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Role of Green Technology to Achieve Sustainable Development

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Abstract: *Global environmental challenges have compelled society to reconsider its methods of growth and establish the idea of sustainable development. The adoption of new environmentally friendly technology is undoubtedly essential for achieving sustainable growth. Numerous green efforts are being implemented to preserve and enhance the environment's potential to thrive in the new resource-efficient and sustainable civilization of the future. There is hope for global action in the application of science and technology to environmental concerns. This hope is stimulated by the urgency of current environmental issues, the newly discovered recognition of shared environmental interests, and the fundamental role that science and technology, and specifically green technologies, play in identifying and addressing environmental threats. This research aims to find out role of green technologies to achieve sustainable development. This research is conducted in two ways primary and secondary. The primary information was collected by a questionnaire survey through google form, and same was used to analyse it and the secondary information was collected by referring various research articles and blogs. This study recommends needs for selecting green technology to achieve sustainable development. In conclusion it is inferred that the green technologies improve the standards of livings without impacting environment which leads to achieve sustainability.*

Keywords: Green Technology, Sustainable Development, Benefits of Green Technology, Energy Efficiency, Environment Protection

I. INTRODUCTION

The value of green technology is something we learn more about every day. But are we all familiar with green technology? Green technology, sometimes known as eco-technology, it is also known as sustainable technology or environmental technology. It incorporates a variety of constantly expanding systems for producing energy as well as non-toxic cleaning solutions. It takes into account both a thing's immediate and long-term effects on the environment. Due to its emphasis on energy efficiency, health and safety issues, recycling, renewable resources, and many other factors, green technology is ecologically friendlyby definition.

Experts agree that humans need to address a number of challenges in order to attain sustainability on our world, including bad energy policy, climate change, deforestation, soil degradation, and excessive resource consumption. In such kind of situation if we opt for Green Technologies, it will play's vital role in order to achieve sustainability.

In order to achieve sustainability through Green Technology, green technology policy should be based on four main things:

- Environment: Protect the environment and reduce any negative effects.
- Energy: Strive towards energy independence and encourage effective use.
- Economy: Use technology to advance the country's economic progress.
- Social: Enhance everyone's quality of life.

1.1 Green Technology

A wide word and area of new, creative ways to introduce environmentally beneficial improvements into daily life is known as "green technology" (GT). It is made and utilised in a way that protects the environment and natural resources. It serves as a substitute for fossil fuels and shows less harm to the health of people, animals, and plants, as well as less

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harm to the environment. The quantity of waste and pollution produced during manufacturing and consumption is intended to be reduced through the use of green technology. It is also known as clean technology and environmental technology. Although it can be challenging to pinpoint exactly which fields fall under the scope of green technology, it is safe to state that "Green Technology is the development and application of products, equipment, and systems used to conserve the natural environment and resources, which minimises and reduces the adverse effects of human activities." The requirements of society should be met by this technology in ways that won't harm or deplete natural resources in the long run. Green Technology may be summed up as technology that satisfies current requirements while not interfering with the potential of future generations to fulfil their own needs.

1.2 Sustainable Development

Currently, there are several definitions of sustainable development. The majority of definitions place a strong emphasis on the necessity of making choices that take into account the connection between economic growth and its effects on the environment, economy, and society.

One of the most frequently cited definitions of sustainable development is the definition contained in the report by G.Kh. Brundtland, in which sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [1][3].

Another definition of the concept of sustainable development is "Caring for the Earth", where development sustainability is understood as an approach aimed at "improving the quality of human life during life within the carrying capacity of supporting systems" [2][3]. Sustainable development entails using limited resource and having an effect on the environment in a way that doesn't harm them or make them worse, and that also doesn't degrade their significance to future generations.

1.3 Benefits of Green Technology

The phrase "Green Technology" refers to a broad variety of methods and techniques that may be applied to reduce the adverse effects on the environment. Green technology lowers costs by enhancing product design, reducing waste, reducing our carbon footprint, and boosting company efficiency. It also generates new employment. Green technology increases our quality of life while reducing its negative effects on the environment and expenses compared to older technologies. There are various benefits of Green Technology as follows:

A. Reduce Energy Consumption

By focusing on energy efficiency throughout every stage of the product lifecycle, green technology aids in the reduction of energy usage. Efficiency in manufacturing equipment will lower the energy required, and sustainable product design will be used to reduce the energy consumption of the completed product, resulting in savings for both the company and the customer. Moreover, green technology, such as wind turbines, solar photovoltaic systems, and hydropower, is helpful in lowering the usage of conventional non-renewable energy sources, such as fossil fuels.

