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An Overview on Green Technology

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ABSTRACT: Human civilization develops and employs a variety of technologies to assist day-to-day activities. Green technology is environmental and eco-friendly technology that is produced and used in such a manner that it does not harm the environment and conserves natural resources, resulting in long-term development. However, some individuals refer to green technology as environmental technology or clean technology, both of which are designed to safeguard the environment and, in particular, natural resources. This paper discusses several types of green technology along with numerous green technology products. It also discusses several applications of green technology including solar panels, solar array, reusable water bottles, solar water heater, wind generator, house insulation, etc. This also explain several goals of green technology. As green technology is completely eco-friendly and is helpful in solving several real-life problems, it has higher chances of getting implemented in future thereby increasing its future scope.

KEYWORDS: Energy, Environment, Green Technology, Recycling, Resources.

1. INTRODUCTION

Technology adoption is restricted, and it has negative consequences for the environment and human society. As a result, new technologies that are more eco and environmentally friendly may be used to assist day-to-day activities of today's lifestyle. New technologies, on the other hand, are more efficient and environmentally friendly as a result of greater awareness and recent advancements in energy management research. These are referred to as "green" or "clean" technologies. Energy efficiency, recycling, safety and health issues, renewable resources, and many other topics are covered by green technology[1].

Green technology is a rapidly increasing and fashionable option in the building business today. Since the early 1990s, green technology has received a lot of attention, and in today's construction, there has been a significant movement toward an efficient building design execution driven by eco-friendly activities that enable sustainable technology. Green technology, also known as sustainable technology, is a type of building technology that is "green" in nature and aimed toward long-term sustainability. True, when we say "green," we're referring to nature[2]. Green technology, on the other hand, is one that considers the influence of innovation on the environment, whether it is temporary or long-term. Green technology in construction refers to the creation of new structures that include additional features of environmentally friendly solutions into construction projects.

Green products, according to the US daily bulletin on green technology (2016 edition), are environmentally friendly discoveries that typically include efficient energy, recycling, health and safety issues, and renewable resources, among other things. The highest goals in the construction of environmentally friendly buildings are, first and foremost, to conserve natural resources, eliminate the negative impact of construction activities on environmental safety by using reusable or recyclable materials, and to cause a shift in production patterns to reduce waste and pollutants[3]. Second, finding an alternative to harmful behaviours that harm the environment and pose a threat to human survival. When an acceptable design is employed and

a suitable construction site is found, an increase in the building's energy efficiency is inevitably achieved.

The phrase "green technology" refers to technology that is designed to be environmentally friendly. Green innovations are those that focus on the environment, such as energy efficiency, recycling, safety and health concerns, renewable resources, and so on. The world's natural resources are finite, and some have already been depleted or harmed. Household batteries and devices, for example, can contain dangerous chemicals that can pollute groundwater after disposal, contaminating our land and water with toxins that are impossible to remove from drinking water supplies and food crops grown on damaged soil[4]. The risks to human health are immense. As a result, every investor should seriously consider becoming green. They must realise that eco-friendly ideas and clean technologies are profitable. These are lucrative markets with a lot of room for growth. Green technologies may also help consumers save money on their energy costs, and they are usually safer and healthier goods.

Green technology is the creation and usage of goods, equipment, and systems that help to conserve the natural environment and resources by minimising and reducing the negative impact of human activities on the environment[5]. The term "green technology" refers to goods, equipment, or systems that meet the following requirements:

1. It minimises environmental degradation and natural resource depletion.
2. It emits zero or low greenhouse gases (GHGs), is safe to use, and promotes a healthy and improved environment for all forms of life.
3. It conserves energy and natural resources.
4. It encourages the use of renewable resources.

1.1 Goals of Green Technology:

- The fundamental goal of green technology is to satisfy and cater to the requirements of society without harming or diminishing the earth's natural resources[6].
- To suit current demands without compromising on quality. The emphasis is now on creating goods that can be completely recovered or reused. As one of the major aims of green technology, measures are being done to decrease waste and pollution by altering production and consumption habits.
- It is critical to create alternative technologies to prevent future harm to human and other living things' health, as well as the benefits and drawbacks of green technology.

