrogen storage, decentralized power supply, and localized generation and distribution. As a green technology, nanotechnology enables large-scale sustainable solar and wind energy production and distribution at a low cost without causing additional harm to the environment, promoting a clean energy future.

## 8. GREEN TECHNOLOGY IN BUILDING CONSTRUCTION

Greentechnologypresentsexcitingnewopportunities within the construction sector, including the development of energy-efficient, exceptionally strong, and remarkably lightweight building materials. It is now feasible to monitor the properties, appearance, and hardness of concrete by manipulating the fundamental structures of cement components. Nano-modification also delivers critical data for more accurately projecting the operational lifespan of materials and insights on how to enhance them further.

#### 9. GREEN TECHNOLOGY IN AIRCRAFTS AND SPACE TRAVELING

Exploring space will provide us with a means to assess the health of the planet, a source of energy, and a blank slate for our imagination. Green technologies will enable humans to inhabit space more sustainably. Potential applications where green technologies can influence space exploration include propulsion fuels, coatings, basic fabrics, intelligent suits, sensors, and life-sustaining environments. Green nanotechnology is expected to create materials that are more efficient, stronger, self-repairing, and lighter than those currently available.

#### **10. GREEN TECHNOLOGY IN HEALTHCARE AND MEDICATION**

Human well-being is a significant and essential domain of green nanotechnology science. Research in green nanotechnology presents numerous opportunities for advancements within the medical sector. Fair and straightforward diagnostics, innovative drug delivery methods, and accelerated creation of new medications are just a few examples of green technology applications in this area. Long-term and considerably more effective green nanotechnology advancements will repair DNA deoxyribonucleic acid) and cellular damage, as well as transform drug therapies. It has been suggested tha" with suitable rejuvenation treatments, individuals might live for up to 1,000 years. Microscope machines could potentially navigate into our bodies in 30 or 40 years, replacing damaged cells and tissues while successfully eliminating diseases.

#### **11. GREEN TECHNOLOGY IN FOOD AND THE FOOD PROCESSING**

Establishing a sustainable balance between food supply and necessity that guarantees the long- term survival of the human race would rank as one of humanity's greatest challenges. Green technologies within the food and food processing sectors encounter challenges in minimizing the production of process-induced contaminants, which requires the expertise of specialists. Biological preservation, non-thermal technologies, electronic and magnetic wave heating, and electrical and magnetic fields are merely a few of the technologies at disposal. There remain potential opportunities to eliminate process-induced toxins in food products, as well as to address the environmental effects of food production and storage, under the broad umbrella of nanotechnology and biotechnology.

#### **12. GREEN SOLUTIONS**

Numerous factors lead to the exhaustion of natural resources and pollution of the atmosphere, with consumer purchasing habits and daily lifestyle choices being the most significant. Minor modification scan create a substantial impact; for instance, if every office employee utilized one less staple daily, we would conserve 120 tons of metal. Annually, over 14 billion pounds of waste are dumped into the kingdom's oceans. The bulk of this waste is comprised of plastic, which is harmful to marine life. The decline in environmental quality stems directly from millions of decisions made without consideration of their effects on nature. These figures are undeniably alarming, but individuals possess the capability to transform the world; after all, roughly 75% of landfill waste is biodegradable. Many individuals underestimate the power of the individual, especially their influence regarding significant issues. Consumers are the sole entities capable of impacting the world; although it may not seem that way, consumers truly dictate how businesses operate. The absence of a commonly accepted classification system for green technology often hinders its development and adoption. In 2016, China established the Green Technology Bank (GTB), a virtual repository of green technologies, to encourage and uphold sustainability progress and investment. This research proposed a level three classification system of green technology (CSGT) employing a blended approach that integrates bottom-up and top-down methods to create a coherent metric for classifying these technologies. Green technologies are categorized into five primary classes: ecological quality, resource utilization, energy consumption, safe living, and environmental protection, with 30 subordinate categories and 87 tertiary groups, based on the proposed CSGT. The CSGT facilitated the examination of 2453 specific examples of renewable energy sources. The results yielded valuable data for decision- makers and green investors to understand the growth of green technology from various perspectives, sectors, implementation phases, and geographic distributions.