B. Recycling Technology Reduces Waste

The advantage of recycling is that it converts trash into a resource. It is a fantastic green technology that reduces waste while also enabling the recovery of raw materials that can be utilised to produce new goods. Recovered materials assist to protect our planet's natural resources by lowering the volume of solid waste that ends up in landfills and, concurrently, by lowering the need for ongoing raw material extraction.

C. Reduces Water Consumption

On our earth, water is a vital resource, thus it is crucial to avoid wasting it. Large amounts of water are used in both domestic and industrial activities. Water use may be decreased with the use of green technologies. This may be accomplished by utilising green technology to enhance product design or add smart functionality, allowing water to be conserved by using just what is absolutely essential for the activity.

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D. Reduces Air Pollution

The two main causes of air pollution in modern cities are traffic and polluting industry. Hybrid and electric cars are among the green technologies that are increasingly being employed and rewarded for lowering air pollution in urban areas.

E. Reduces Overall Carbon Foot Print:

Green energy will be a major factor in assisting us in lowering our carbon footprint. This includes recycling and using natural resources more wisely. For this, several innovative green technologies, such as biogas and carbon capture and storage, are being developed.

The major benefits of green technology are of 3 types: Environmental, Economic, and Social. Those are helping to achieve sustainable development by acting on all three pillars of sustainability.

1. Environmental Benefits

Green technology improves environmental sustainability by lowering waste and improving the effectiveness of the design and manufacturing processes. Green technology benefits the environment in a number of ways, including through the use of sustainable energy, decreased energy usage, decreased raw material use, recycling, less product maintenance, longer-lasting goods, and more.

2. Financial Benefits

Efficiency gains are what drive green technology's economic advantages. These include things like lower energy costs, a lesser need to buy raw materials for manufacturing, more design and manufacturing efficiency, increased automation, competitive advantages for company's product or service, tax benefits, and more.

3. Social Benefits

Because of the better environmental circumstances and new employment prospects provided by this expanding sector of the economy, society as a whole also benefits from green technology.

More green spaces and sustainable urban planning are also enhancing the urban environment, creating better locations for thriving local economies and strong social networks.

II. RESEARCH METHODOLOGY

In this research, quantitative analysis is used to analyze the data. This research is conducted in two ways primary and secondary. The primary information was collected by a questionnaire survey through google form, and same was used to analyse it and the secondary information was collected by referring various research articles and blogs.

A structured questionnaire is according to a 5-point (Likert-type) scale ranging from 1 to 5 namely Strongly Disagree, Disagree, Neither Disagree nor Agree, Agree and Strongly Agree. Because, the Likert scale makes available more information about the respondents' degree of contribution, it can make available deeper implications of the perception to be surveyed.

Limitation:

Sample data of 41 individuals collected from my colleagues, relatives and friends.

Analysis and Interpretation:

Findings of the research on questionnaire are as follows:

Out of 41 responses 51.2% are female and 48.8% are male respondents.

Among which 82.9% respondents lies between 20-30 years old age group and 17.1% lies between 31-40 years old age group.