1.2 Different Types Of Green Technology:

Green technology refers to a variety of production and consumption practises. As part of the adoption and application of green technology, environmental technologies are used for monitoring and assessment, pollution prevention and control, and clean-up and restoration. Environmental monitoring and assessment technologies are used to track and measure the status of the environment, as well as the release of dangerous natural or manufactured materials. Product replacement or the redesign of a whole manufacturing process, rather than the use of new equipment, are examples of prevention technologies that remove the production of environmentally hazardous substances or modify human behaviours in ways that decrease environmental damage. Control technology renders hazardous substances harmless before they reach the environment. Ecosystems that have been destroyed by natural or human causes can be restored using remediation and restoration methods[7].

1.3 Different Types Of Green Technology Products:

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Green technology goods are items that are created and utilised with the environment in mind. Green technology products are created with the goal of reducing waste, pollution, and even the use of fossil fuels. Green technology items include energy production goods, green chemicals, sustainable or recyclable products, and alternative energy technologies, to name a few. Solar panels and thermal heating discs, which help create alternative energy, are two of the most common green technology objects used in everyday life.

Solar panels, which may be put on houses, apartments, and business buildings, use the sun's heat to charge solar batteries, which can then be used to generate energy instead of non-sustainable sources like gas. Thermal heating discs, which are used in swimming pools, absorb the sun's rays and reflect them across the pool's surface, offering a non-fossil fuel alternative to heating. Many green technology products rely on green chemicals. These products are designed to mimic the effects of hazardous, polluting substances while decreasing the danger of poisoning and harm to the environment. Home cleaning agents made of coconut and glycerine, pesticides that utilise orange or peppermint oil instead of harmful chemicals, and even green laundry detergent that may minimise water pollution are all examples of green chemical goods.

Green technology items that are both sustainable and recyclable assist extend the life of consumer goods. Cell phones manufactured from plastic water bottles, appliances rebuilt from scrap metal, and even recyclable computers are examples of these items. Green technology goods that utilise sustainable and recyclable materials frequently promote their participation in recycling programmes; consumers looking for a new mobile phone or laptop may want to enquire about specific models that use recycled materials. Popular green technology items include solar-powered charging solutions for phones, laptops, and portable appliances Green technology may help reduce fossil fuel consumption and lower energy bills by converting ordinary items to alternative energy power sources.

1.4 Applications of Green Technology In Our Life:

1.4.1 *Solar Array:* The solar cell is one of the most well-known examples of green technology. Through the process of photovoltaic, a solar cell transforms the energy in light directly into electrical energy. Using solar energy to generate electricity reduces the usage of fossil fuels, lowering pollution and greenhouse gas emissions.

1.4.2 *Reusable water bottle:* The reusable water bottle is another basic product that may be called environmentally friendly. It is beneficial to drink enough of water. It is beneficial to the ecology to reduce plastic trash. As a result, stylish reusable water bottles that you can refill yourself are good for your health, the environment, and the environment.

1.4.3 *Solar water heater:* Installing a solar water heater may be a fantastic way to save money on electricity while also saving the environment. The costs of installing a solar water heater are actually recovered considerably faster than the costs of using photovoltaic technology to generate electricity. This is owing to solar water heating systems' greater efficiency as well as their lower cost when compared to the huge solar array necessary to power a residence.

1.4.4 *Wind generator:* A home wind generator costs a lot of money. Some people have made their own wind generators out of store-bought materials from local hardware stores. Others have bought kits or paid for expert installation to supplement the electricity they get from the grid. A home wind generator's power output varies almost as much as its original cost. Many kit-based generators will only be able to offset 10-15% of your household's energy costs.

1.4.5 Rainwater harvesting system: Rain collector systems are very basic mechanical devices that link to a gutter system or other rooftop water collection network and collect rainwater in a barrel or cistern for non-potable usage later (like watering plants, flushing toilets, and irrigation). These systems are incredibly low-cost.

1.4.6 Insulating house: According to the EPA, energy loss from inadequate insulation accounts for 10% of annual residential energy consumption. We'll receive a great return on our investment if we seal our house to keep energy out.

1.4.7 Building with green technology: To decrease their environmental effect, green buildings employ a range of ecologically friendly approaches. Builders may use reclaimed materials, passive solar design, natural ventilation, and green roofing technologies to create structures that have a far lower carbon footprint than traditional building. These methods not only improve the environment, but they may also result in more economically appealing structures that are healthier for the people who live in them. The main advantage of constructing green is that it reduces a building's environmental effect. Green building approaches can also help you save money on your building's construction and operation costs. Open areas and natural circulation are used in green ventilation systems, which reduce the demand for typical air conditioning and eliminate many of these issues.

1.4.8 National benefits for energy generation: Another area where green technology might make a difference is power generating. Distributed generating technologies, such as solar PV, biogas production, and wind power, have demonstrated that they may increase employment possibilities and can be used to produce energy.

