GREEN BUILDING: PUBLIC PERCEPTION, OPPORTUNITIES AND CHALLENGES IMPLEMENTING IN BANGLADESH.

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It is hereby declared that “GREEN BUILDING: PUBLIC PERCEPTION, OPPORTUNITIES AND CHALLENGES IMPLEMENTING IN BANGLADESH " is the result of our research and effort, except where otherwise acknowledged. This thesis has not been submitted elsewhere for the award of any degree or diploma.

We take full responsibility for the content and originality of the work presented in this thesis.

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Dedicated

to

“People who are working for establishment of green buildings all around the world and making this world a better place for all kinds of living things”

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ABSTRACT

Green building offers a sustainable solution to environmental degradation caused by rapid urbanization and energy-intensive construction practices. Despite increasing climate vulnerability in Bangladesh, the adoption of green building principles remains limited. This study investigates the level of public awareness, identifies potential opportunities, and analyzes the key challenges associated with implementing green buildings in the country.

A mixed-method research design was employed, incorporating literature review, structured surveys, and semi-structured interviews. Data were collected from 418 respondents and were analyzed using SPSS software to derive both descriptive and inferential insights. Findings reveal that while general awareness of green building concepts is growing, substantial knowledge gaps remain, particularly among non-professionals. The study identifies promising opportunities such as growing public interest, government policy drafts, and the availability of sustainable materials.

However, challenges including high initial costs, lack of technical expertise, and weak enforcement of regulations continue to hinder implementation. The study recommends increased stakeholder collaboration, targeted awareness campaigns, and policy reforms to support a smoother transition toward sustainable building practices. These findings contribute to the national discourse on green innovation and provide practical insights for architects, engineers, urban planners, and policymakers in Bangladesh.

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List of Abbreviations

LEED	Leadership in Energy and Environmental Design
USGBC	U.S. Green Building Council
BREEAM	Building Research Establishment Environmental Assessment Method
EDGE	Excellence in Design for Greater Efficiencies
BD+C	LEED for Building Design and Construction
ID+C	LEED for Interior Design and Construction
O+M	LEED for Operations and Maintenance
HVAC	Heating, Ventilation, and Air Conditioning
VOC	Volatile Organic Compounds
PV	Photovoltaic (e.g., solar panels)
CO_2	Carbon Dioxide
BNBC	Bangladesh National Building Code
BGBC	Bangladesh Green Building Council
RMG	Ready-Made Garments
UNFPA	United Nations Population Fund
UNDP	United Nations Development Programme
SREDA	Sustainable and Renewable Energy Development Authority
AAC	Autoclaved Aerated Concrete
FSC	Forest Stewardship Council
IoT	Internet of Things
GRIHA	Green Rating for Integrated Habitat Assessment
IGBC	Indian Green Building Council
EPZ	Export Processing Zone
KVA	Kilovolt-Ampere
SHGC	Solar Heat Gain Coefficient
BDT	Bangladeshi Taka
DPHE	Department of Public Health Engineering
M.Sc.	Master of Science
PhD	Doctor of Philosophy
IHE-Delft	Institute for Water Education, Delft
SU	Sonargaon University
CE	Civil Engineering
CCTV	Closed-Circuit Television
LED	Light Emitting Diode
SDGs	Sustainable Development Goals
ASTM	American Society for Testing and Materials
AASHTO	American Association of State Highway and Transportation Officials
SPSS	Statistical Package for the Social Sciences
R^2	R-squared (statistical measure)

CHAPTER 1

Introduction

1.1 Background and Motivations

The global construction industry is undergoing a significant transformation, driven by the urgent need to address environmental degradation, energy inefficiency and climate change. Buildings account for a large portion of global energy use and greenhouse gas emissions, making the shift toward sustainable or "green" buildings crucial. Green buildings are designed to reduce resource consumption, minimize environmental impacts, and improve human well-being. They use energy-efficient systems, renewable materials, and sustainable technologies to create eco-friendly and cost-effective structures.

In Bangladesh, rapid urbanization, industrial expansion, and a growing population have led to increased construction activities, putting immense pressure on natural resources and urban infrastructure. Cities like Dhaka are experiencing problems such as air pollution, poor waste management, energy shortages, and loss of green space. Although the concept of green building is gaining some attention in Bangladesh, it is still in its early stages. Public perception, economic feasibility, and regulatory frameworks play crucial roles in determining its future growth. This thesis is motivated by the need to explore how green building practices can be effectively introduced and promoted in Bangladesh while understanding the perceptions, challenges, and opportunities in this context.

1.2 History of Green Building

The concept of green building has evolved over centuries, though its formalization as a discipline is relatively recent. Studies by Roodman,D.M.,Lenssen,n.(1995) and Yudelson,J. (2007) highlight that green building history. Here's a brief overview of its history:

Ancient to Pre-Modern Practices

Long before modern sustainability standards, many ancient civilizations incorporated environmentally conscious practices in construction:

- **Ancient Egypt and Mesopotamia** used thick walls and courtyards for natural cooling.
- **Greek and Roman** architecture leveraged solar orientation and thermal mass.
- **Traditional Asian and Middle Eastern** architecture used natural ventilation and shading (e.g., wind catchers, bamboo, earthen walls).

These early examples demonstrate how people historically adapted to their environments using local materials and passive design strategies—principles central to green building today.

20th Century Industrial Era

The rise of industrialization and modern construction techniques in the 20th century led to energy-intensive buildings with less consideration for environmental impact. However, the energy crisis of the 1970s triggered a global reassessment of energy use in buildings, sparking interest in energy efficiency and solar design.

Birth of the Green Building Movement (1990s–2000s)

The modern green building movement formally began in the 1990s with the development of rating systems like:

BREEAM (UK) – 1990

LEED (USA) – launched by the U.S. Green Building Council in 1998

- These systems provided measurable frameworks for sustainable design, construction, and operation of buildings.
- Key focus areas included energy efficiency, water conservation, indoor air quality, and the use of recycled or low-impact materials.

Global Adoption and Innovation (2010s–Present)

- By the 2010s, green building practices had spread globally, supported by government policies, public awareness, and corporate sustainability goals.
- Countries in Asia (e.g., China, India), Africa, and Latin America began adapting green building principles to local contexts.

- Innovations include **net-zero energy buildings, green roofs, smart energy systems, and biophilic design.**

In Bangladesh

Green building is a growing concept, with increasing awareness and early-stage initiatives:

- The Bangladesh Green Building Council was formed under the Institute of Architects Bangladesh.
- Some commercial and institutional buildings in Dhaka and Chattogram have adopted partial green features.
- Policy support, public awareness, and technical training are still in developmental stages.

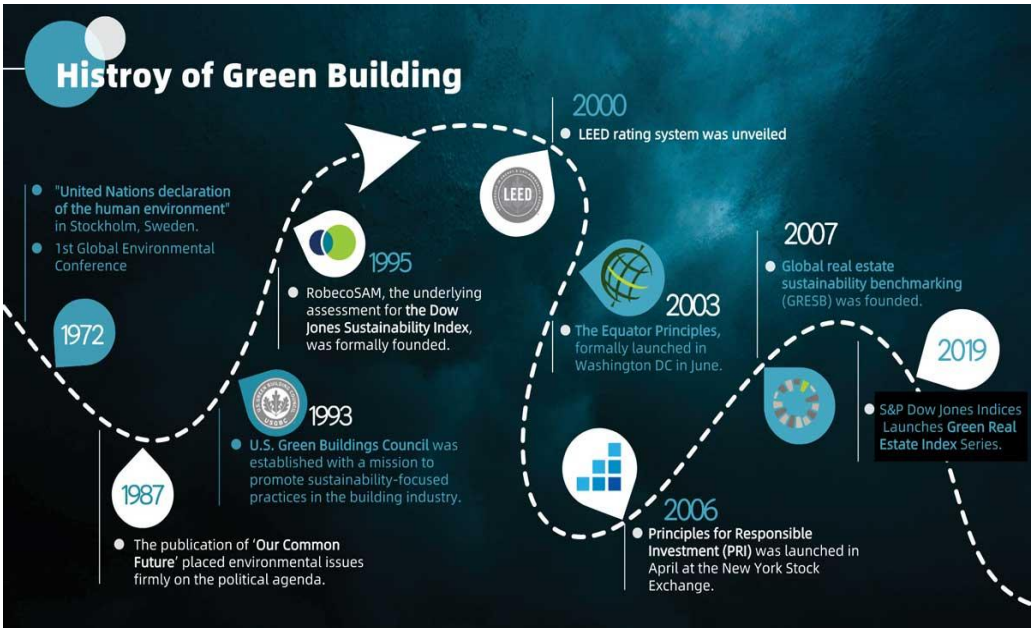


Figure 1.1: Green Building History

Reference : https://www.google.com/greenbuildinghistory (visit:03/05/2025)

1.3 Research Objectives and Overview

The main objective of this thesis is to assess the public perception of green buildings in Bangladesh and to identify the opportunities and challenges involved in their implementation. The study seeks the following research find out:

- To find out the current level of awareness and perception of green building practices among the public in Bangladesh.
- To find out the opportunities exist for promoting green buildings in the local context.
- To find out the key technical, economic, and policy-related challenges to implementing green buildings in Bangladesh.

To address these find out, the research adopts a mixed-method approach, combining literature review, surveys with residents and professionals, and interviews with stakeholders in the construction and environmental sectors.

1.4 Organization of the thesis

This thesis is organized into six chapters:

Chapter 1: Introduction and Objective: Provides the background, objectives, and structure of the study.

Chapter 2: Literature Review: Discusses global and regional developments in green building, including theoretical frameworks and previous studies.

Chapter 3: Methodology: Outlines the research design, data collection tools, and analysis techniques.

Chapter 4: Results and Discussion: Presents the findings from the survey and interviews, analyzing public perception, opportunities, and challenges.

Chapter 5: Conclusions and Future Work: Summarizes key insights, provides recommendations, and outlines future research directions.

CHAPTER 2

Literature Review

2.1 Introduction

Green building, also known as sustainable or environmentally responsible construction, has become a key focus in global efforts to reduce carbon emissions, conserve energy, and promote healthier living environments. The concept has evolved significantly over the past few decades, particularly in developed countries, where institutional frameworks, rating systems (e.g., LEED, BREEAM), and financial incentives have promoted its adoption.

In contrast, the adoption of green building practices in developing countries—including Bangladesh—is still at a nascent stage. Factors such as public awareness, construction cost concerns, policy limitations, and lack of technical expertise hinder large-scale implementation. This literature review explores existing scholarly work and institutional documents to provide a comprehensive understanding of global and local green building contexts. It also highlights key theoretical frameworks, existing knowledge gaps, and areas where further research is required—particularly related to public perception and practical barriers in Bangladesh.

2.1.1 LEED

LEED (Leadership in Energy and Environmental Design) is one of the most widely recognized and adopted green building certification systems in the world. Developed by the U.S. Green Building Council (USGBC) in 1998, LEED provides a framework for designing, constructing, operating, and maintaining sustainable buildings and infrastructure. It emphasizes performance in key areas such as energy efficiency, water use, air quality, materials, and environmental impact.

LEED Certification System

LEED certification evaluates a building based on a points-based system. Projects earn points in several categories:

- Sustainable Sites
- Water Efficiency

- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Innovation in Design
- Regional Priority

Based on the total points earned, a building can achieve one of four LEED certification levels:

- Certified (40–49 points)
- Silver (50–59 points)
- Gold (60–79 points)
- Platinum (80+ points)

LEED Rating Systems

LEED has specialized rating systems for different types of projects, such as:

- LEED for Building Design and Construction (BD+C)
- LEED for Interior Design and Construction (ID+C)
- LEED for Building Operations and Maintenance (O+M)
- LEED for Homes
- LEED for Neighborhood Development

Benefits of LEED Certification

Environmental: Reduces energy and water consumption, greenhouse gas emissions, and environmental degradation.

Economic: Lower operating costs, higher property value, and incentives in some regions.

Health and Wellbeing: Improved indoor air quality, natural lighting, and occupant satisfaction.

Reputation: LEED-certified buildings are seen as innovative, responsible, and future-ready.

LEED in the Context of Bangladesh

In Bangladesh, LEED-certified buildings are still relatively few, primarily seen in export-oriented industrial sectors (e.g., RMG factories) to meet international compliance requirements. However, awareness is growing among architects, engineers, and developers. Institutions like BGMEA and the Bangladesh Green Building Council are advocating for sustainable practices, and some multinational companies have already constructed LEED-certified buildings.

Challenges for LEED Implementation in Bangladesh

- High upfront cost of certification and documentation
- Lack of awareness and technical expertise
- Inadequate government incentives
- Limited availability of sustainable materials

Conclusion

LEED provides a globally accepted standard for sustainability in the built environment. Its adaptation in Bangladesh could significantly contribute to climate resilience, energy efficiency, and sustainable urban development—if supported by strong policy frameworks, education, and local adaptation.



Figure 2.1 : LEED Point Marking

Reference : https://www.google.com/leedcertificate (visit:03.05.2025)

2.1.2 LEED Certified green building in world

The Edge (Amsterdam, Netherlands)

- **LEED Certification:** Platinum (98/110 points – one of the highest)
- **Highlights:** Smart lighting, rainwater harvesting, solar energy, and digital workplace integration.
- **Use:** Office building (headquarters of Deloitte)



Figure 2.2 : The Edge (Amsterdam, Netherlands)

Reference : https://www.google.com/theedge (visit:03.05.2025)

Bullitt Center (Seattle, USA)

- **LEED Certification:** Platinum
- **Highlights:** Net-zero energy, composting toilets, rainwater collection, solar array, and toxic-free materials.
- **Use:** Commercial office space.

