

Prospects and Limitations of Green Technology:

A Study in the Perspective of Bangalore City

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Abstract

The environment is impacted by green technology, also known as sustainable technology. It is created by combining recycling, renewable resources, safety concerns, reducing, and reusing. Green technology protects the environment by combining science and technology. Clean technology is referred to as such because it aids in the balancing of the ecosystem. Companies nowadays consume more energy than is required, causing pollution in the environment.

Like, Bangalore is one of India's fastest growing cities, dubbed the "Silicon Valley of India" for heralding and spearheading the country's Information Technology based industries' growth. It has taken the lead in service-based industries since the advent and growth of the IT industry, fueling significant economic and spatial growth. Bangalore has developed into a cosmopolitan city that draws residents and visitors from all over the world. Green technology, also known as environmentally friendly technology, is being used in Bangalore. Technology assists in the development of technology while minimizing environmental impact. Through it have various limitations. Green Technology seeks expensive renewable and biodegradable materials. Many people are unaware of the green harvests and the customs associated with them. Most people are hesitant to pay a premium for environmentally friendly products. The cost of water conductivity technology is also exorbitant.

Administrators and professionals must use a green building model that is appropriate for their situation. Global environmental issues have forced society to reconsider its development strategy and redefine the concept of sustainable development. Environmentally friendly technologies are indeed critical for long-term development. Several green initiatives are being implemented in order to preserve and improve environmental quality, which may flourish in a future resource-efficient and sustainable-thinking society. The primary goal of green technology is to reduce

greenhouse gas emissions and slow global warming (GHG). Green energy is generated by sunlight, rain, tides, wind, and plants; it is renewable. As pollution levels in Bangalore have increased, the primary goal of green technology is to slow global warming and reduce greenhouse gases (GHG). Green energy is generated by sunlight, rain, tides, wind, and plants; it is renewable.

We have compiled a list of the major factors impeding Green Technology prospects in the IT hub, as well as their limitations, growth opportunities, and potential challenges, in this paper on Green Technology Prospects and Limitations from the Perspective of Bangalore, which has aided us in reaching a conclusion.

Keyword:- Bangalore, Green Technologies, Environmental Performance, Sustainability.



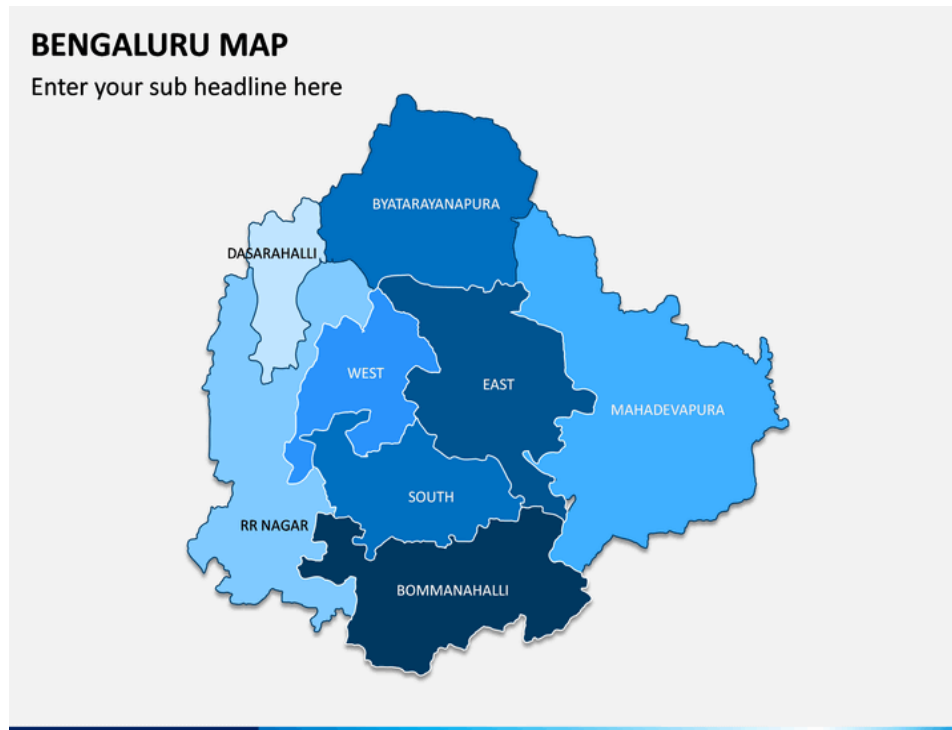
1. Hypothesis

This analytical study on the transition of Prospects and Limitations of Green Technology in Bangalore is done to categorize the areas of improvement and rectifications of green technologies that are currently struggling in Bangalore under coercive circumstances. The paper investigates and presents the current prospects and limitations of green technology in Silicon Valley's "Bangalore."