1.5 Attaining Environmental Sustainability via Green technologies:

There is a chance of achieving environmental sustainability by employing numerous green technologies in a systematic and planned manner, which aids in natural resource conservation and environmental preservation. Fuel cell and renewable energy technologies are gaining a lot of traction as green technologies because they can be readily integrated into existing infrastructure. Green transportation is a combination of fuel cells and renewable energy sources, thus its flexibility is determined by how well these technologies are applied.

Green Technology (GT) is a wide term that refers to a variety of methods and materials for producing energy, as well as non-toxic cleaning solutions. The major reason for this area's importance is that most people anticipate considerable innovation and changes in their way of life. Alternative technology development should aim to benefit the world by safeguarding the environment and mother earth. This technology satisfies society's requirements in ways that will last eternally without harming or depleting natural resources. In terms of technology that can generate entirely reclaimed or re-used items, such a cradle to grave manufacturing cycle has effectively decreased waste and pollution by altering production and consumption habits. Technology advancements have sparked interest in creating alternative fuels as a new source of energy and improved energy efficiency. Furthermore, GT is the application of green chemistry and green engineering, two of the most fascinating disciplines of technology that are expected to revolutionise the way things is created throughout the world.

2. LITERATURE REVIEW

Bhavana Gangadhar et al. discussed comparison between green technology and environmental sustainability in India in which they discussed how the four pillars of green technology are applied to many areas. The government has taken steps to encourage green technologies and has created a number of tax incentives for renewable energy generation. Green technology is

the creation and use of goods, equipment, and systems that help to preserve the natural environment and resources by minimising and reducing their impact. Human actions have a harmful influence on the environment. They discussed how Green Technology (GT) is a wide term that refers to a variety of methods and materials for producing energy, as well as non-toxic cleaning solutions. The major reason for this area's importance is that most people anticipate considerable innovation and changes in their way of life. Alternative technology development should aim to benefit the world by safeguarding the environment and mother earth. This technology satisfies society's requirements in ways that will last eternally without harming or depleting natural resources. In terms of technology that can generate entirely reclaimed or re-used items, such a cradle to grave manufacturing cycle has effectively decreased waste and pollution by altering production and consumption habits. Technology advancements have sparked interest in creating alternative fuels as a new source of energy and improved energy efficiency. Furthermore, GT is the application of green chemistry and green engineering, two of the most fascinating disciplines of technology that are expected to revolutionise how everything is created across the planet[8].

Ghanshyam Das Soni discussed several benefits of green technology in which he explained how green technologies cover a wide range of technologies that aid in reducing human influence on the environment and fostering long-term growth. The main characteristics for green technology are social equity, economic feasibility, and long-term viability. Today, the ecosystem is on the verge of reaching a tipping point, at which time we will have caused irreparable permanent damage to the world. Our current behaviours are pushing the planet towards an ecological landslide, which, if it occurs, would inevitably result in catastrophe. Green technologies are a method of preserving the environment. As a result, both its advantages and disadvantages must be evaluated. Green technology makes use of non-depleting natural resources. Green technology makes use of cutting-edge energy generating methods. One of the most recent green technologies is green nanotechnology, which combines green engineering and green chemistry. The disposal of trash is one of the most critical elements in environmental degradation. Green technology provides solutions to these problems as well. It has the potential to modify waste patterns and production in such a manner that it does not affect the environment and allows us to become more environmentally conscious[9].

Xian Zhiyong discussed Green Technology Innovation Model and System Improvement based on Environmental Protection in which he explained how Green technology innovation creates economic benefits while also protecting the environment; it necessitates innovation in the areas of production chain strengthening, process innovation, and waste recycling production in order to prevent net resource consumption. Traditional technical innovation models based on one-way linear foundation, in traditional technological innovation activities, human as infinite demand, production, and consumption, leading in resource depletion, pollution, and unsustainable economic and social development[10].

3. DISCUSSION

Green technology goods are becoming increasingly popular among consumers. Government customers are increasingly being required to purchase green products when they are available, and the range of items covered by such mandates is expanding. When it comes to corporate clients, if they can show a return on investment in green products, demand will grow. The most promising products in this area are those that minimise energy usage. Nonetheless, a rising number of company purchasers are likely to be driven solely by a desire to be seen as supporting environmental sustainability. So, change is on the way. In the R&D phase, green in technology goods are being implemented. Products are being redesigned to utilise fewer

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hazardous chemicals, use less shipping material, consume less energy, and encourage end-of-life recycling. As a result, the technology industries are embracing change in terms of environmental sustainability. They are evolving in order to prevent bad effects, fulfil green demand, or do both. Regardless of their motivations, they are unmistakably moving toward green. Thus, implementation of green technology is continuously increasing recently.