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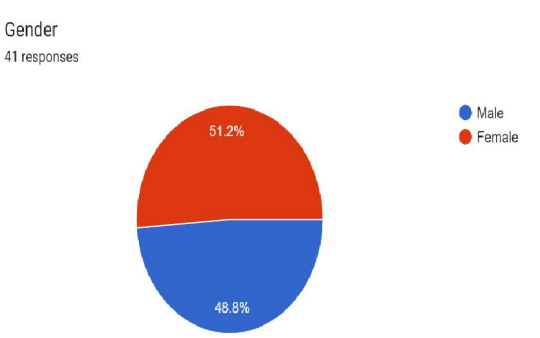
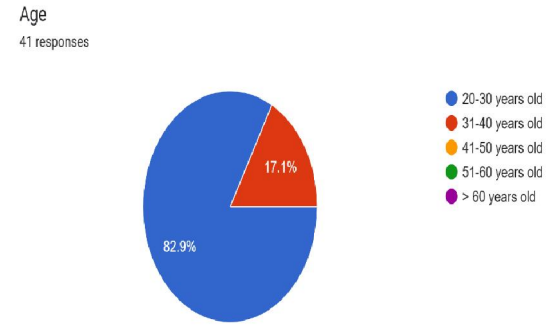
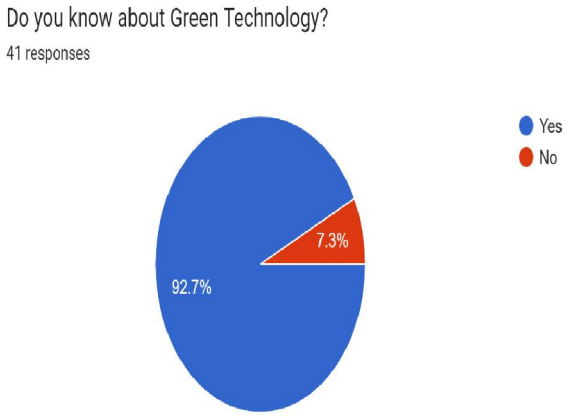
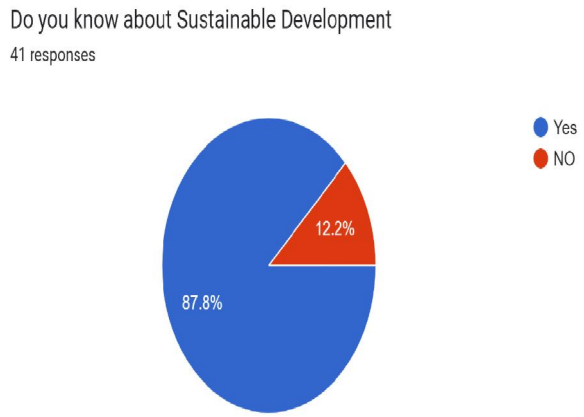




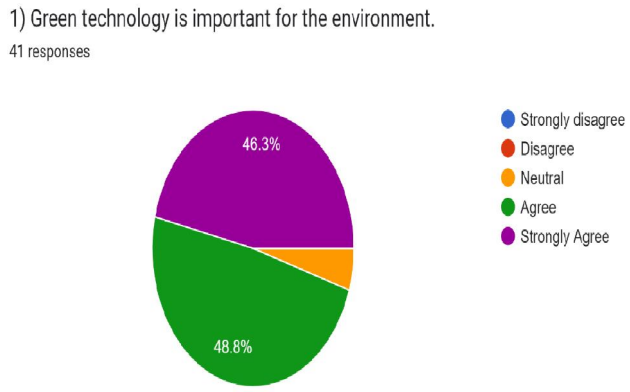
92.7% know about the concept Green Technology and 7.3% don't know about the same.
87.8% know about the concept Sustainable Development and 12.2% don't know about the same.

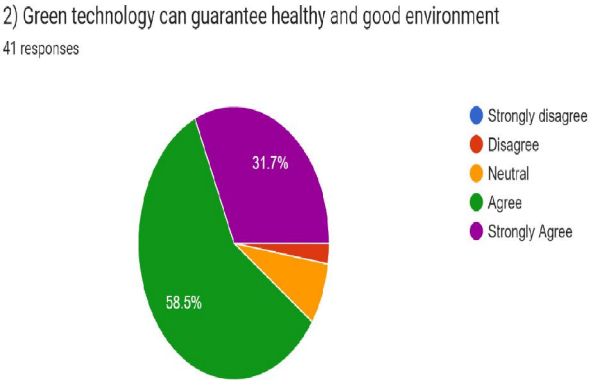




Awareness about Green Technology

In order to get idea about awareness of Green Technology among the people following questions were asked and got respective findings.





1) 48.3% respondents strongly agreed that green technology is important for the environment, 48.8% are agreed with it and 4.9% remains neutral.
2) 31.7% respondents strongly agreed on Green Technology can guarantee healthy and good environment, 58.5% agreed with it while 7.3% remains neutral and 2.4% disagreed with it.