2. Introduction

Bangalore, the capital of India's southern federal state of Karnataka, is a typical developing-country metropolis. Bangalore, India's fastest growing and industrializing conurbation has an estimated population of 10 million and above people and is one of the largest cities in the country. The dependable local infrastructure and convenient connections to other cities have

encouraged the establishment of large corporations. As industrialization progressed, the amount of non-biodegradable or even hazardous compounds in waste increased. It is estimated that Bangalore alone generates about 125 tonnes of e-waste per year, with that figure expected to rise to 147 tons per year in the coming days, and the city's average plastic usage is approximately 16 kg per person per month. Karnataka's government is implementing green technologies to reduce pollution. Governments, businesses, and industries all over the world have been looking for ways to reduce waste.



Green technology employs three mantras for environmental improvement: reduce, reuse, and recycle. One of the advantages of green technology is that it has a low environmental impact. It reduces toxic gas emissions in the environment and is used to conserve natural resources. Green technology consumes less energy than traditional technology. Examples of green technology used by the Karnataka government in Silicon Valley include:

- *Energy*
- *Construction that is environmentally friendly.*
- *Green building*
- *Green chemistry*

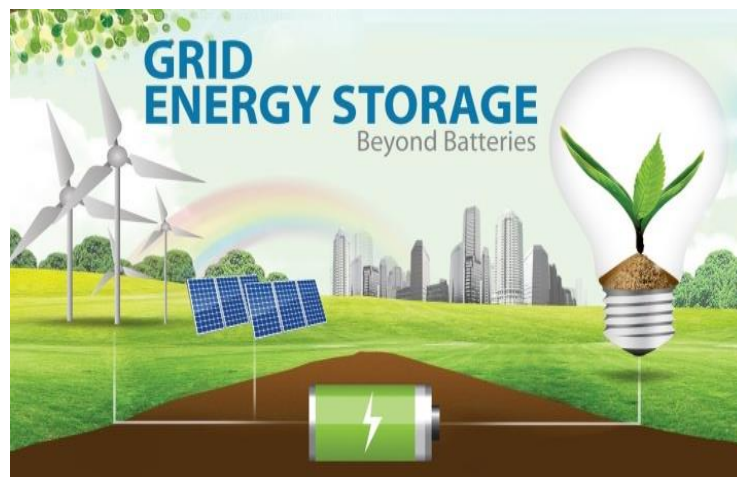
- *Nanotechnology that is environmentally friendly*

3. Literature review

3.1. Green Technology

Green technology is the development and use of products, equipment, and systems that aid in the preservation of the natural environment and its resources. It can also be called "environmental technology" or "clean technology." It lessens and minimizes the negative impact of human activities by lowering CO₂ emissions or making products more biodegradable. Its goal is to contribute to the long-term viability of the environment. The term "green technology" first appeared in the last 20 years. Green technology is technology that is friendly to the environment. Such technology has been developed and is being used in a way that is not harmful to the environment or depletes natural resources. The central idea is to create new technologies that do not deplete natural resources. As a result, people, species, and the overall health of our planet should suffer less harm. Bangalore administration employs a variety of renewable energy sources that are currently popular.

Energy storage: Technology is expected to improve further, making its use more feasible and affordable. Storage is expected to be a key component of all future energy technologies.



Micro grids and artificial intelligence:

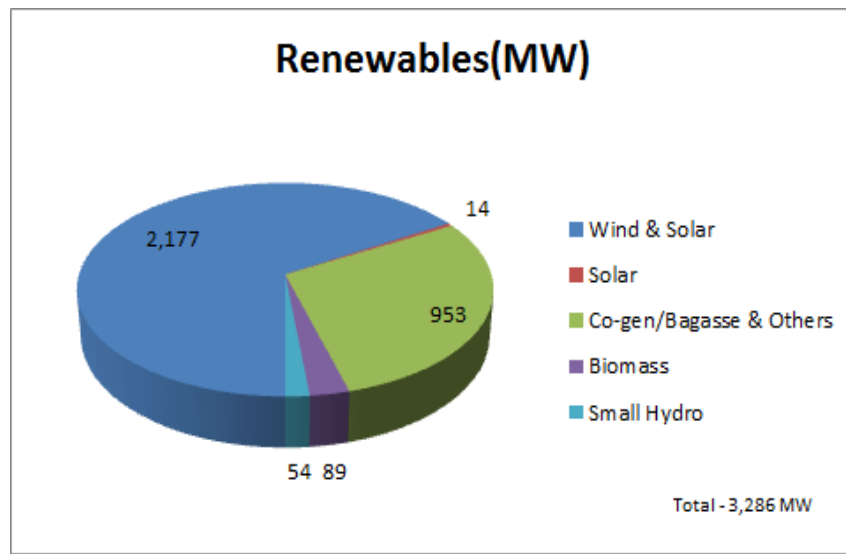
Using Artificial Intelligence (AI) machine learning capabilities with micro grid controllers allows for continuous operation adaptation and improvement.