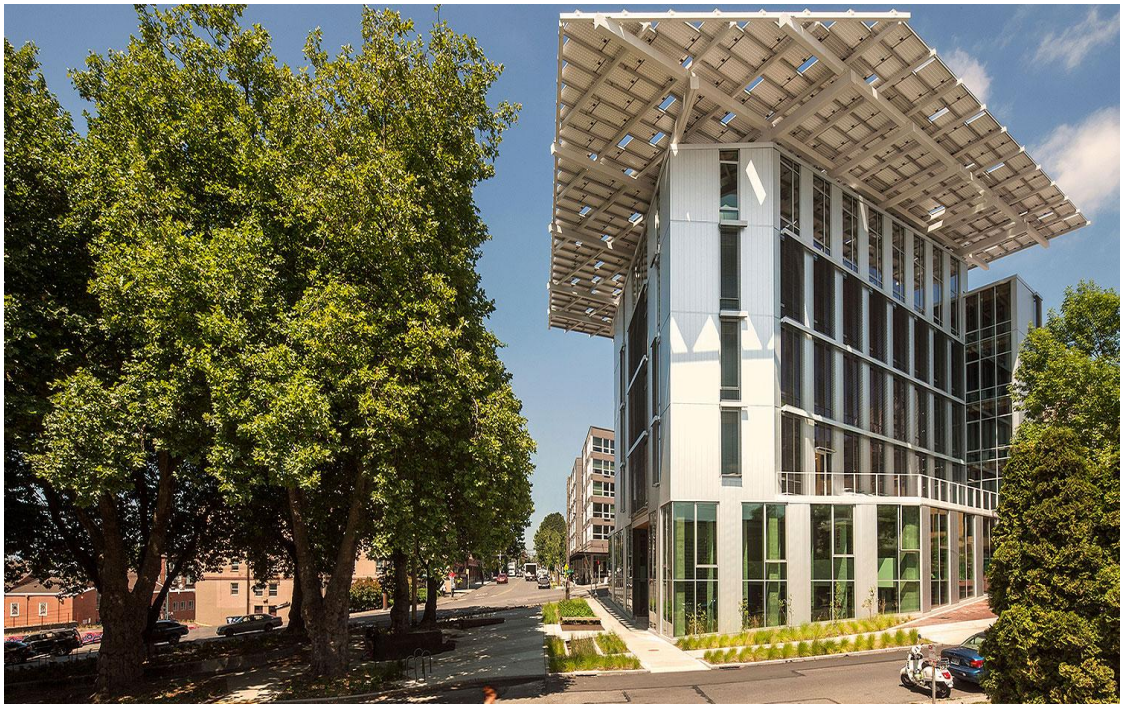


Figure 2.3 : Bullitt Center (Seattle, USA)

Reference : https://www.google.com/bullittcenter (visit:03.05.2025)

PNC Tower (Pittsburgh, USA)

- **LEED Certification:** Platinum
- **Highlights:** Natural ventilation, green roof, double-skin façade, and high-efficiency HVAC systems.
- **Use:** Office headquarters

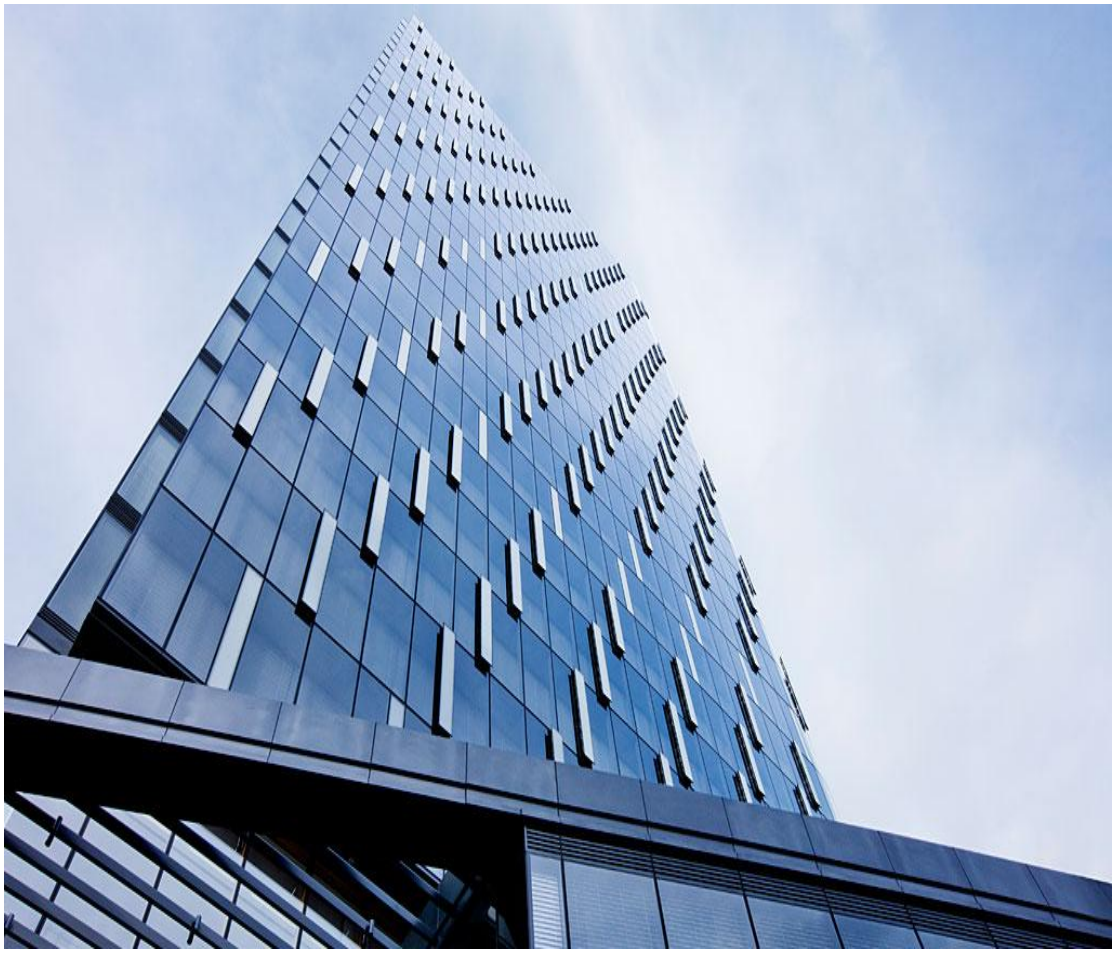


Figure 2.4 : PNC Tower (Pittsburgh, USA)

Reference : https://www.google.com/pnctower (visit:03.05.2025)

Bank of America Tower (New York, USA)

- **LEED Certification:** Platinum
- **Highlights:** Waterless urinals, CO_2 monitoring, greywater recycling, and efficient waste management.
- **Use:** Skyscraper with office space.

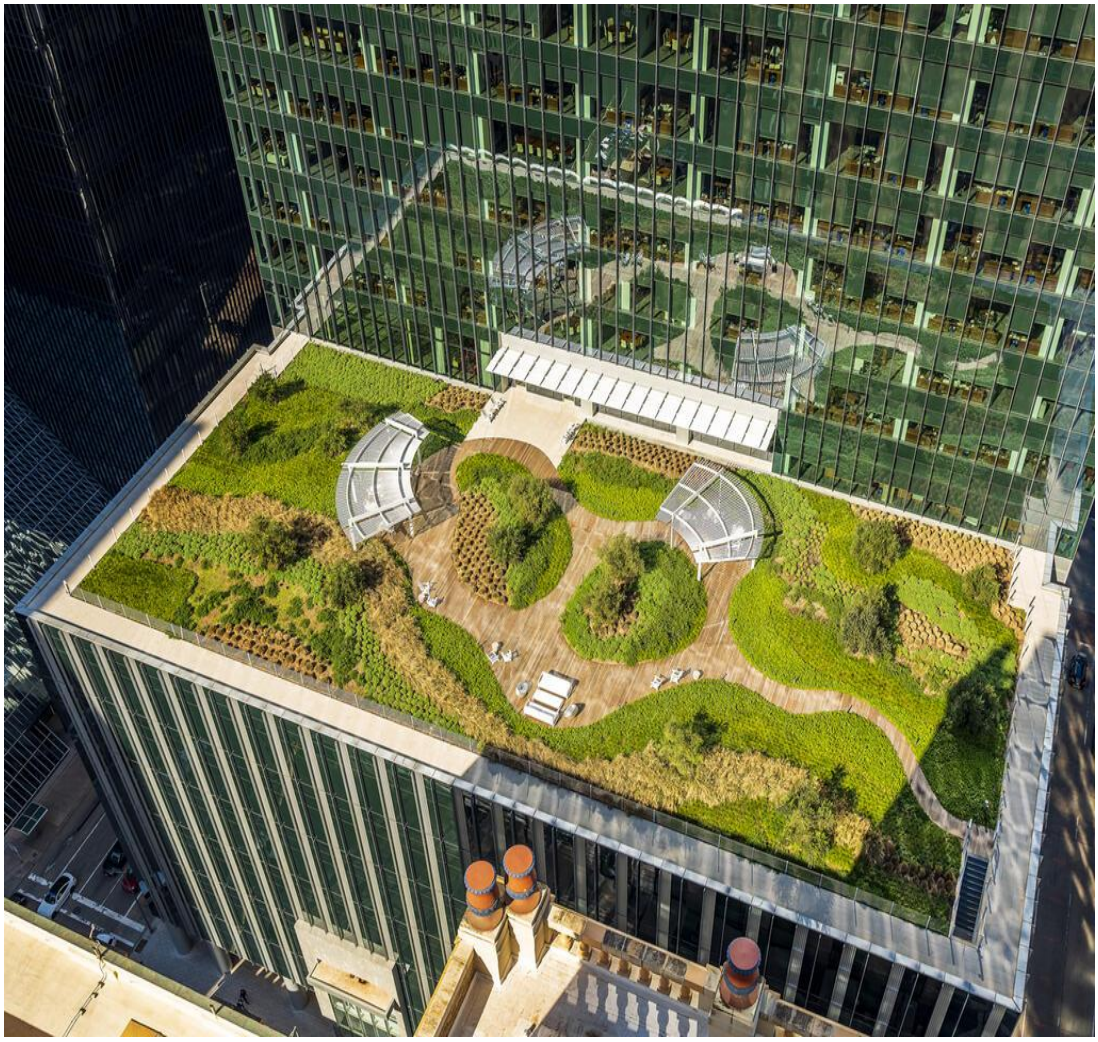


Figure 2.5 : Bank of America Tower (New York, USA)

Reference : https://www.google.com/bankofameriacatower (visit:03.05.2025)

Vancouver Convention Centre (Vancouver, Canada)

- **LEED Certification:** Platinum
- **Highlights:** Living roof, on-site water treatment, seawater heating and cooling, and daylight maximization.
- **Use:** Public convention center



Figure 2.6 : Vancouver Convention Centre (Vancouver, Canada)

Reference: https://www.google.com/vancouverconventioncentre (visit :03/05/2025)

2.1.3 LEED Certified green building in Bangladesh

Consist Apparels Ltd:

- Location: Bawpara, Kaultiya, Gajipur.
- Certification: LEED Platinum
- Score: 84/100
- Sector: Garment Manufacturing
- Highlights: Recognized for its sustainable practices in the apparel.



Figure 2.7 : Consist Apparels Ltd

Reference :https://www.google.com/consistapparels (visit :03/05/2025)

Simple tree Attalika

- Location: Dhaka
- Certification: LEED Gold
- Size: 130000 sqft
- Use: Commercial office space
- Features: Incorporates energy-efficient systems and design elements.



Figure 2.8 : Simple tree Attalika

Reference : https://www.google.com/simlpletreeattalika (visit :03/05/2025)

2.2 Benefits of Green Building

Green buildings are designed to minimize environmental impact while enhancing the health and comfort of occupants. Studies Sayigh, A. (Ed.). (2019) The benefits can be categorized into environmental, economic, health & social, and operational advantages.

2.2.1 Environmental Benefits

Reduced carbon emissions: Green buildings significantly lower greenhouse gas emissions through energy-efficient systems and renewable energy use.

Efficient resource use: They use water, energy, and materials more efficiently than traditional buildings.

Waste reduction: Use of recycled, low-impact, and locally sourced materials helps reduce construction and operational waste.

Preservation of natural habitat: Sustainable site planning helps protect biodiversity and ecosystems.

2.2.2 Economic Benefits

Lower operating costs: Energy and water-efficient technologies reduce utility bills over the building's life cycle.

Increased property value: LEED and other green certifications enhance market appeal and resale value.

Higher rental rates and occupancy: Tenants often prefer certified green spaces due to lower utility costs and healthier environments.

Incentives and subsidies: In some regions, green buildings receive tax benefits, expedited permits, and other incentives.

2.2.3 Health and Social Benefits

Improved indoor air quality: Use of low-VOC materials, better ventilation, and air filtration systems contribute to healthier indoor environments.

Enhanced occupant productivity: better lighting, thermal comfort, and acoustic performance can lead to higher concentration and lower absenteeism.

Psychological benefits: Access to natural light, views of greenery, and biophilic design elements can reduce stress and improve mental well-being.

2.2.4 Operational Benefits

Higher performance and durability: Green buildings often have better structural quality, efficient systems, and easier maintenance.

Smart systems integration: Many green buildings use intelligent energy management and automation systems.

Resilience to climate impacts: They are designed to withstand extreme weather and reduce urban heat island effects.

2.2.5 Global and Community Benefits

Contribution to climate goals: Green buildings support national and global carbon reduction targets.

Encourages innovation: Promotes the use of modern construction techniques, materials, and renewable energy systems.

Job creation: Growth in green building leads to demand for skilled professionals, creating employment opportunities.

2.3 Methods of Green Building

Green building methods are a set of strategies applied throughout the life cycle of a building to minimize environmental impact, enhance energy efficiency, and ensure the health and comfort of occupants. The following methods are essential in the context of sustainable construction:

2.3.1 Site Selection and Planning

Environmentally Responsible Location: Choose sites near public transportation and existing infrastructure to reduce environmental disruption.

Preservation of Natural Features: Conserve existing topography, vegetation, and water bodies.

Storm water Management: Utilize permeable pavements, bioswales, and rain gardens to reduce runoff.

2.3.2 Sustainable Design

Passive Solar Design: Orient buildings to optimize solar gain in winter and minimize heat in summer.

Daylighting: Integrate windows, skylights, and reflective surfaces to increase natural light.

Natural Ventilation: Design cross-ventilation paths to enhance indoor air flow without mechanical systems.

2.3.3 Energy Efficiency

Insulation and Glazing: Install high R-value insulation and double/triple-glazed windows.

Energy-Efficient Systems: Use high-efficiency HVAC, LED lighting, and Energy Star-rated appliances.

Renewable Energy: Incorporate solar PV panels, solar water heaters, or wind turbines.

Smart Building Technologies: Employ automation systems for lighting, HVAC, and energy use monitoring.

2.3.4 Water Efficiency

Low-Flow Fixtures: Install water-efficient faucets, toilets, and showerheads.

Rainwater Harvesting: Collect and store rainwater for irrigation or toilet flushing.

Greywater Recycling: Reuse wastewater from sinks and showers for non-potable applications.

2.3.5 Sustainable Materials

Local and Renewable Resources: Use locally available materials and rapidly renewable options like bamboo.

Recycled Content: Employ materials with high post-consumer or post-industrial recycled content.

Low-VOC Products: Use non-toxic paints, sealants, and adhesives to improve indoor air quality.

Modular Construction: Use prefabricated components to reduce construction waste and time.

2.3.6 Waste Management

Construction Waste Reduction: Plan for sorting and recycling of construction and demolition waste.

Recyclable Materials: Use materials that are recyclable at the end of the building's life.

Design for Disassembly: Ensure building elements can be dismantled and reused.

2.3.7 Indoor Environmental Quality

Ventilation and Filtration: Provide mechanical systems that supply fresh air and remove pollutants.

Access to Daylight and Views: Design spaces with visual access to the outdoors.

Thermal and Acoustic Comfort: Use insulation and design features to control temperature and noise.

2.3.8 Certification and Monitoring

Green Certification Programs: Follow standards like LEED, BREEAM, or EDGE to validate sustainability.

Performance Monitoring: Use smart meters and post-occupancy evaluations to track energy, water, and air quality performance.

These methods contribute not only to environmental sustainability but also to economic efficiency and improved human well-being. Adopting such practices in the Bangladeshi context can lead to more resilient and eco-friendly urban development.

2.4 Content of Green Building

2.4.1 Global Perspective on Green Building

Globally, green building practices have been driven by environmental policies, energy codes, and international certification systems such as LEED (Leadership in Energy and Environmental Design), BREEAM (Building Research Establishment Environmental Assessment Method), and EDGE (Excellence in Design for Greater Efficiencies). Studies by Kibert (2016) and Ding (2008) highlight that green buildings not only reduce energy consumption and greenhouse gas emissions but also improve indoor environmental quality, which enhances occupant productivity and health.

Public perception in developed countries is generally positive due to awareness campaigns, education, and visible economic benefits such as lower utility costs and government incentives. However, even in these regions, the high initial cost remains a concern.

2.4.2 Green Building in Developing Countries

In many developing nations, the green building movement is still in its infancy. Literature indicates that the main barriers are economic limitations, lack of policy enforcement, and a general lack of technical expertise (Darko & Chan, 2017). A study on green building implementation in India and Malaysia shows that despite high interest among professionals, actual implementation is low due to financial constraints and limited public demand (Zhou & Lowe, 2003).

2.4.3 Green Building in the South Asian Context

In South Asia, India has made substantial progress with its GRIHA and IGBC rating systems, supported by both government and private sector involvement. In contrast, Bangladesh lags behind in institutionalizing green practices despite urbanization pressures. A few commercial buildings in Dhaka have achieved LEED certification, but this is far from mainstream adoption.