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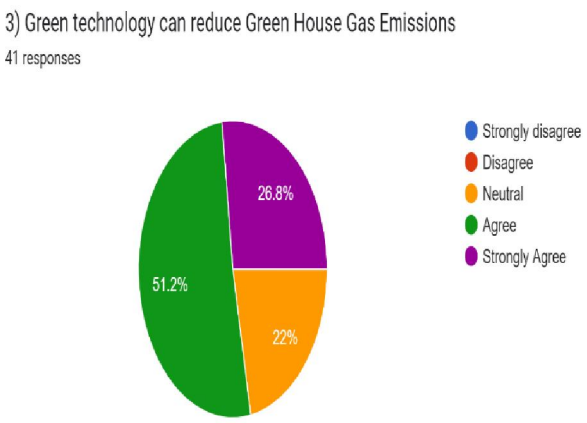
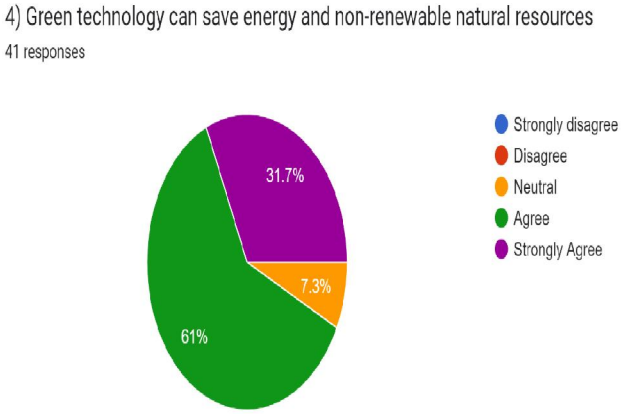
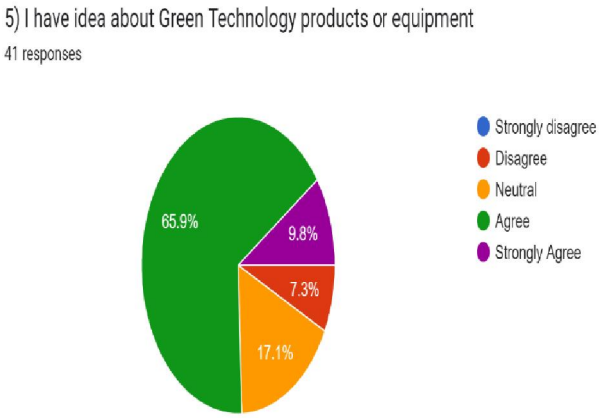
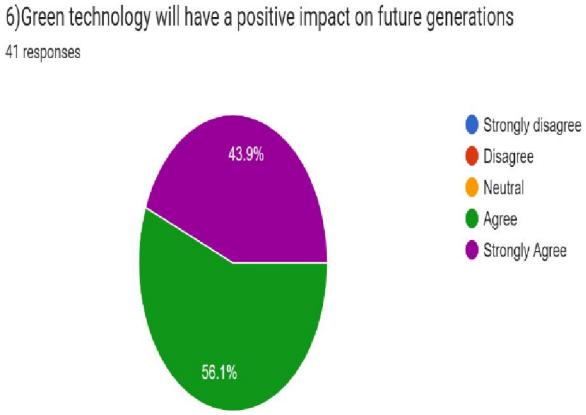




3) 26.8% respondents strongly agreed that Green technology can reduce Green House Gas Emissions51.2% are agreed with it and 22% remains neutral.

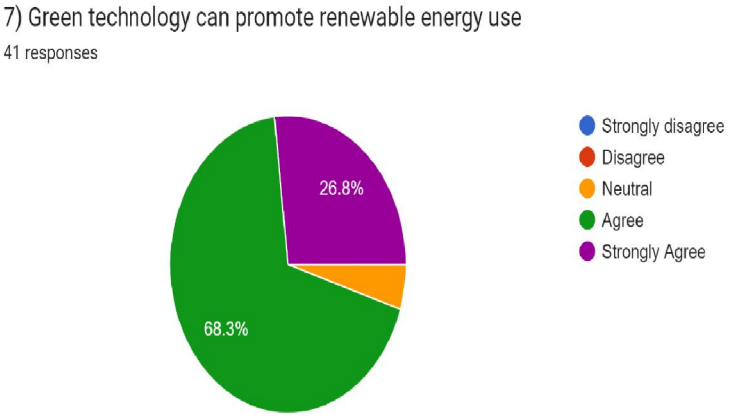
4) 31.7% respondents strongly agreed on Green technology can save energy and non-renewable natural resources, 61% agreed with it while 7.3% remains neutral.





5) 9.8% respondents strongly agreed that "They have idea about Green Technology products or equipment", 65.9% are agreed with it while 17.1% remains neutral and 7.3% disagreed with it.