The Internet of Things and Energy Block-chain: The combination of block-chain's distributed ledger technology and the everyday devices we use to receive and transmit information, now known as the Internet of Things (IoT), has the potential to have a significant impact on energy.

Solar and wind energy are already more efficient and cost-effective than traditional energy sources, and evolving technologies will continue to lower their costs and improve their performance.





3.2. Importance of Green Technology

Bangalore's daily waste production of around 4,500 tonnes generates a significant amount of waste that must be collected, as well as a variety of small-scale recycling activities that go along with it. As a result, this research has been conducted on the recycling sector and green technology used in Bangalore, as well as its significance and limitations.

Over the last two decades, green technologies have received a lot of attention around the world, owing primarily to rising demand for more efficient and sustainable resource use. These demands emphasize the importance of developing environmentally friendly technological innovations and responsible practices in order to address the challenges posed by resources and environmental over-exploitation.

The significance of green technology, including its ability to promote the green industry has to be prioritized. There is a major environmental savior because of green technology. Prior to the use of green technology, industries were causing environmental damage; however, the usage of green technology has diminished environmental damage. Green technology is a step forward in the evolution of green business. Green technology serves as the strategic axis of green growth. Green technology contributes to the reduction of greenhouse gas emissions. It is the country's new and innovative source of progress.

The importance of Green Technology



3.3. Green Technology's Objectives



Green technology seeks to accomplish the following goals:

- *Rethinking*: - The goal of rethinking is to consider changing production patterns so that products can be reclaimed or reused.
- *Recycling*: - It is the process of repurposing waste materials. It is a technique for removing waste that can be used to conserve natural resources.

- *Renewing*: - It is the process of conserving natural resources by utilizing renewable resources. Refurbished items are those that can be used multiple times.
- *Reducing*: - Waste that cannot be reused, such as electronics that are no longer functional, is reduced.
- *Responsibility*: - Green technology accepts responsibility for preserving nature's beauty by avoiding environmental harm.

3.4. Limitations of Green Technology

Making efforts to improve energy efficiency or reduce pollution produced by your home, business, and general living habits are examples of green processes and technology. The primary goal of these processes and technology is to reduce the potential negative impact on the environment that energy consumption and pollution can have. While environmentally friendly living is a desirable goal, there are a number of potential drawbacks to Green processes and technology, including: high implementation costs, a lack of information, no known alternative chemical or raw material inputs, no known alternative process technology, uncertainty about performance impacts, and a lack of human resources and skills.

- Initial cost
- Inadequate Saving
- Completion
- Marginal Cost

3.5. A Case Study of Bangalore

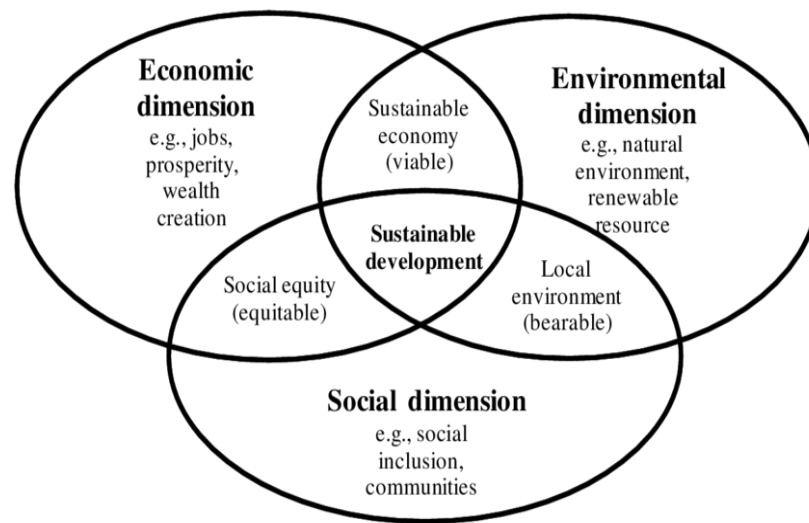
Bangalore was once known as the "garden city" because of its clean air and beautiful parks, which were undoubtedly among the reasons it became Asia's IT hub. It has now reached a tipping point in which spontaneous development threatens traditional urban amenities. Bangalore's unsustainable environmental trends are exacerbated by the new mobility pattern and increasing congestion. The government has put in place a number of green technology-based models.