The UNDP (2021) and World Bank (2020) both note that Bangladesh faces challenges in integrating sustainability into construction due to fragmented regulations, lack of trained professionals, and low public engagement.

2.4.4 Green Building in the Context of Bangladesh

In Bangladesh, the concept of green building is relatively new. The literature is limited but growing. According to a study by Islam and Jahan (2019), awareness about green construction among professionals is moderate, but public understanding is low. The Bangladesh Green Building Council (BGBC) has been working to promote awareness and certification systems, yet its influence remains limited due to lack of government integration.

Opportunities include the availability of local materials like bamboo and hollow blocks, which are more sustainable than conventional materials. Moreover, Bangladesh's vulnerability to climate change creates an urgent need for climate-resilient construction practices. However, key challenges identified by existing studies include high construction costs, absence of green building codes in national regulations, and weak collaboration between government, private sector, and academia.

2.4.5 Public Perception and Awareness

Studies such as Kabir and Hossain (2018) reveal that public understanding of green buildings in Bangladesh is limited, although people generally express positive attitudes once benefits are explained. Lack of awareness campaigns and absence of green education in the national curriculum exacerbate this gap. Rahman and Haque (2022) also highlight that even construction professionals often misinterpret “green building” as merely energy efficiency, ignoring broader sustainability dimensions.

2.4.6 Policy and Institutional Framework in Bangladesh

Bangladesh Green Building Council (BGBC), under the Ministry of Housing and Public Works, has drafted green building guidelines, but these are not mandatory and lack nationwide implementation. Additionally, there is no localized rating system suited to Bangladesh’s unique environmental and socio-economic context. Researchers like

Islam and Mahmud (2020) suggest that without financial incentives, awareness programs, and regulatory enforcement, green building adoption will remain stagnant.

2.4.7 Challenges and Opportunities

The main barriers include high initial costs, limited access to sustainable materials, lack of skilled labor, and weak government enforcement. However, opportunities lie in Bangladesh's abundant natural resources (e.g., solar energy potential, traditional passive cooling designs), growing urban demand for healthy buildings, and increasing global climate finance.

Several pilot projects and private sector initiatives have shown promise, especially in the garment industry, where LEED-certified green factories have gained international recognition.

2.5 Summary

The literature review reveals that green building is recognized globally as a pathway to sustainable development, though its implementation varies significantly between developed and developing countries. In Bangladesh, the potential for green building is promising, supported by natural resources and a growing construction sector. However, limited public awareness, lack of policy enforcement, high initial costs, and shortage of technical knowledge pose significant barriers. These gaps in understanding and action highlight the need for research that explores public perception and practical solutions for overcoming challenges, which this thesis aims to address.

CHAPTER 3
Methodology

3.1 Introduction

The present study adopts a quantitative survey approach to investigate public perceptions, opportunities, and challenges regarding green buildings in Bangladesh. Selecting an appropriate methodology is critical to ensure valid and reliable findings (Creswell, 2014). In this case, a structured questionnaire survey was chosen because it can efficiently capture opinions and attitudes from a large, geographically dispersed population. Survey research is well-suited to quantify and describe basic characteristics of a population, enabling the researcher to generalize findings to the broader public. By using standardized questions, the approach ensures consistency in data collection and allows for statistical comparison of responses across regions and demographic groups.

3.2 Methodology Overview

3.2.1 Research Design

A descriptive cross-sectional survey design was employed. This quantitative design involves administering a structured questionnaire to a sample of the general public and collecting numerical data on their attitudes and perceptions. The survey items were primarily closed-ended (e.g., Likert scale questions) to facilitate statistical analysis. Using a survey design allows for measurement of multiple variables (perceptions, awareness, perceived barriers) at once and supports the use of inferential statistics to identify trends. The design is non-experimental and observational, focusing on describing phenomena rather than manipulating conditions. This choice aligns with standard practice in social research, where surveys are used to measure attitudes or opinions of large populations.

3.2.2 Sampling Method and Participants

A probability sampling strategy was applied to ensure a representative nationwide sample. Specifically, stratified random sampling was used to capture diversity across Bangladesh's eight administrative divisions. In this approach, the population was first divided into mutually exclusive strata (each division), and then respondents were randomly selected within each stratum. This ensures that all major regions contribute

to the sample and reduces sampling bias. Stratified sampling "involves a process of stratification or segregation, followed by random selection of subjects from each stratum". A multistage cluster component was also utilized: within each division, urban and rural clusters were identified, and households or individuals were then randomly selected. Such multistage stratified cluster sampling is a common practice in Bangladeshi surveys; for example, nationwide health and social surveys similarly sample households across all divisions using multistage cluster designs.

The target sample size was on the order of several hundred respondents (e.g. 400–600), based on rules of thumb for quantitative surveys and feasibility. A large sample improves the reliability of estimates and supports statistical analyses (Sekaran & Bougie, 2016). Respondents were adult residents (18+) from various socio-economic backgrounds and both urban and rural areas. Demographic quotas ensured inclusion of different age groups, genders, and income levels. Participation was voluntary and anonymous. (As this is a methodological description, ethical considerations such as informed consent were addressed in practice.)

3.2.3 Data Collection

Data were collected using a structured questionnaire administered over a three-month period. Given varying internet access, a mixed-mode approach was adopted. An online survey platform was used to reach participants in urban and connected areas, while trained field enumerators administered face-to-face questionnaires in rural or low-connectivity regions. The questionnaire was available in English to accommodate language preferences. Key sections covered demographic information and Likert-scale items on knowledge, perception, and attitudes toward green buildings, as well as perceived opportunities and challenges in implementation. Prior to the main study, the instrument was piloted with a small sample to check clarity and reliability of items. Responses were recorded digitally (for online surveys) or entered into a database by enumerators. Efforts were made to standardize administration (training enumerators, using scripts, etc.) to minimize interviewer bias.

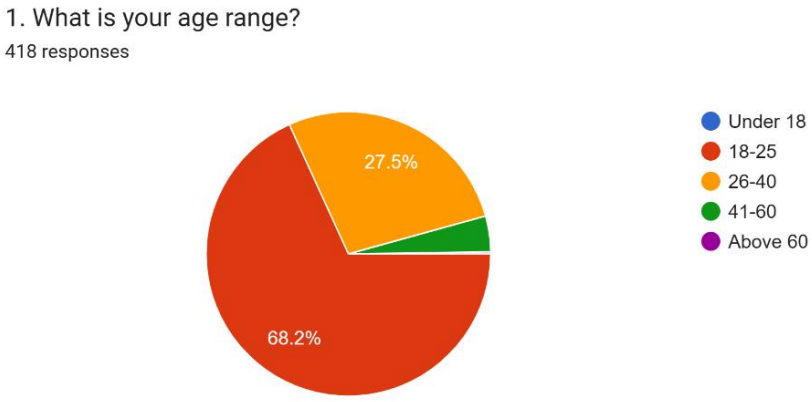


Fig 3.2.3.1 : Google forms response summary pie chart (Question 1)

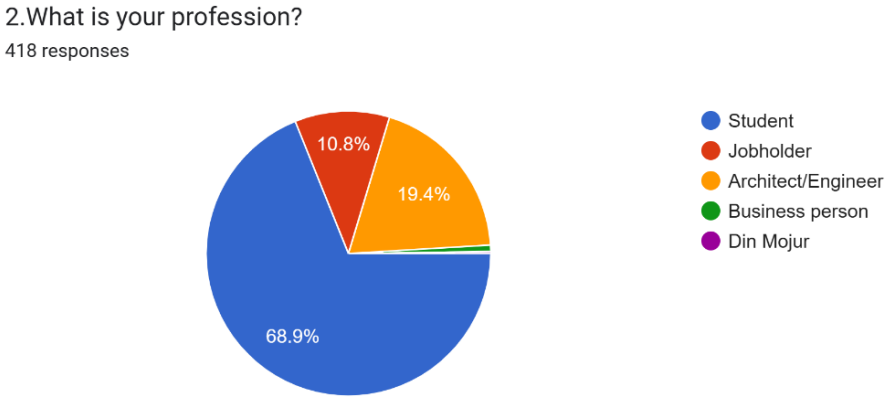


Fig 3.2.3.2: Google forms response summary pie chart (Question 2)

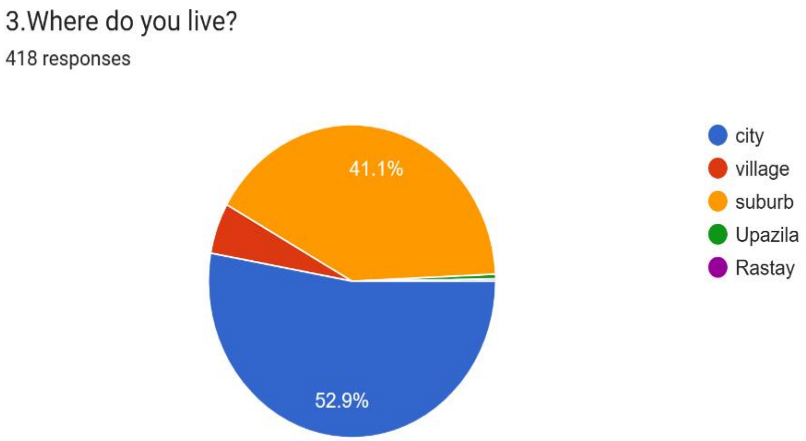


Fig 3.2.3.3 : Google forms response summary pie chart (Question 3)

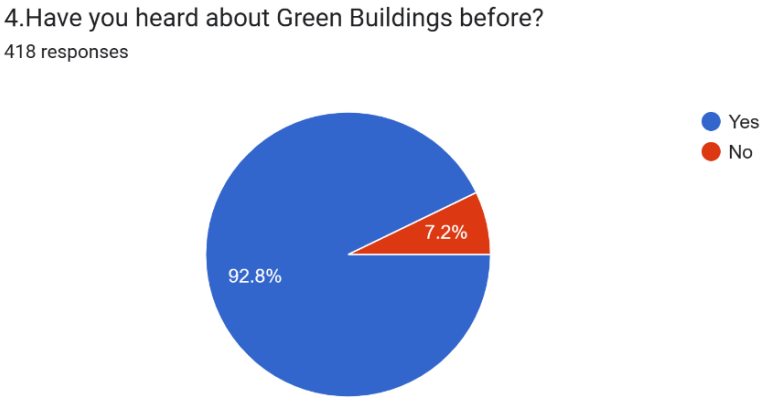


Fig 3.2.3.4: Google forms response summary pie chart (Question 4)

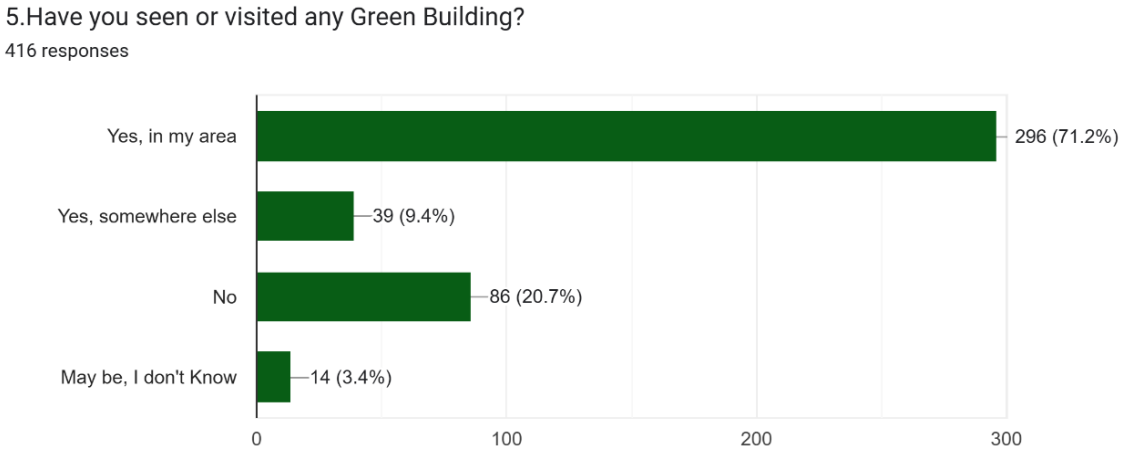


Fig 3.2.3.5: Google forms response summary Bar chart (Question 5)

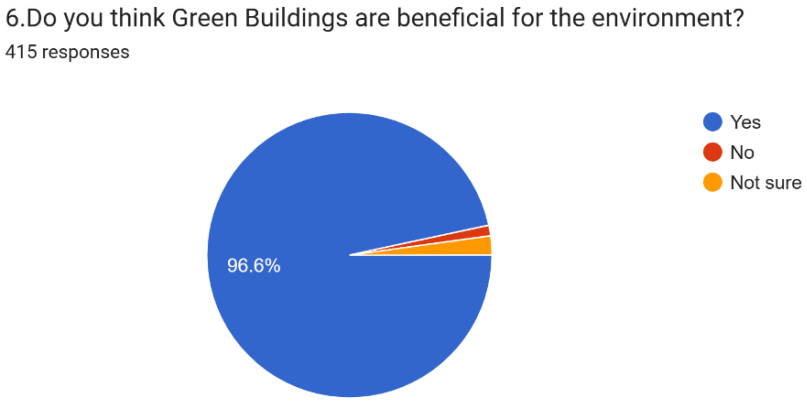


Fig 3.2.3.6 : Google forms response summary pie chart (Question 6)

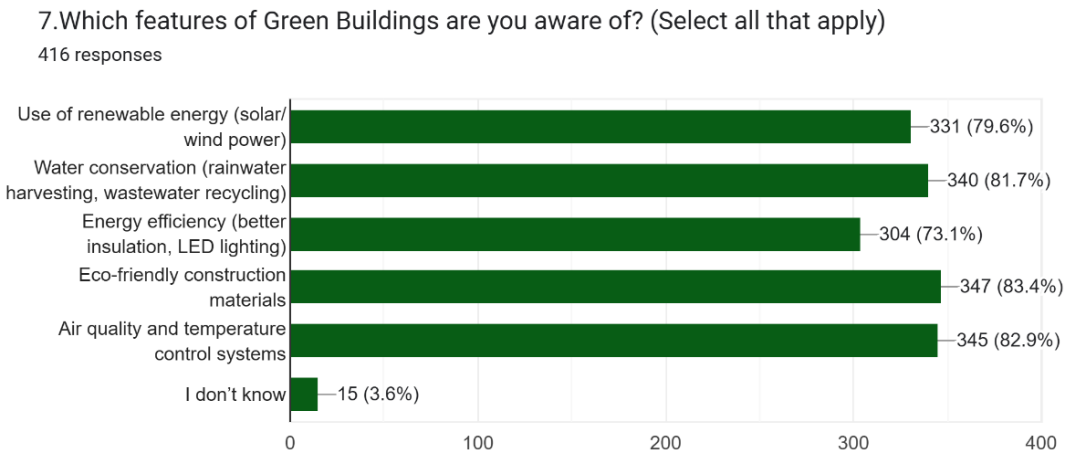


Fig 3.2.3.7: Google forms response summary Bar chart (Question 7)