6) 43.9% respondents strongly agreed that "Green technology will have a positive impact on future generations, 56.1% are agreed with it.



7) 26.8% respondents strongly agreed that "Green technology can promote renewable energy use", 68.3% are agreed with it and 4.9% remains neutral.

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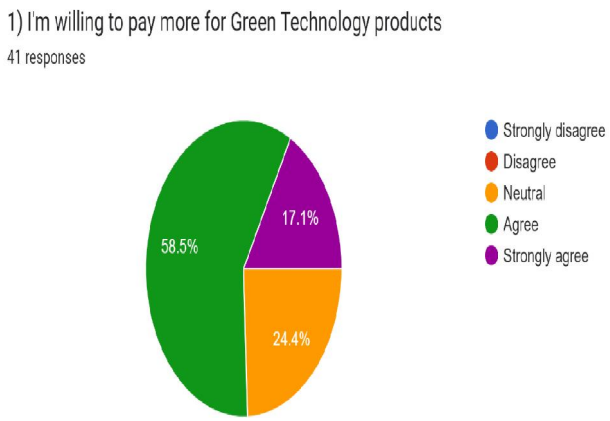
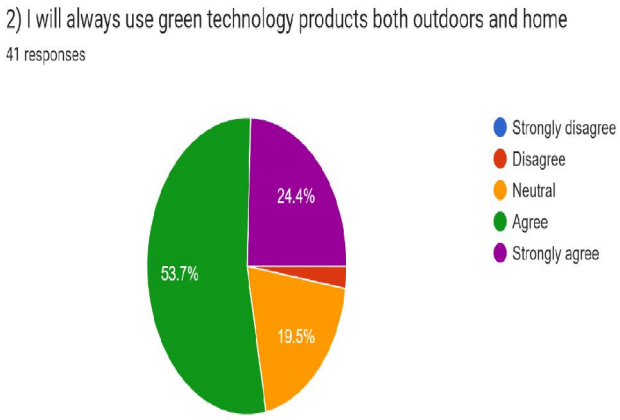
Attitude towards Green Technology and Sustainable Development

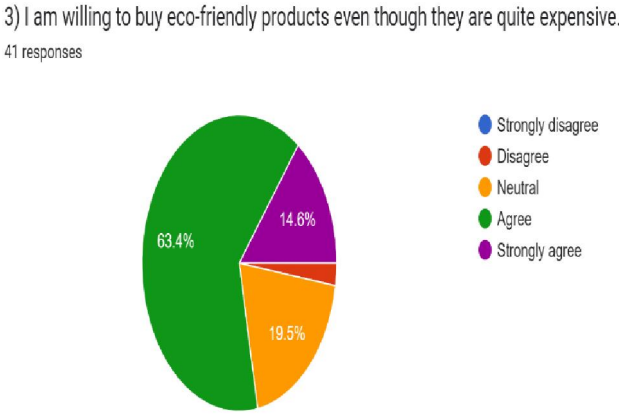
In order to get idea about attitude of people towards Green Technology and Sustainable Development following questions were asked and got respective findings.

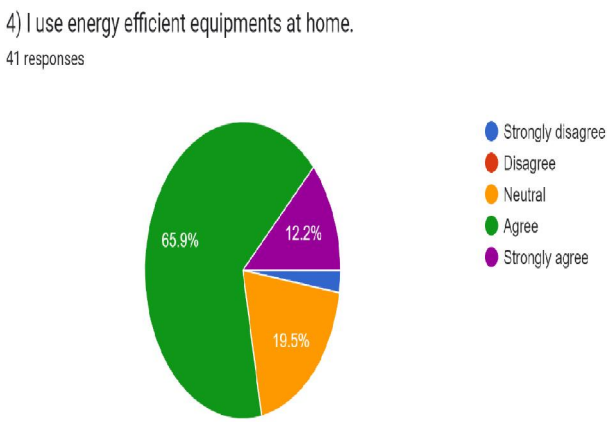




1) 17.1% respondents strongly agreed that "They're willing to pay more for Green Technology products", 58.5% are agreed with it and 24.4% remains neutral.