- *TRANUS*, "transport–land use" integrated model:-
The goal of this study is to assess the effects of various urban policy options on energy consumption and CO₂ emissions associated with urban transportation. It is difficult to predict the empirical impacts of various combinations of Transportation and land use policies. Second, a method for quantifying the results in terms of energy consumption

and GHG emissions is required. Several methods are used to accomplish this, with two distinct methods defined: "stated preference" and "revealed preference."

- Bangalore's hotel industry has shown its commitment to sustainability by incorporating green practices into its daily operations. In the hospitality industry, sustainability is concerned with incorporating sustainability into operations and focusing on practices such as energy conservation, renewable energy use, and waste recycling. Customers' brand loyalty can be increased by utilizing sustainability as a resource. With the help of sustainability indicators, consumer attitudes and perceptions can be improved even further.
- For a long time, biomass energy has been regarded as an important component of a tropical country's energy strategy, such as India's. However, as potential energy sources, energy planners' attention is primarily focused on firewood and agricultural residues. Bio-energy has been studied as a method of converting biomass into high-quality fuels. Biogas and producer gas are preferred as gaseous fuels.
- *Green technology's business objectives:*
 - a) Sustainability Goals
 - b) Product Life Cycle Goals
 - c) Product Efficiency Goal
 - d) Closed-Loop Innovation
- *Greenability vs. Sustainability:-*

According to the United Nations, sustainability is commonly viewed through three lenses: social, economic, and environmental.



Sustainability Dimensions

4. Objective

As a result of the information technology boom over the last 15 years, Bangalore has undergone profound economic, social, and spatial transformations (IT). However, the city's management capacity is jeopardized by the magnitude and speed of these transformations. The long-term viability of development, particularly its environmental component, is under threat. Rapid demographic growth and urban sprawl are putting strain on the city's dense and radial-concentric structure, which is at risk of becoming congested and unmanageable, leaving little room for new developments and Green technological advancements to take root. It has some promising prospects but also some drawbacks.

5. Methodology Design

As a result, information, statistical records, and data are gathered from authenticated verified official portals, research/survey/journal references in this field, opinion polls, and review reports as formally published by affiliated agencies/institutions/functioning bodies/research organizations. Data and information are gathered over the course of the current situation. Data was gathered through primary and secondary sources. Secondary data sources included new papers, magazines, articles, and books, while primary data sources included a Google form. The credibility and methodology stated in those information sources are used to confirm the reliability of these data/information, and they are thoroughly checked to ensure there are no contradictory or misleading facts that could harm social/economic or other platforms.

6. Green Technology Adoption Obstacles

It is typically more expensive than the technology it seeks to replace because it considers the environmental costs that have been externalized in many traditional manufacturing processes. This is a brand-new technology with a lot of unanswered questions. Furthermore, because of development and training costs, it is more expensive than other established technologies. Supporting infrastructure, technological readiness, human resource capabilities, and geographic factors all have an impact on this technology's perceived profitability. Other factors may stymie or slow the adoption and spread of these technologies.

7. Conclusion

By utilizing Green technology, we help to promote an eco-friendly and domestic environment, as well as our own well-being, by lowering costs, reducing waste, and conserving energy. Green technology includes not only green computing but also focuses on the mechanisms used in computers. Green technology addresses the issue of global warming correctly. At the moment, every company is focusing on the concept of green IT. Green technology contributes to significant energy savings, as well as a reduction in CO₂ and CFC production, all of which contribute to environmental protection. The green economy has the potential to achieve sustainable development and eliminate poverty on a massive scale. Sustainability can be implemented using simple technologies without jeopardizing the hotel's luxury or standards. As a result, the technology industries are adapting in terms of environmental sustainability.

8. Recommendations and suggestions

As we know, prior to the implementation of green technology, there were numerous complications such as global warming, energy shortages, pollution, and other environmental issues. However, there has been a change in the environment as well as in human life since we began using green technology.

It is now up to us to decide how we view green technology; if we support green IT, there will be a significant moral shift in society. Green technology aids in the integration of fossil fuels and renewable energy from the environment, thereby reducing environmental impacts. Green electricity is the most recent and valuable type of renewable energy. Green technology helps to reduce toxic gas emissions. It also has a chain reaction in terms of waste reduction. As the distribution of electric and fuel cell vehicles expands rapidly, it is expected that both electricity and hydrogen will become future fuels. Green technology employs renewable energy sources such as geothermal energy, rain, wind, tides, algae, and plants to reduce environmental global warming. We can protect natural resources from being harmed by toxic gases and global warming by conserving energy. Using green products that are free of ozone depletion and toxic compounds can help to protect the environment.

Establishing these facilities also necessitates a significant amount of land, which may necessitate a reduction in farmland, which explains why many people are concerned if more wind turbines are required. Another disadvantage is that many green energy sources are only available in certain parts of the world.

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