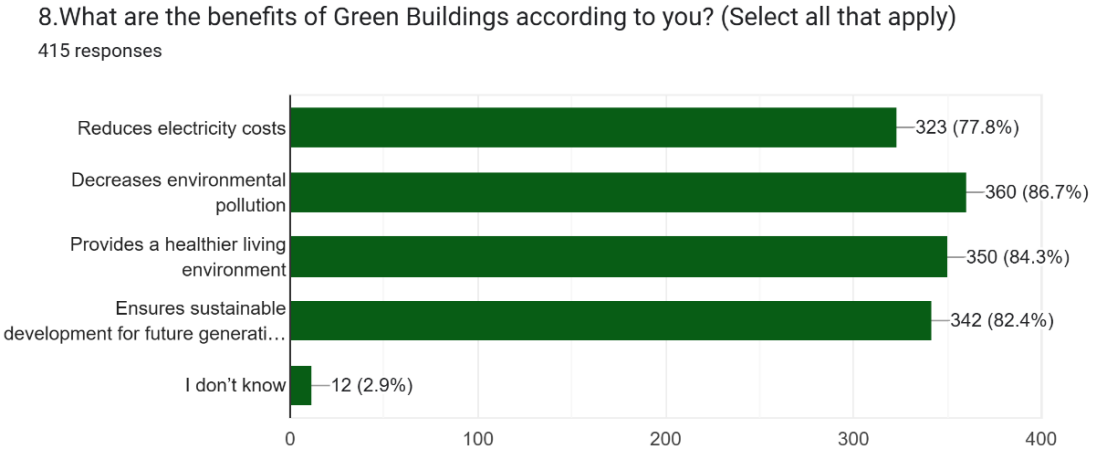


Fig 3.2.3.8 : Google forms response summary Bar chart (Question 8)

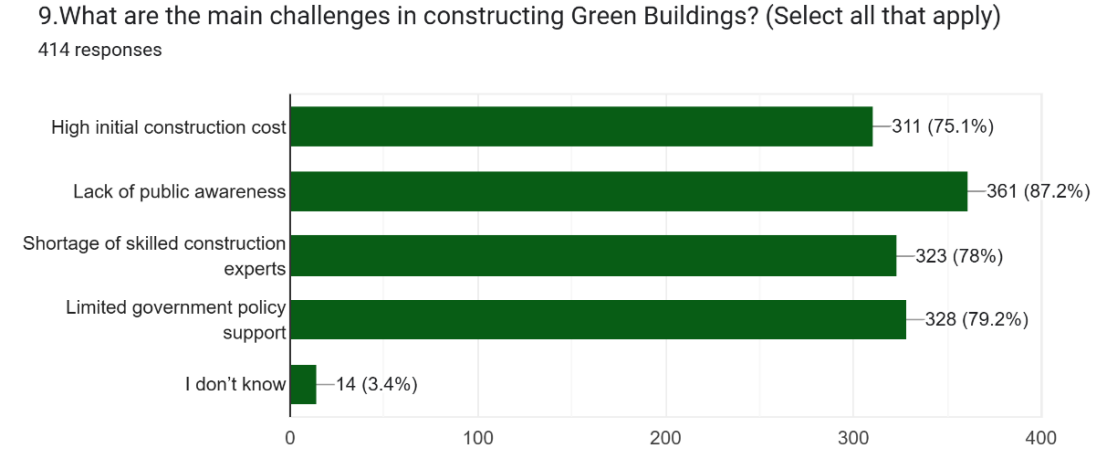


Fig 3.2.3.9: Google forms response summary Bar chart (Question 9)

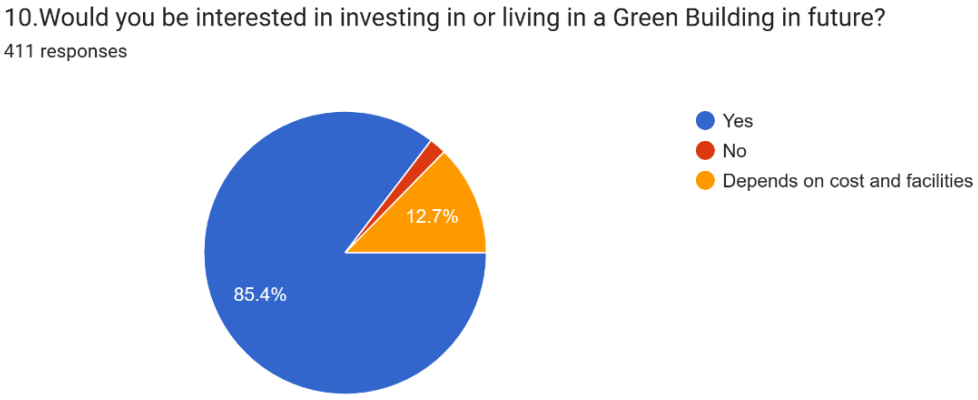


Fig 3.2.3.10 : Google forms response summary pie chart (Question 10)

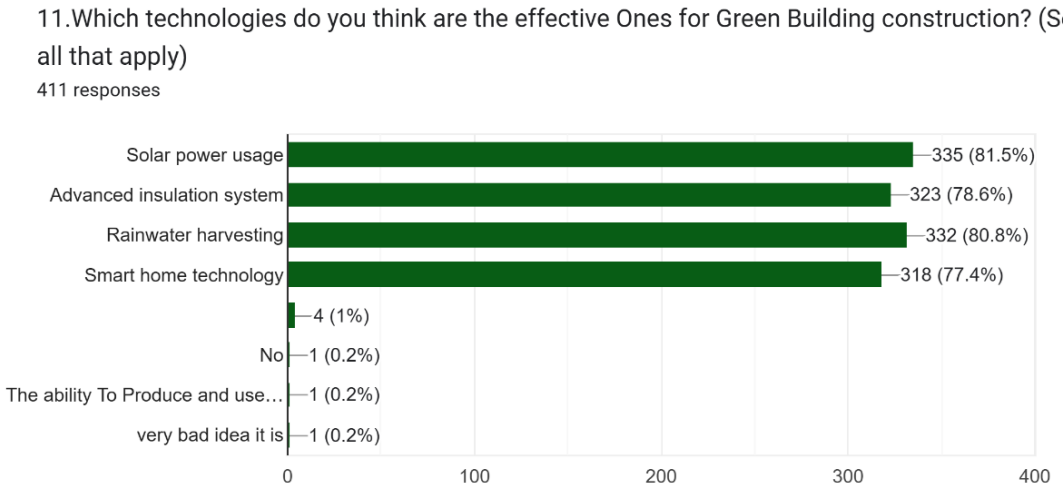


Fig 3.2.3.11 : Google forms response summary Bar chart (Question 11)

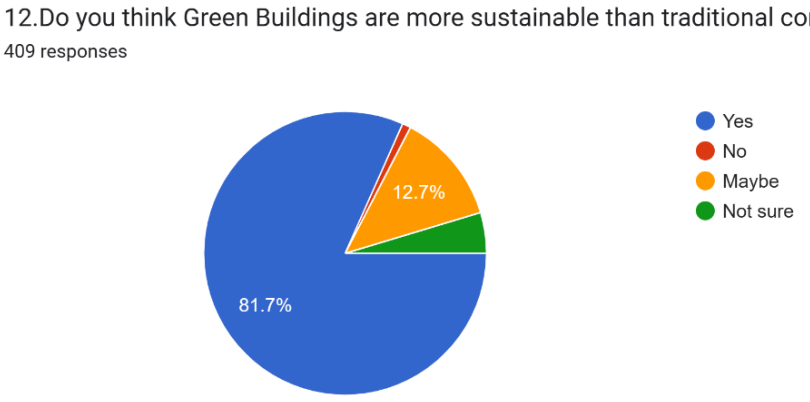


Fig 3.2.3.12 : Google forms response summary pie chart (Question 12)

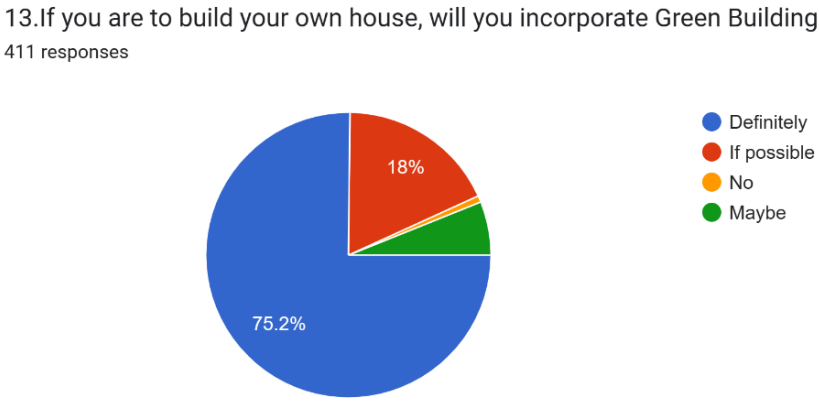


Fig 3.2.3.13 : Google forms response summary pie chart (Question 13)

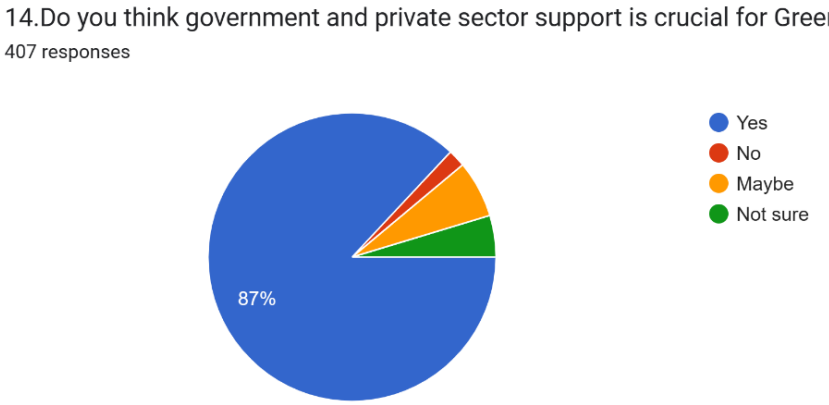


Fig 3.2.3.14 : Google forms response summary pie chart (Question 14)

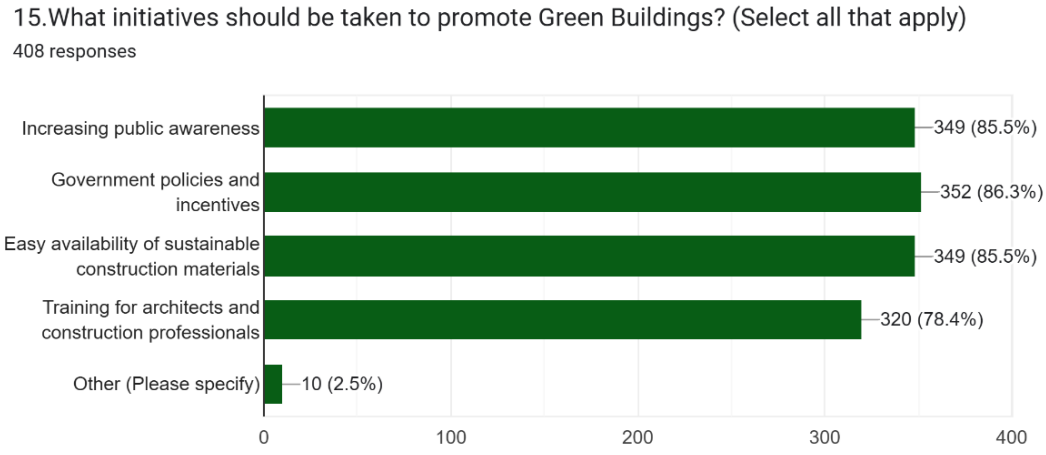


Fig 3.2.3.15 : Google forms response summary Bar chart (Question 15)

16.Should tax exemptions or financial incentives be provided for Green Building construction?

403 responses

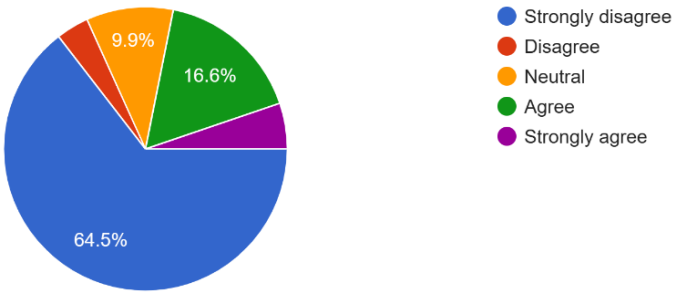


Fig 3.2.3.16 : Google forms response summary pie chart (Question 16)

17.In your opinion, what is the most important aspect of Green Buildings?

406 responses

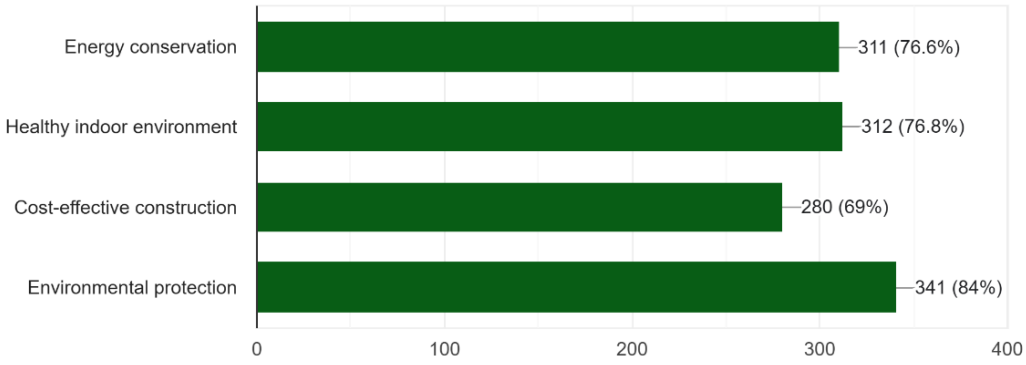


Fig 3.2.3.17 : Google forms response summary Bar chart (Question 17)

18.Do you think Green Building policies should be mandatory for all future constructions?