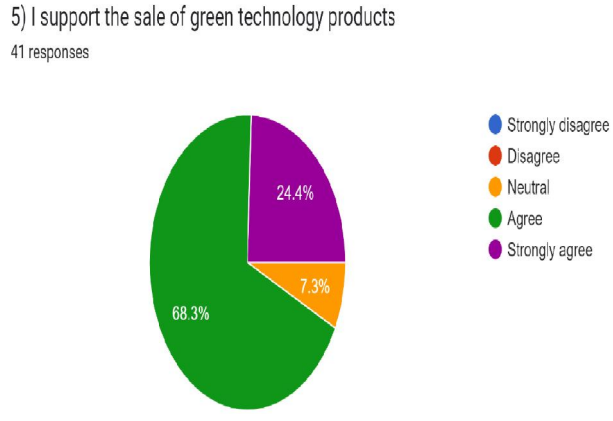
2) 24.4% respondents strongly agreed on "They will always use green technology products both outdoors and home", 53.7% agreed with it while 19.5% remains neutral and 2.4% disagreed with it.

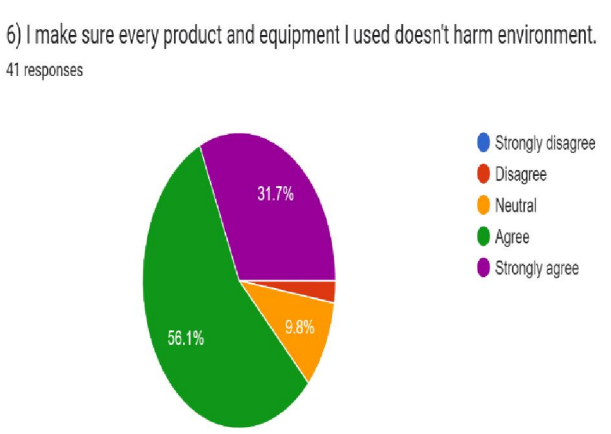




3) 14.6% respondents strongly agreed that 'They are willing to buy eco-friendly products even though they are quite expensive", 63.4% are agreed with it while19.5% remains neutral and 2.4% disagreed with it.

4) 12.2% respondents strongly agreed on "They use energy efficient equipment's at home", 65.9% agreed with it while19.5% remains neutral and 2.4% strongly disagreed with it.





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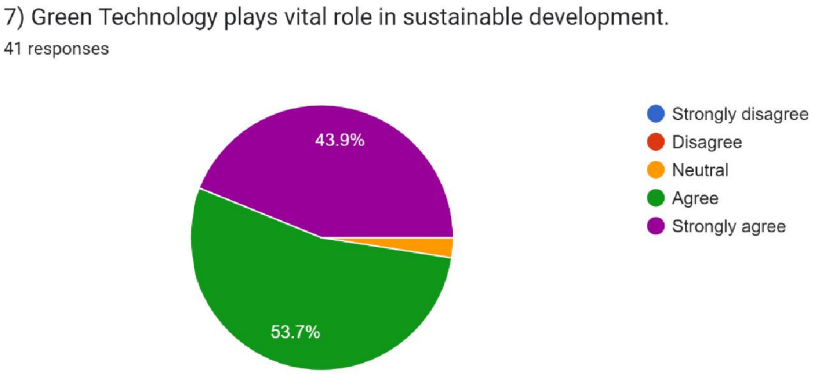
5) 24.4% respondents strongly agreed that "They support the sale of green technology products", 68.3% are agreed with it and 7.3% remains neutral.

6) 31.7% respondents strongly agreed on "They make sure every product and equipment I used doesn't harm environment", 56.1% agreed with it while 9.8% remains neutral and 2.4% disagreed with it.



7) 43.9% respondents strongly agreed that "Green Technology plays vital role in sustainable development", 53.7% are agreed with it and 2.4% remains neutral.

According to above interpretation it is found that youth are aware of Green Technology and its benefits to achieve sustainability. Still some people have neutral thinking about green technology, its equipment's and sustainable development so it is necessary to create awareness among all age groups so that it becomes easy to encourage people towards green technology to achieve sustainability without impacting environmental resources.

III. CONCLUSION

Green technologies lower waste and food generated locally, improve living conditions, and assist to achieve cleaner air in urban areas. In conclusion, it is evident that green technology enables us to utilise renewable resources, save energy, and maintain a clean environment. We can lessen pollution and safeguard the environment by utilising green technologies which leads us to sustainability.

IV. RECOMMENDATION/SUGGESTIONS

To encourage people towards green technology it's necessary to provide some subsidies for the highly expensive green technology based gadgets, products and equipment's or try to manufacture it in cost efficient way so that people can used it on domestic level, business level etc.

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