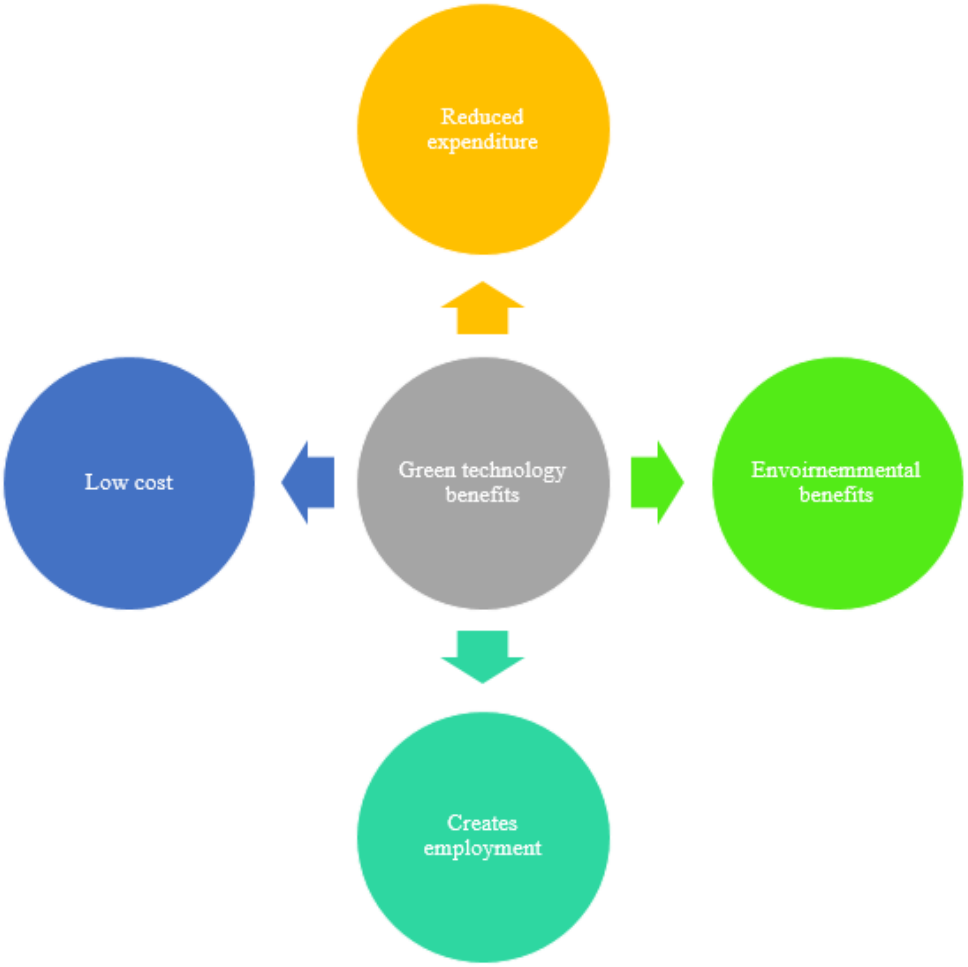

Figure 1: Illustrates the major benefits of the green technology.

4. CONCLUSION

This paper solely focuses on several aspects of Green technology. It discusses several types of green technology along with numerous green technology products. It also discusses several applications of green technology including solar panels, solar array, reusable water bottles, solar water heater, wind generator, house insulation, etc. This also explain several goals of green technology. It can be inferred that, in today's world, green technology is a requirement in order to attain environmental sustainability and to live a sustainable existence. As a result, developing an environmentally sustainable and economical public transportation system is no longer an issue of choice, but rather a need. Green technology, with proper study and

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development, can tackle this problem. Because conventional technology poses a threat to the environment's long-term viability. Although certain obstacles stand in the way of its implementation, if we consider the long-term implications, future generations will undoubtedly benefit. We can also save part of our limited energy resources by utilising green technologies. Because of the inadequacies of India's public transportation infrastructure, demand for private transportation is surging. As green technology is completely eco-friendly and is helpful in solving several real-life problems, it has higher chances of getting implemented in future thereby increasing its future scope.

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