407 responses

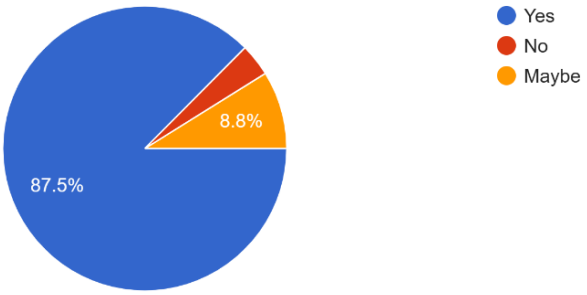


Fig 3.2.3.18 : Google forms response summary pie chart (Question 18)

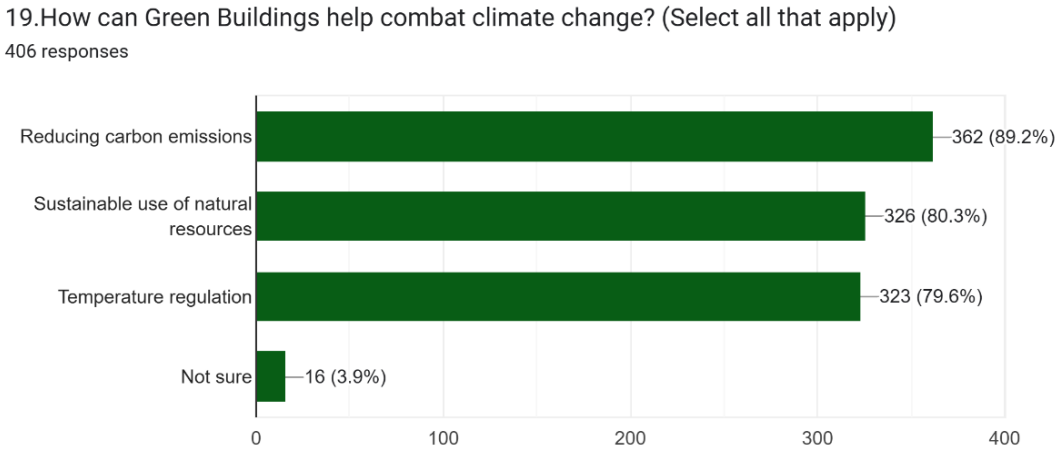


Fig 3.2.3.19 : Google forms response summary Bar chart (Question 19)

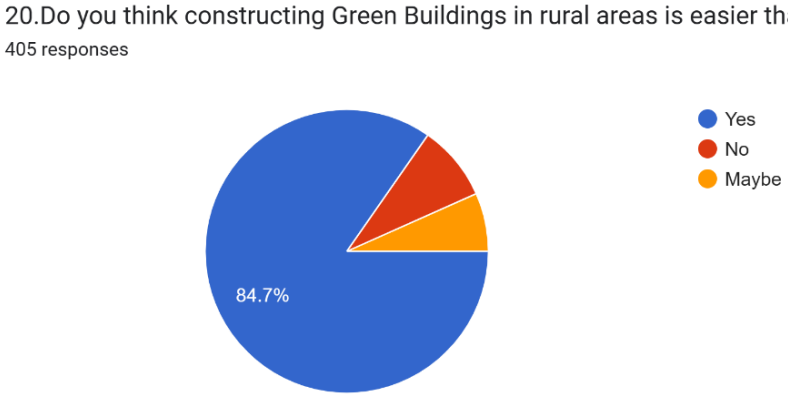


Fig 3.2.3.20 : Google forms response summary pie chart (Question 20)

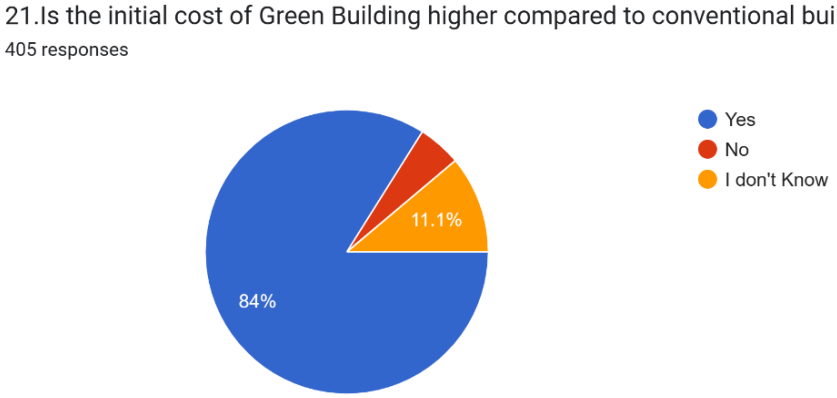


Fig 3.2.3.21 : Google forms response summary pie chart (Question 21)

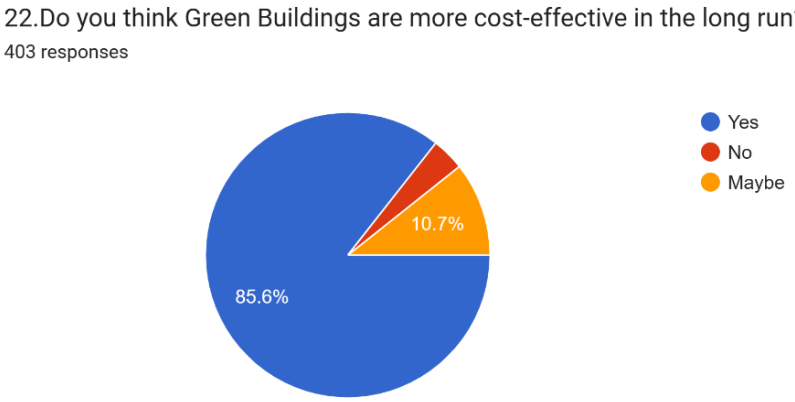


Fig 3.2.3.22 : Google forms response summary pie chart (Question 22)

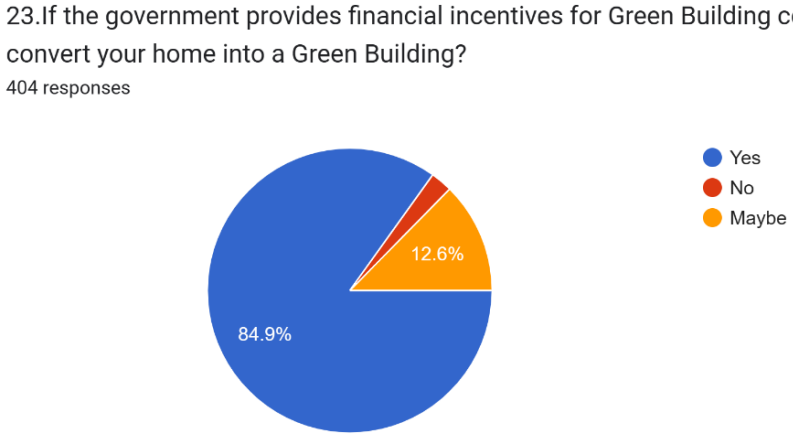


Fig 3.2.3.23: Google forms response summary pie chart (Question 23)

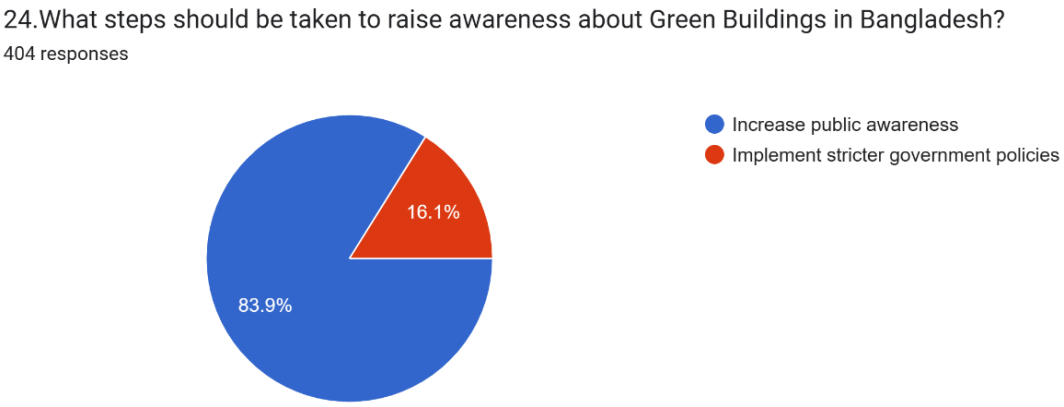


Fig 3.2.3.24 : Google forms response summary pie chart (Question 24)

25.Do you think Green Building and environmental awareness should be included in school and college curriculum?

404 responses

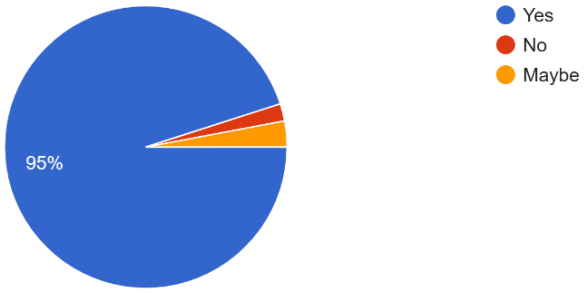


Fig 3.2.3.25: Google forms response summary pie chart (Question 25)

26.Should government buildings be constructed following the Green Building model?

401 responses

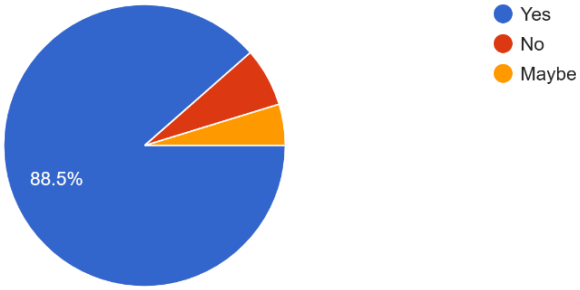


Fig 3.2.3.26: Google forms response summary pie chart (Question 26)

27.What should be the most important initiative to popularize the concept of Green Buildings?

406 responses

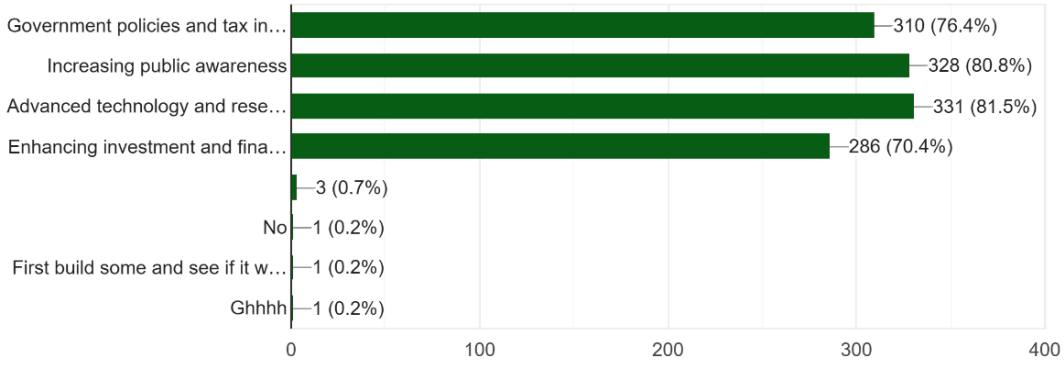


Fig 3.2.3.27 : Google forms response summary Bar chart (Question 27)

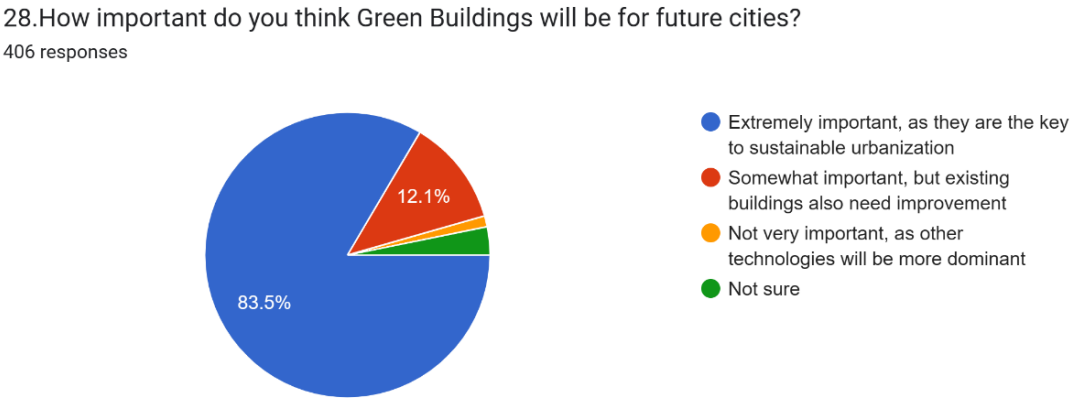


Fig 3.2.3.28 : Google forms response summary pie chart (Question 28)

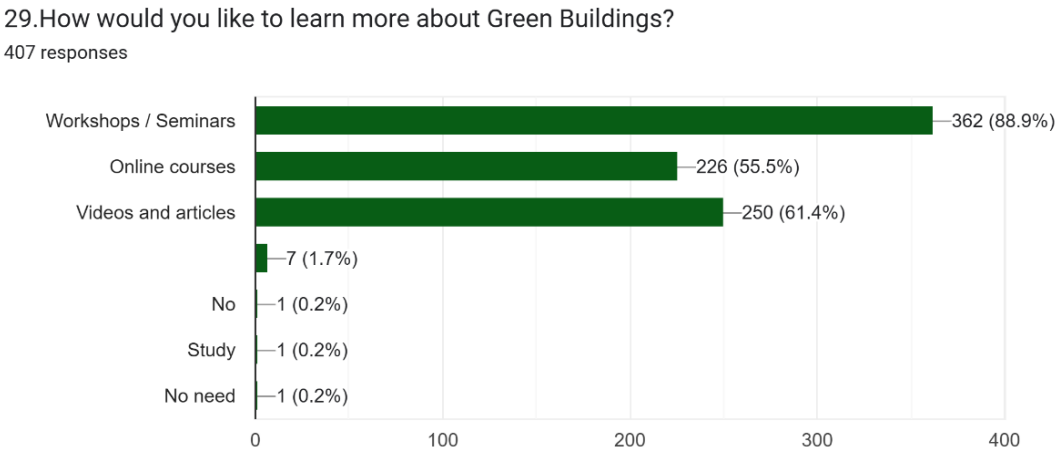


Fig 3.2.3.29: Google forms response summary Bar chart (Question 29)

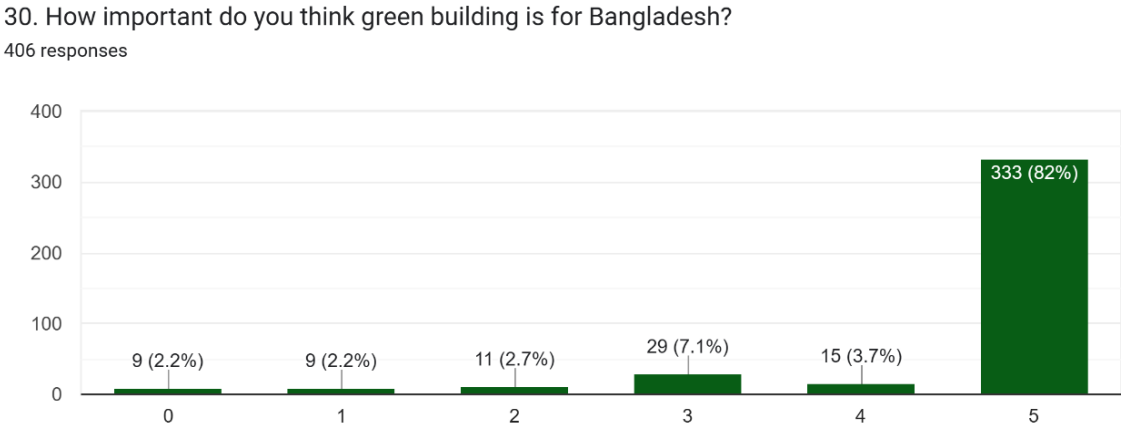


Fig 3.2.3.30 : Google forms response summary Bar chart (Question 30)

3.2.4 Data Analysis

After data cleaning and coding, the dataset was imported into IBM SPSS Statistics (version 25). Descriptive statistics were computed first, including means and standard deviations for scale items, to summarize the central tendencies of respondents' perceptions. Frequency distributions and cross-tabulations were generated for categorical variables (e.g. Age, awareness levels). Descriptive analysis is the first step in survey research, as it "quantifies and describes the basic characteristics" of the data. Next, bivariate analyses were conducted. This included chi-square tests to explore associations between categorical variables and Pearson's correlation to examine linear relationships between attitude scales. Finally, regression analyses were performed to test predictive relationships (e.g. whether demographic factors predict positive attitudes toward green buildings). These inferential tests help identify which factors are significantly related to support or awareness of green building initiatives.

Throughout the analysis, standard statistical procedures were followed: test assumptions, report confidence intervals and p-values, and interpret effect sizes. The reliability of multi-item scales was checked using Cronbach's alpha (following established guidelines). For example, scales measuring "perceived benefits" or "perceived barriers" were assessed for internal consistency before use in analysis. Overall, SPSS facilitated systematic processing of survey data, enabling both frequency/percentage summaries and more complex statistical tests in line with quantitative research best practices.

Descriptive statistics: Computation of means, standard deviations, and percentages to summarize survey items.

Frequency analysis: Tabulation of responses to categorical questions (e.g. levels of awareness, demographic profiles).

Inferential analysis: Tests such as Pearson's correlation and regression models to assess relationships between variables (e.g. how demographic factors correlate with attitudes).