#### **13. LITERATURE REVIEW**

J. Charles Rajesh Kumar. J et al. discussed the current significant achievements, forecasts, projections, electricity generation, along with challenges, speculation, and job opportunities arising from the growth of sustainable green energy in India. The author is cognizant of the numerous challenges that the clean energy sector encounters. The adoption of renewable green energy and assuring individuals' access to fair, consistent, sustainable, and contemporary energy are two approaches to attain sustainable green energy development. Robust government investment and a progressively improving economic climate have positioned India at the forefront of the world's most profitable green energy markets. The administrations have formulated strategies, programs, and a conducive environment to attract international investment and expedite the country's participation in the clean energy sector. The green energy industry is projected to create a significant number of local jobs in the upcoming years. Innovators, policymakers, project developers, researchers, businesses, stakeholders, affiliated owners, agencies, and scholars have all gained from the references cantered on the analytical findings. Mahesh Kumar outlined the environmental, economic, and social impacts of green energy resources. The author noted that although conventional energy reliant on oils, gases, and coal is crucial for the advancement of each country's economy, these resources have certain adverse effects on the ecological environment, and this draw back limits the overuse of traditional resources, shifting attention towards sustainable green natural resources. Both economic, social, and environmental issues can be mitigated by utilizing renewable energy, as these fuels are labelled eco-friendly and do not produce greenhouse gases like carbon dioxide, sulphur dioxide, or carbon monoxide. Wind energy is recognized as one of the most viable clean energy sources, followed by solar energy, photovoltaic solar cells, and hydroelectric power. The appropriate implementation of renewable energy systems will yield local employment, enhanced health, job creation, business development, consumer choices, improved living patterns, community bonding, revenue generation, demographic effects, and public advancement. Chet Narayan Acharya illustrated how green energy policies, planning, and management could assist Nepal in achieving sustainable growth and poverty alleviation. The use of carbon has surged considerably due to heightened global economic growth and enhanced traditional living standards. The rapid rise in fossil fuel consumption, along with the repercussions, has necessitated the search for alternative energy sources. Green energy, as the term suggests, refers to a renewable energy source. Nepal embodies an ironic scenario for renewable energy resources, despite its inability to expedite its development and expansion initiatives. It represents an attempt to investigate and understand the implementation of green power, effective organization, and the potential of the Nepalese economy. The researchfindingsindicatedthatsubstitutinggreenenergyforfossilfuelsaids in transforming poverty and ensuring its long-term sustainability.

#### **14. DISCUSSION**

Green technology is defined as technology that is environmentally sustainable, designed and used in a manner that does not harm the environment and conserves natural resources. Green technology is also referred to as sustainable technology and sustainable energy. The purpose of green technologies is to meet societal needs without damaging or exhausting the planet's natural capital. The objective is to satisfy present requirements without compromising quality, thus the emphasis is now on developing materials that can be fully recycled or reused. As a significant focus of green technology, efforts are being made to reduce waste and emissions by changing production and consumption practices. Alternative approaches must be formulated to ascertain more health disruptions, alongside the pros and cons of green technology. The current study investigated how green technology is being adopted and its impact on various sectors. The report suggests several strategies for achieving sustainable development and its importance for the future.

#### **15. CONCLUSION**

Technology has influenced society and the globe in numerous ways, also supporting the progress of more industrialized economies, like the contemporary financial economy. A few of the advancements that science has brought to society include aircraft technology, automotive technology, biotechnology, electronic technology, telecommunication technology, Internet technology, clean energy technology, atomic and industrial technology, nanotechnology, and space technology. These technological innovations have transformed people's lives and

offered comfort. To maintain their comfort within society, individuals must remain attentive to the health of the environment. In this article, we propose how innovations can achieve greater efficiency by integrating renewable elements, preventing environmental damage, and transitioning them to new technologies, ensuring a clean planet for future generations. The paper also discusses the advantages and challenges of green technologies in irrigation, drinking water, solar energy, construction, aviation and space exploration, education, food production, and health and medicine in the twenty-first century. To monitor sustainable development and green growth, nations require clearly defined action plans and metrics. The transition to green technology should assist in stabilizing global initiatives aimed at enhancing people's well-being and societal welfare while minimizing potential adverse effects. One of the most attractive aspects of green technology is that it enables individuals to lead their lives in a more environmentally responsible way. Green technology encompasses a broad array of devices, facilitating a more environmentally conscious lifestyle in everyday life.

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