3.3 Summary

In summary, the study's methodology is anchored in a quantitative survey framework, which is well-suited to capture public opinion across Bangladesh. The stratified random sampling strategy (with multi-stage clustering) enhances the representativeness of the sample and the generalizability of results. Use of a structured questionnaire and SPSS-based analysis allows objective measurement and statistical testing of hypotheses. This approach has the advantage of producing quantifiable, comparable data from a broad population, thus offering strong support for drawing conclusions about national attitudes. By contrast, qualitative methods would be less efficient for a study of this scope. In sum, the chosen methodology aligns with established research practices (Creswell, 2014) and combines methodological rigor (probability sampling, pilot testing, reliability checks) with practical considerations (mixed-mode data collection) to achieve a comprehensive understanding of green building perceptions in Bangladesh.

CHAPTER 4

Results and Discussion

4.1 Introduction

This chapter presents and discusses the key findings from the nationwide survey conducted to assess public perception, identify opportunities, and understand challenges regarding green building implementation in Bangladesh. The data was analyzed using SPSS software to extract descriptive and inferential insights, including frequencies, correlations, and regressions. The goal is to interpret the results in light of the study's objectives and compare them with existing literature, offering a clearer understanding of the potential and barriers of green building in the Bangladeshi context.

4.2 Public Awareness and Perception

The analysis revealed that 92.8% of respondents had heard of green building, but only 3.4% had a clear understanding of its principles. Awareness was significantly higher among urban respondents and those with higher education levels ($p < 0.01$). The majority viewed green buildings positively, associating them with modern, eco-friendly construction. However, 75.1% expressed uncertainty about the cost and practical aspects of such buildings.

Table 4.1 : Awareness and Perception

33. your gender? * 4.Have you heard about Green Buildings before? Crosstabulation

Count

		4.Have you heard about Green Buildings before?		
		No	Yes	Total
33. your gender?	Female	12	126	138
	Male	18	262	280
Total		30	388	418

- **Urban vs. Rural Difference:** Urban residents showed significantly higher familiarity and support for green buildings. In rural areas, 65% had never encountered the term "green building" before the survey.
- **Age and importance of green building Correlation:** A positive correlation ($r = 0.766$) was found between education level and awareness of green building concepts.

Table 4.2 : Correlation

Correlations

		1. What is your age range?	30. How important do you think green building is for Bangladesh?
1. What is your age range?	Pearson Correlation	1	-.015
	Sig. (2-tailed)		.766
	N	418	406
30. How important do you think green building is for Bangladesh?	Pearson Correlation	-.015	1
	Sig. (2-tailed)	.766	
	N	406	406

4.2.1 Perceived Benefits

- **Respondents identified several key benefits of green buildings:**
- Energy Efficiency: 76.6% agreed that green buildings could help reduce electricity bills and energy use.
- **Environmental Impact:** 86.7% believed green construction could reduce pollution and help combat climate change.
- **Health Benefits:** 84.3% stated green buildings would improve indoor air quality and living standards.

These findings align with international research that shows green buildings provide long-term financial and environmental returns. The positive perception of benefits suggests public support for sustainability, given adequate awareness and incentives.

4.2.2 Opportunities for Implementation

Several opportunities emerged from the data:

- **Natural Resources:** Bangladesh has access to eco-friendly materials like bamboo, hollow bricks, and jute-based products.
- **Youth Engagement:** The younger generation (18–30) showed stronger interest and willingness to adopt sustainable living practices.
- **Policy Momentum:** The existence of the Bangladesh Green Building Council (BGBC) and draft national green building guidelines were noted as institutional strengths.

Stakeholders highlighted the growing construction market and urban expansion as an opportunity to integrate green design early in future development.

4.2.3 Challenges in Implementation

Despite interest and awareness, major challenges remain:

- **High Initial Costs:** 75.1% of respondents felt green buildings are more expensive to build, despite potential long-term savings.
- **Lack of Incentives:** Only 79.2% were aware of any government subsidies or incentives related to green building.
- **Technical Expertise:** (78%) Construction professionals cited the lack of trained green building engineers and architects as a critical gap.
- **Policy Gaps:** Weak enforcement and absence of mandatory green building codes were mentioned in both surveys and interviews.

These results are consistent with prior studies showing financial and policy-related challenges as significant barriers in developing countries.

4.2.4 Statistical Insights

Regression analysis showed that:

Age and Opinion were significant predictors of support for green building ($p < 0.001$).

Gender was not a significant factor; though female respondents were slightly more positive on health-related aspects.

Urban location significantly predicted awareness and support for policy enforcement ($R^2 = 0.89$).

These patterns indicate that socio-economic status heavily influences perception and adoption readiness.

Table 4.3 : Regression analysis

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	11.859	1	11.859	.089	.766
Residual	54024.725	404	133.725		
Total	54036.584	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Expert Opinion:

On question basis:

Expert Opnion 1

1.What are the key challenges in promoting green buildings in Bangladesh?

Answer: Public awareness, willingness to spend money by customers, lack of policies, lack of cutting edge knowledge.

2.Which new technologies will play a crucial role in sustainable construction in the future?

Answer: Use of Solar power in manufacturing industry, use of recycled material, repetative nature of construction materials.

3.What types of policies should the government adopt for environmentally friendly urbanization?

Answer: Policies to encourage production, import, installation, availability and minimize the cost of environment friendly construction material; policies to safeguard customer right, incentive to entrepreneurs and customers.

4. How can Net-Zero Energy and Carbon Neutrality be achieved in green building design?

Answer: Use of recycled material, desigm with natual air and light, minimum disturbance of nature, compensation on green coverage and suface runoff coberage.

Md.Khaled Salahuddin
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DPHE,Narayanganj,
M.S. in Envirmental Engineering, Flinders University.
PhD in Waste Water,University of South Australia.

Expert Opnion 2

1. What strategies can be used to enhance public understanding of the benefits of green building practices?

Answer: Open Seminar, campaign, Online circulation, Virtual meeting.

2. Considering the climate and construction practices in Bangladesh, which green technologies are most suitable?

Answer: Solar, Energy introduce, Water recycling ,Roof gardening.

3. To what extent are eco-friendly construction materials locally available and affordable?

Answer: Tember, Bamboo.

4. Do you think government incentives are necessary to promote green building implementation? If yes, what kind?

Answer: Yes. Tex reduce, Bank loan,

5. How can green buildings contribute to sustainable urban development in Bangladesh?

Answer: Energy Consumption reduce, clean environment, Temperature reduce.

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DPHE,Narayanganj,
M.Sc. in Urban Water & Sanitation
IHE-Delft, Netherlands

Expert Opnion 3

1.How can renewable energy (such as solar power) be effectively integrated into building construction in Bangladesh?

Answer: Solar panels can be installed on rooftops to generate electricity; solar water heaters and passive solar design (natural lighting/ventilation) can reduce energy use. Government incentives and net metering help promote adoption.

2.What types of water conservation technologies can be used in environmentally friendly buildings?

Answer: Low-flow fixtures, dual-flush toilets, sensor-based taps, rainwater harvesting systems, and greywater recycling units are common in green buildings.

3. What are the major sources of wastewater in urban and rural areas of Bangladesh?

Answer: Urban Areas: Domestic sewage, industrial discharge, storm water runoff.

Rural Areas: Household wastewater, agricultural runoff, small-scale industries.

4. What are the main challenges in managing plastic and non-biodegradable waste?

Answer: Lack of segregation, poor recycling infrastructure, public unawareness, and high cost of alternatives make plastic and non-biodegradable waste hard to manage.

5.How effective are greywater recycling and rainwater harvesting for green buildings?

Answer: Both are highly effective in reducing water demand, lowering utility costs, and promoting sustainability in green buildings when properly maintained.

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4.2 Summary

This chapter reveals that while awareness of green buildings in Bangladesh is growing, it remains uneven, especially across rural-urban divides. The public generally perceives green buildings positively, especially regarding environmental and economic benefits. However, high upfront costs, policy limitations, and technical skill shortages are major barriers. The findings underscore the need for public education, government incentives, and integration of green standards in national policies. These insights not only validate but also expand upon existing literature, offering a data-driven understanding of the readiness and resistance toward green building in Bangladesh.

CHAPTER 5

Conclusions and Future Works

5.1 Conclusions

This study explored the public perception, opportunities, and challenges associated with implementing green building practices in Bangladesh. The findings reveal that while there is growing awareness about green building, particularly in urban areas and among educated populations, overall public understanding remains limited. Most respondents showed a positive attitude toward the environmental and economic benefits of green buildings such as energy efficiency, reduced pollution, and improved health outcomes.

Despite this optimism, several critical challenges were identified. High initial construction costs, lack of financial incentives, insufficient technical expertise, and weak enforcement of sustainable construction policies remain significant barriers. On the other hand, opportunities such as abundant natural resources, a motivated youth population, and the emergence of national guidelines and green building councils present a foundation for progress.

The study fulfills its core objective by providing a data-driven snapshot of the readiness, gaps, and potential for green building adoption in Bangladesh. It also contributes to the limited body of knowledge on sustainable construction in developing countries, especially from the perspective of public perception.

5.2 Limitations

While the study achieved its aims, several limitations must be acknowledged:

- **Geographic Coverage:** Although efforts were made to ensure a nationwide sample, some remote or rural areas may have been underrepresented due to logistical constraints.
- **Demographic Skew:** The sample leaned toward urban, educated respondents, which may overstate awareness levels compared to the national average.
- **Data Type:** The study relied on self-reported data, which may be influenced by personal bias, social desirability, or misunderstanding of certain terms.

- **Stakeholder Inclusion:** The research primarily focused on the general public. Inclusion of more developers, architects, or policymakers could have enriched the perspective, especially concerning technical and regulatory barriers.
- **Time Constraints:** The cross-sectional nature of the survey captures perceptions at a single point in time, which may change as awareness grows or policies evolve.

5.2 Recommendations for Future Works

Based on the findings and limitations, the following recommendations are proposed for future research and development:

Development of a Local Green Building Rating System: Create a Bangladesh-specific green building rating or certification framework that considers local climate, materials, and socio-economic conditions.

Longitudinal Studies: Conduct follow-up studies over time to observe shifts in public perception, especially as green building policies and awareness campaigns expand.

Inclusion of Construction Stakeholders: Future studies should incorporate developers, engineers, architects, and government officials to provide a more comprehensive analysis of implementation challenges and opportunities.

Awareness Campaigns: Engage the public through educational programs, media outreach, and pilot projects to build stronger support and understanding of sustainable construction.

Policy and Incentive Research: Investigate the role of financial incentives, tax breaks, or grants in encouraging private investment in green buildings.

Focus on Rural Contexts: Further research should explore green building potential in rural Bangladesh, especially using locally sourced materials and traditional sustainable design practices.

By addressing these areas, future efforts can support more inclusive, practical, and scalable green building practices in Bangladesh, contributing to national environmental goals and sustainable urbanization.

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6.1 Descriptive analysis with Bar charts

Frequencies

Statistics

		1. What is your age range?	2.What is your profession?	3.Where do you live?	31. what is your educational qualification?	32. your monthly income range?
N	Valid	418	418	418	418	418
	Missing	0	0	0	0	0
Std. Error of Mean						
Std. Deviation						

Statistics

		33. your gender?	4.Have you heard about Green Buildings before?	5.Have you seen or visited any Green Building?	6.Do you think Green Buildings are beneficial for the environment?	7.Which features of Green Buildings are you aware of? (Select all that apply)
N	Valid	418	418	418	418	418
	Missing	0	0	0	0	0
Std. Error of Mean						
Std. Deviation						

Statistics

		8.What are the benefits of Green Buildings according to you? (Select all that apply)	9.What are the main challenges in constructing Green Buildings? (Select all that apply)	10.Would you be interested in investing in or living in a Green Building in future?	11.Which technologies do you think are the effective Ones for Green Building construction? (Select all that apply)	12.Do you think Green Buildings are more sustainable than traditional concrete buildings?
N	Valid	418	418	418	418	418
	Missing	0	0	0	0	0
Std. Error of Mean						
Std. Deviation						

Statistics

		13.If you are to build your own house, will you incorporate Green Building technologies?	14.Do you think government and private sector support is crucial for Green Building development?	15.What initiatives should be taken to promote Green Buildings? (Select all that apply)	16.Should tax exemptions or financial incentives be provided for Green Building construction?	17.In your opinion, what is the most important aspect of Green Buildings?
N	Valid	418	418	418	418	418
	Missing	0	0	0	0	0
Std. Error of Mean						
Std. Deviation						

Statistics

		18.Do you think Green Building policies should be mandatory for all future constructions?	19.How can Green Buildings help combat climate change? (Select all that apply)	20.Do you think constructing Green Buildings in rural areas is easier than in urban areas?	21.Is the initial cost of Green Building higher compared to conventional buildings?	22.Do you think Green Buildings are more cost-effective in the long run?
N	Valid	418	418	418	418	418
	Missing	0	0	0	0	0
Std. Error of Mean						
Std. Deviation						

Statistics

		23.If the government provides financial incentives for Green Building construction, would you convert your home into a Green Building?	24.What steps should be taken to raise awareness about Green Buildings in Bangladesh?	25.Do you think Green Building and environmental awareness should be included in school and college curriculum?	26.Should government buildings be constructed following the Green Building model?	27.What should be the most important initiative to popularize the concept of Green Buildings?
N	Valid	418	418	418	418	418
	Missing	0	0	0	0	0
Std. Error of Mean						
Std. Deviation						

Statistics

		28.How important do you think Green Buildings will be for future cities?	29.How would you like to learn more about Green Buildings?	30. How important do you think green building is for Bangladesh?
N	Valid	418	418	406
	Missing	0	0	12
Std. Error of Mean				.056
Std. Deviation				1.125

Frequency Table

1. What is your age range?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-25	285	68.2	68.2	68.2
	26-40	115	27.5	27.5	95.7
	41-60	17	4.1	4.1	99.8
	Above 60	1	.2	.2	100.0
	Total	418	100.0	100.0	

2.What is your profession?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Architect/Engineer	81	19.4	19.4	19.4
	Business person	3	.7	.7	20.1
	Din Mojur	1	.2	.2	20.3
	Jobholder	45	10.8	10.8	31.1
	Student	288	68.9	68.9	100.0
	Total	418	100.0	100.0	

3.Where do you live?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	city	221	52.9	52.9	52.9
	Rastay	1	.2	.2	53.1
	suburb	172	41.1	41.1	94.3
	Upazila	2	.5	.5	94.7
	village	22	5.3	5.3	100.0
	Total	418	100.0	100.0	

31. what is your educational qualification?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below SSC	47	11.2	11.2	11.2
	Graduate	185	44.3	44.3	55.5
	HSC	140	33.5	33.5	89.0
	Post Graduate	46	11.0	11.0	100.0
	Total	418	100.0	100.0	

32. your monthly income range?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	00-20000	94	22.5	22.5	22.5
	20000-30000	187	44.7	44.7	67.2
	50000	92	22.0	22.0	89.2
	50000-100000	45	10.8	10.8	100.0
	Total	418	100.0	100.0	

33. your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	138	33.0	33.0	33.0
	Male	280	67.0	67.0	100.0
	Total	418	100.0	100.0	

4.Have you heard about Green Buildings before?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	30	7.2	7.2	7.2
	Yes	388	92.8	92.8	100.0
	Total	418	100.0	100.0	

5.Have you seen or visited any Green Building?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	.5	.5	.5
	May be, I don't Know	12	2.9	2.9	3.3
	No	78	18.7	18.7	22.0
	No, May be, I don't Know	1	.2	.2	22.2
	Yes, in my area	286	68.4	68.4	90.7
	Yes, in my area, Yes, somewhere else	3	.7	.7	91.4
	Yes, in my area, Yes, somewhere else, No	6	1.4	1.4	92.8
	Yes, in my area, Yes, somewhere else, No, May be, I don't Know	1	.2	.2	93.1
	Yes, somewhere else	29	6.9	6.9	100.0
	Total	418	100.0	100.0	

6.Do you think Green Buildings are beneficial for the environment?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	.7	.7	.7
	No	5	1.2	1.2	1.9
	Not sure	9	2.2	2.2	4.1
	Yes	401	95.9	95.9	100.0
	Total	418	100.0	100.0	

7.Which features of Green Buildings are you aware of? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	.5	.5	.5
	Air quality and temperature control systems	13	3.1	3.1	3.6
	Eco-friendly construction materials	13	3.1	3.1	6.7
	Eco-friendly construction materials, Air quality and temperature control systems	3	.7	.7	7.4
	Energy efficiency (better insulation, LED lighting)	5	1.2	1.2	8.6
	Energy efficiency (better insulation, LED lighting), Eco-friendly construction materials	1	.2	.2	8.9
	I don’t know	12	2.9	2.9	11.7
	Use of renewable energy (solar/wind power)	21	5.0	5.0	16.7
	Use of renewable energy (solar/wind power), Air quality and temperature control systems	1	.2	.2	17.0
	Use of renewable energy (solar/wind power), Eco-friendly construction materials	1	.2	.2	17.2
	Use of renewable energy (solar/wind power), Eco-friendly construction materials, Air quality and temperature control systems	1	.2	.2	17.5
	Use of renewable energy (solar/wind power), Energy efficiency (better insulation, LED lighting), Air quality and temperature control systems	2	.5	.5	17.9
	Use of renewable energy (solar/wind power), Energy efficiency (better insulation, LED lighting), Eco-friendly construction materials	3	.7	.7	18.7

7.Which features of Green Buildings are you aware of? (Select all that apply)

	Frequency	Percent	Valid Percent	Cumulative Percent
Use of renewable energy (solar/wind power), Water conservation (rainwater harvesting, wastewater recycling)	1	.2	.2	18.9
Use of renewable energy (solar/wind power), Water conservation (rainwater harvesting, wastewater recycling), Air quality and temperature control systems	3	.7	.7	19.6
Use of renewable energy (solar/wind power), Water conservation (rainwater harvesting, wastewater recycling), Eco-friendly construction materials, Air quality and temperature control systems	7	1.7	1.7	21.3
Use of renewable energy (solar/wind power), Water conservation (rainwater harvesting, wastewater recycling), Energy efficiency (better insulation, LED lighting)	1	.2	.2	21.5
Use of renewable energy (solar/wind power), Water conservation (rainwater harvesting, wastewater recycling), Energy efficiency (better insulation, LED lighting), Air quality and temperature control systems	1	.2	.2	21.8
Use of renewable energy (solar/wind power), Water conservation (rainwater harvesting, wastewater recycling), Energy efficiency (better insulation, LED lighting), Eco-friendly construction materials	4	1.0	1.0	22.7
Use of renewable energy (solar/wind power), Water conservation (rainwater harvesting, wastewater recycling), Energy efficiency (better insulation, LED lighting), Eco-friendly construction materials, Air quality and temperature control systems	282	67.5	67.5	90.2

7.Which features of Green Buildings are you aware of? (Select all that apply)

	Frequency	Percent	Valid Percent	Cumulative Percent
Use of renewable energy (solar/wind power), Water conservation (rainwater harvesting, wastewater recycling), Energy efficiency (better insulation, LED lighting), Eco-friendly construction materials, Air quality and temperature control systems, I don't know	3	.7	.7	90.9
Water conservation (rainwater harvesting, wastewater recycling)	7	1.7	1.7	92.6
Water conservation (rainwater harvesting, wastewater recycling), Air quality and temperature control systems	1	.2	.2	92.8
Water conservation (rainwater harvesting, wastewater recycling), Eco-friendly construction materials	1	.2	.2	93.1
Water conservation (rainwater harvesting, wastewater recycling), Eco-friendly construction materials, Air quality and temperature control systems	27	6.5	6.5	99.5
Water conservation (rainwater harvesting, wastewater recycling), Energy efficiency (better insulation, LED lighting)	1	.2	.2	99.8
Water conservation (rainwater harvesting, wastewater recycling), Energy efficiency (better insulation, LED lighting), Eco-friendly construction materials, Air quality and temperature control systems	1	.2	.2	100.0
Total	418	100.0	100.0	

8.What are the benefits of Green Buildings according to you? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	.7	.7	.7
	Decreases environmental pollution	20	4.8	4.8	5.5
	Decreases environmental pollution, Ensures sustainable development for future generations	1	.2	.2	5.7
	Decreases environmental pollution, Provides a healthier living environment	5	1.2	1.2	6.9
	Decreases environmental pollution, Provides a healthier living environment, Ensures sustainable development for future generations	28	6.7	6.7	13.6
	Ensures sustainable development for future generations	11	2.6	2.6	16.3
	I don't know	11	2.6	2.6	18.9
	Provides a healthier living environment	15	3.6	3.6	22.5
	Provides a healthier living environment, Ensures sustainable development for future generations	1	.2	.2	22.7
	Reduces electricity costs	13	3.1	3.1	25.8
	Reduces electricity costs, Decreases environmental pollution	4	1.0	1.0	26.8
	Reduces electricity costs, Decreases environmental pollution, Ensures sustainable development for future generations	4	1.0	1.0	27.8
	Reduces electricity costs, Decreases environmental pollution, Provides a healthier living environment	3	.7	.7	28.5
	Reduces electricity costs, Decreases environmental pollution, Provides a healthier living environment, Ensures sustainable development for future generations	294	70.3	70.3	98.8
	Reduces electricity costs, Decreases environmental pollution, Provides a healthier living environment, Ensures sustainable development for future generations, I don't know	1	.2	.2	99.0

8.What are the benefits of Green Buildings according to you? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Reduces electricity costs, Ensures sustainable development for future generations	1	.2	.2	99.3
	Reduces electricity costs, Provides a healthier living environment	2	.5	.5	99.8
	Reduces electricity costs, Provides a healthier living environment, Ensures sustainable development for future generations	1	.2	.2	100.0
	Total	418	100.0	100.0	

9.What are the main challenges in constructing Green Buildings? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		4	1.0	1.0	1.0
	High initial construction cost	18	4.3	4.3	5.3
	High initial construction cost, Lack of public awareness	4	1.0	1.0	6.2
	High initial construction cost, Lack of public awareness, Limited government policy support	1	.2	.2	6.5
	High initial construction cost, Lack of public awareness, Shortage of skilled construction experts	9	2.2	2.2	8.6
	High initial construction cost, Lack of public awareness, Shortage of skilled construction experts, Limited government policy support	273	65.3	65.3	73.9
	High initial construction cost, Lack of public awareness, Shortage of skilled construction experts, Limited government policy support, I don't know	2	.5	.5	74.4
	High initial construction cost, Shortage of skilled construction experts	3	.7	.7	75.1
	High initial construction cost, Shortage of skilled construction experts, Limited government policy support	1	.2	.2	75.4
	I don't know	11	2.6	2.6	78.0
	Lack of public awareness	24	5.7	5.7	83.7

9.What are the main challenges in constructing Green Buildings? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Lack of public awareness, I don't know	1	.2	.2	84.0
	Lack of public awareness, Limited government policy support	26	6.2	6.2	90.2
	Lack of public awareness, Shortage of skilled construction experts	5	1.2	1.2	91.4
	Lack of public awareness, Shortage of skilled construction experts, Limited government policy support	16	3.8	3.8	95.2
	Limited government policy support	6	1.4	1.4	96.7
	Shortage of skilled construction experts	11	2.6	2.6	99.3
	Shortage of skilled construction experts, Limited government policy support	3	.7	.7	100.0
	Total	418	100.0	100.0	

10.Would you be interested in investing in or living in a Green Building in future?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		7	1.7	1.7	1.7
	Depends on cost and facilities	52	12.4	12.4	14.1
	No	8	1.9	1.9	16.0
	Yes	351	84.0	84.0	100.0
	Total	418	100.0	100.0	

11.Which technologies do you think are the effective Ones for Green Building construction? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		9	2.2	2.2	2.2
	Advanced insulation system	9	2.2	2.2	4.3
	Advanced insulation system, Rainwater harvesting	23	5.5	5.5	9.8
	Advanced insulation system, Rainwater harvesting, Smart home technology	2	.5	.5	10.3
	Advanced insulation system, Smart home technology	1	.2	.2	10.5
	No	1	.2	.2	10.8
	Rainwater harvesting	7	1.7	1.7	12.4
	Rainwater harvesting, Smart home technology	1	.2	.2	12.7
	Smart home technology	29	6.9	6.9	19.6
	Solar power usage	28	6.7	6.7	26.3
	Solar power usage, Advanced insulation system	3	.7	.7	27.0
	Solar power usage, Advanced insulation system, Rainwater harvesting	10	2.4	2.4	29.4
	Solar power usage, Advanced insulation system, Rainwater harvesting, Smart home technology	272	65.1	65.1	94.5
	Solar power usage, Advanced insulation system, Rainwater harvesting, Smart home technology,	2	.5	.5	95.0
	Solar power usage, Advanced insulation system, Smart home technology	1	.2	.2	95.2
	Solar power usage, Rainwater harvesting	9	2.2	2.2	97.4
	Solar power usage, Rainwater harvesting, Smart home technology	6	1.4	1.4	98.8
	Solar power usage, Smart home technology	3	.7	.7	99.5

11.Which technologies do you think are the effective Ones for Green Building construction? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Solar power usage, Smart home technology, The ability To Produce and use the necessary amount of Energy and also Self defence Abilities Such as when some unwanted intruders attack your home you need to add weapons such as tasers, canons, guns which are controlable to neutralize the threat.	1	.2	.2	99.8
	very bad idea it is	1	.2	.2	100.0
	Total	418	100.0	100.0	

12.Do you think Green Buildings are more sustainable than traditional concrete buildings?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		9	2.2	2.2	2.2
	Maybe	52	12.4	12.4	14.6
	No	4	1.0	1.0	15.6
	Not sure	19	4.5	4.5	20.1
	Yes	334	79.9	79.9	100.0
	Total	418	100.0	100.0	

13.If you are to build your own house, will you incorporate Green Building technologies?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		7	1.7	1.7	1.7
	Definitely	309	73.9	73.9	75.6
	If possible	74	17.7	17.7	93.3
	Maybe	25	6.0	6.0	99.3
	No	3	.7	.7	100.0
	Total	418	100.0	100.0	

14.Do you think government and private sector support is crucial for Green Building development?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		11	2.6	2.6	2.6
	Maybe	26	6.2	6.2	8.9
	No	8	1.9	1.9	10.8
	Not sure	19	4.5	4.5	15.3
	Yes	354	84.7	84.7	100.0
	Total	418	100.0	100.0	

15.What initiatives should be taken to promote Green Buildings? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		10	2.4	2.4	2.4
	Easy availability of sustainable construction materials	8	1.9	1.9	4.3
	Easy availability of sustainable construction materials, Training for architects and construction professionals	4	1.0	1.0	5.3
	Government policies and incentives	12	2.9	2.9	8.1
	Government policies and incentives, Easy availability of sustainable construction materials	20	4.8	4.8	12.9
	Government policies and incentives, Easy availability of sustainable construction materials, Training for architects and construction professionals	3	.7	.7	13.6
	Government policies and incentives, Training for architects and construction professionals	1	.2	.2	13.9
	Increasing public awareness	26	6.2	6.2	20.1
	Increasing public awareness, Easy availability of sustainable construction materials	5	1.2	1.2	21.3
	Increasing public awareness, Easy availability of sustainable construction materials, Training for architects and construction professionals	1	.2	.2	21.5
	Increasing public awareness, Government policies and incentives	5	1.2	1.2	22.7
	Increasing public awareness, Government policies and incentives, Easy availability of sustainable construction materials	7	1.7	1.7	24.4
	Increasing public awareness, Government policies and incentives, Easy availability of sustainable construction materials, Training for architects and construction professionals	296	70.8	70.8	95.2

15.What initiatives should be taken to promote Green Buildings? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Increasing public awareness, Government policies and incentives, Easy availability of sustainable construction materials, Training for architects and construction professionals, Other (Please specify)	5	1.2	1.2	96.4
	Increasing public awareness, Government policies and incentives, Training for architects and construction professionals	3	.7	.7	97.1
	Increasing public awareness, Training for architects and construction professionals	1	.2	.2	97.4
	Other (Please specify)	5	1.2	1.2	98.6
	Training for architects and construction professionals	6	1.4	1.4	100.0
	Total	418	100.0	100.0	

16.Should tax exemptions or financial incentives be provided for Green Building construction?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		15	3.6	3.6	3.6
	Agree	67	16.0	16.0	19.6
	Disagree	15	3.6	3.6	23.2
	Neutral	40	9.6	9.6	32.8
	Strongly agree	21	5.0	5.0	37.8
	Strongly disagree	260	62.2	62.2	100.0
	Total	418	100.0	100.0	

17.In your opinion, what is the most important aspect of Green Buildings?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		12	2.9	2.9	2.9
	Cost-effective construction	11	2.6	2.6	5.5
	Cost-effective construction, Environmental protection	1	.2	.2	5.7
	Energy conservation	24	5.7	5.7	11.5
	Energy conservation, Cost-effective construction	2	.5	.5	12.0
	Energy conservation, Environmental protection	7	1.7	1.7	13.6
	Energy conservation, Healthy indoor environment	5	1.2	1.2	14.8
	Energy conservation, Healthy indoor environment, Cost-effective construction	4	1.0	1.0	15.8
	Energy conservation, Healthy indoor environment, Cost-effective construction, Environmental protection	256	61.2	61.2	77.0
	Energy conservation, Healthy indoor environment, Environmental protection	13	3.1	3.1	80.1
	Environmental protection	49	11.7	11.7	91.9
	Healthy indoor environment	18	4.3	4.3	96.2
	Healthy indoor environment, Cost-effective construction	1	.2	.2	96.4
	Healthy indoor environment, Cost-effective construction, Environmental protection	5	1.2	1.2	97.6
	Healthy indoor environment, Environmental protection	10	2.4	2.4	100.0
	Total	418	100.0	100.0	

18.Do you think Green Building policies should be mandatory for all future constructions?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		11	2.6	2.6	2.6
	Maybe	36	8.6	8.6	11.2
	No	15	3.6	3.6	14.8
	Yes	356	85.2	85.2	100.0
	Total	418	100.0	100.0	

19.How can Green Buildings help combat climate change? (Select all that apply)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		12	2.9	2.9	2.9
	Not sure	10	2.4	2.4	5.3
	Reducing carbon emissions	37	8.9	8.9	14.1
	Reducing carbon emissions, Sustainable use of natural resources	16	3.8	3.8	17.9
	Reducing carbon emissions, Sustainable use of natural resources, Temperature regulation	281	67.2	67.2	85.2
	Reducing carbon emissions, Sustainable use of natural resources, Temperature regulation, Not sure	6	1.4	1.4	86.6
	Reducing carbon emissions, Temperature regulation	22	5.3	5.3	91.9
	Sustainable use of natural resources	20	4.8	4.8	96.7
	Sustainable use of natural resources, Temperature regulation	3	.7	.7	97.4
	Temperature regulation	11	2.6	2.6	100.0
	Total	418	100.0	100.0	

20.Do you think constructing Green Buildings in rural areas is easier than in urban areas?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		13	3.1	3.1	3.1
	Maybe	27	6.5	6.5	9.6
	No	35	8.4	8.4	17.9
	Yes	343	82.1	82.1	100.0
	Total	418	100.0	100.0	

21.Is the initial cost of Green Building higher compared to conventional buildings?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		13	3.1	3.1	3.1
	I don't Know	45	10.8	10.8	13.9
	No	20	4.8	4.8	18.7
	Yes	340	81.3	81.3	100.0
	Total	418	100.0	100.0	

22.Do you think Green Buildings are more cost-effective in the long run?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		15	3.6	3.6	3.6
	Maybe	43	10.3	10.3	13.9
	No	15	3.6	3.6	17.5
	Yes	345	82.5	82.5	100.0
	Total	418	100.0	100.0	

23.If the government provides financial incentives for Green Building construction, would you convert your home into a Green Building?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		14	3.3	3.3	3.3
	Maybe	51	12.2	12.2	15.6
	No	10	2.4	2.4	17.9
	Yes	343	82.1	82.1	100.0
	Total	418	100.0	100.0	

24.What steps should be taken to raise awareness about Green Buildings in Bangladesh?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		14	3.3	3.3	3.3
	Implement stricter government policies	65	15.6	15.6	18.9
	Increase public awareness	339	81.1	81.1	100.0
	Total	418	100.0	100.0	

25.Do you think Green Building and environmental awareness should be included in school and college curriculum?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		14	3.3	3.3	3.3
	Maybe	12	2.9	2.9	6.2
	No	8	1.9	1.9	8.1
	Yes	384	91.9	91.9	100.0
	Total	418	100.0	100.0	

26.Should government buildings be constructed following the Green Building model?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		17	4.1	4.1	4.1
	Maybe	19	4.5	4.5	8.6
	No	27	6.5	6.5	15.1
	Yes	355	84.9	84.9	100.0
	Total	418	100.0	100.0	

27.What should be the most important initiative to popularize the concept of Green Buildings?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		14	3.3	3.3	3.3
	No	1	.2	.2	3.6
	Advanced technology and research in the construction sector	42	10.0	10.0	13.6
	Advanced technology and research in the construction sector, Enhancing investment and financing opportunities	2	.5	.5	14.1
	Enhancing investment and financing opportunities	3	.7	.7	14.8
	First build some and see if it works and lives up to you guys expectation.	1	.2	.2	15.1
	Ghhhh	1	.2	.2	15.3
	Government policies and tax incentives	23	5.5	5.5	20.8
	Government policies and tax incentives, Advanced technology and research in the construction sector	1	.2	.2	21.1
	Government policies and tax incentives, Advanced technology and research in the construction sector, Enhancing investment and financing opportunities	2	.5	.5	21.5
	Government policies and tax incentives, Increasing public awareness	10	2.4	2.4	23.9
	Government policies and tax incentives, Increasing public awareness, Advanced technology and research in the construction sector	6	1.4	1.4	25.4

27.What should be the most important initiative to popularize the concept of Green Buildings?

		Frequency	Percent	Valid Percent	Cumulative Percent
	Government policies and tax incentives, Increasing public awareness, Advanced technology and research in the construction sector, Enhancing investment and financing opportunities	262	62.7	62.7	88.0
	Government policies and tax incentives, Increasing public awareness, Advanced technology and research in the construction sector, Enhancing investment and financing opportunities,	1	.2	.2	88.3
	Government policies and tax incentives, Increasing public awareness, Enhancing investment and financing opportunities	5	1.2	1.2	89.5
	Increasing public awareness	24	5.7	5.7	95.2
	Increasing public awareness, Advanced technology and research in the construction sector	9	2.2	2.2	97.4
	Increasing public awareness, Advanced technology and research in the construction sector, Enhancing investment and financing opportunities	6	1.4	1.4	98.8
	Increasing public awareness, Enhancing investment and financing opportunities	5	1.2	1.2	100.0
	Total	418	100.0	100.0	

28.How important do you think Green Buildings will be for future cities?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		12	2.9	2.9	2.9
	Extremely important, as they are the key to sustainable urbanization	339	81.1	81.1	84.0
	Not sure	13	3.1	3.1	87.1
	Not very important, as other technologies will be more dominant	5	1.2	1.2	88.3
	Somewhat important, but existing buildings also need improvement	49	11.7	11.7	100.0
	Total	418	100.0	100.0	

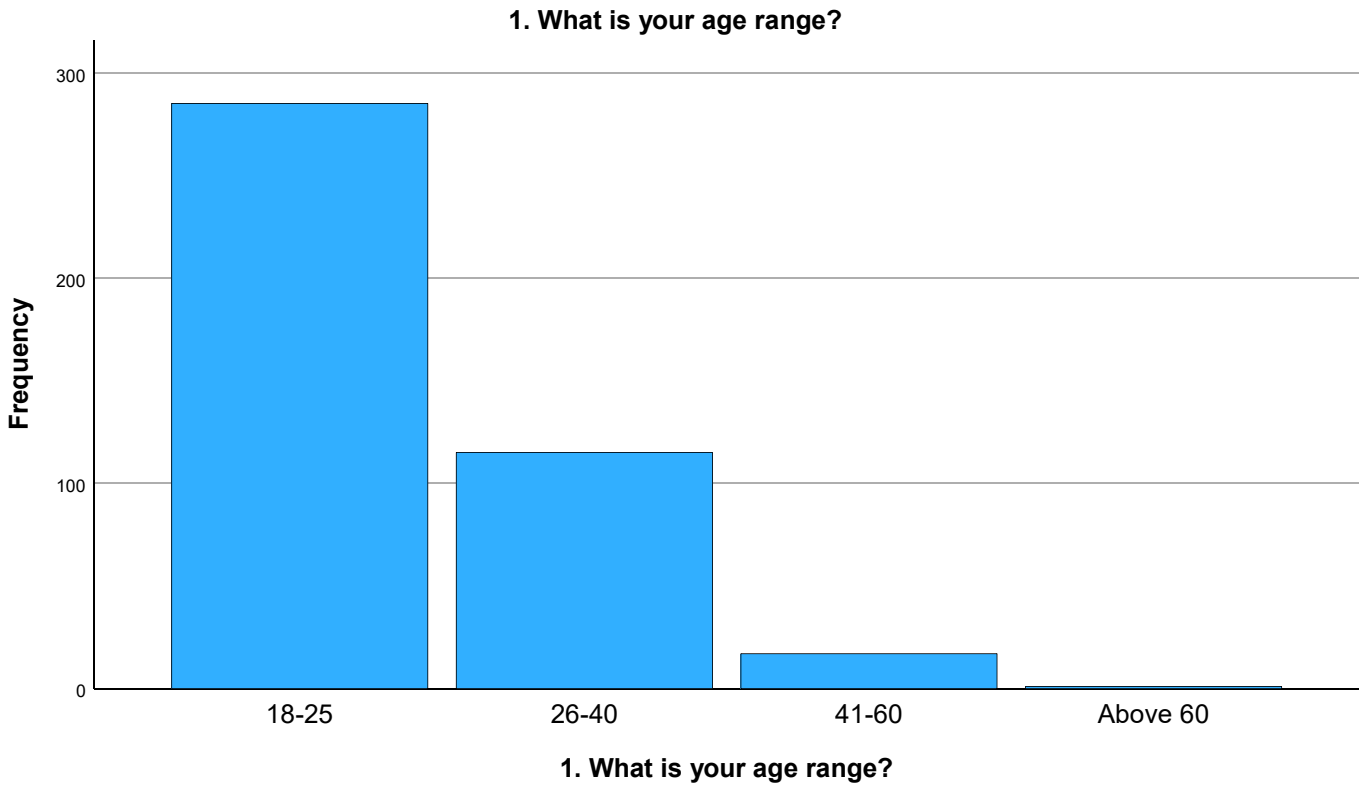
29.How would you like to learn more about Green Buildings?

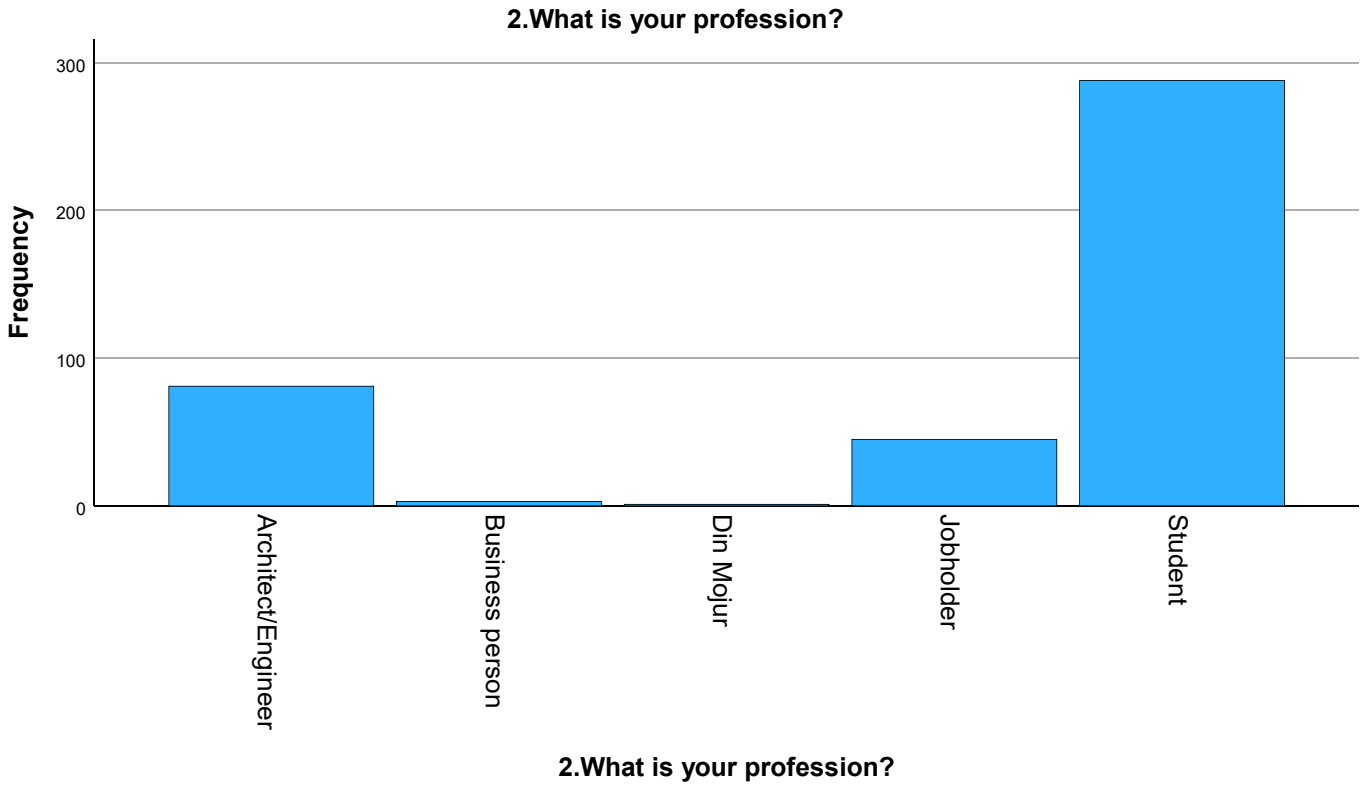
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		15	3.6	3.6	3.6
	No	1	.2	.2	3.8
	No need	1	.2	.2	4.1
	Online courses	10	2.4	2.4	6.5
	Online courses, Videos and articles	2	.5	.5	6.9
	Study	1	.2	.2	7.2
	Videos and articles	26	6.2	6.2	13.4
	Workshops / Seminars	132	31.6	31.6	45.0
	Workshops / Seminars,	1	.2	.2	45.2
	Workshops / Seminars, Online courses	5	1.2	1.2	46.4
	Workshops / Seminars, Online courses,	2	.5	.5	46.9
	Workshops / Seminars, Online courses, Videos and articles	207	49.5	49.5	96.4
	Workshops / Seminars, Videos and articles	15	3.6	3.6	100.0
	Total	418	100.0	100.0	

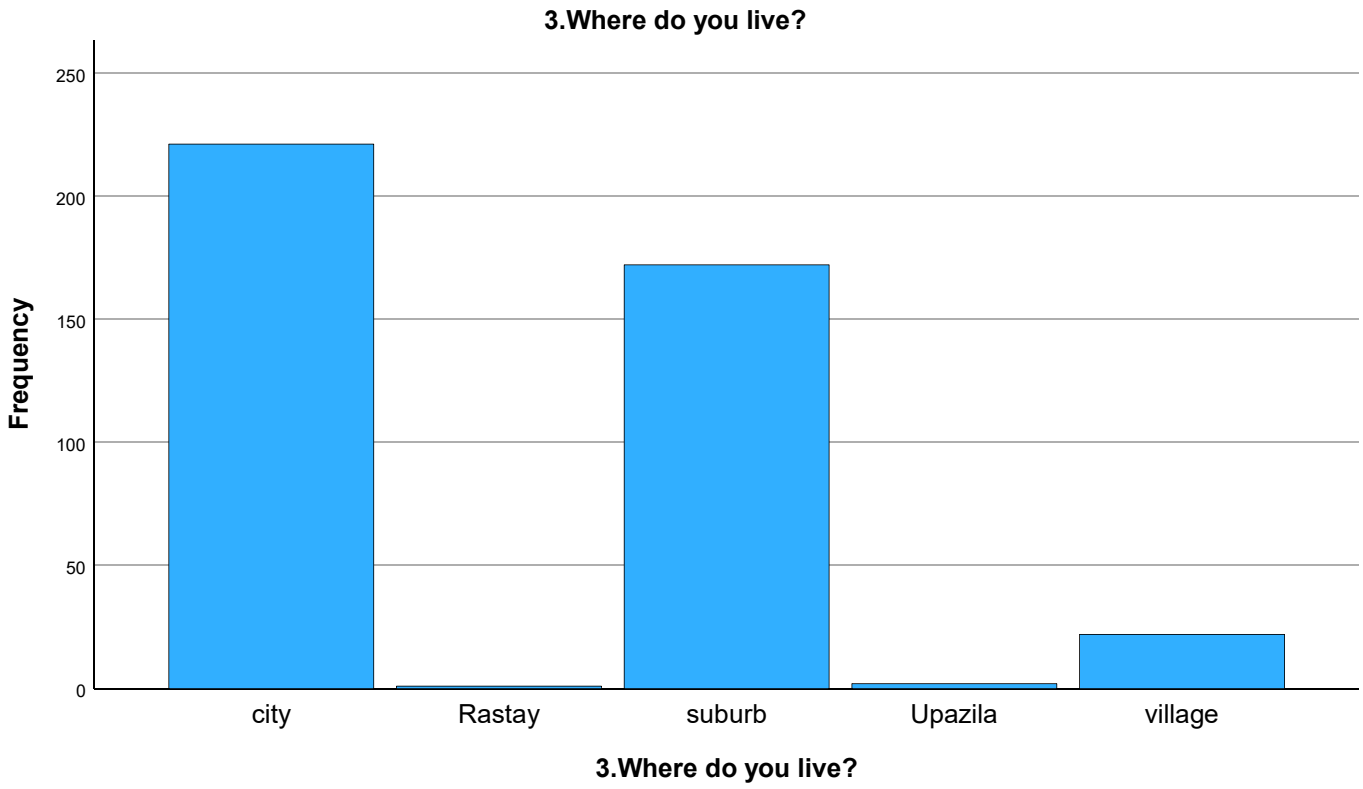
30. How important do you think green building is for Bangladesh?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	9	2.2	2.2	2.2
	1	9	2.2	2.2	4.4
	2	11	2.6	2.7	7.1
	3	29	6.9	7.1	14.3
	4	15	3.6	3.7	18.0
	5	333	79.7	82.0	100.0
	Total	406	97.1	100.0	
Missing	System	12	2.9		
Total		418	100.0		

Bar Chart

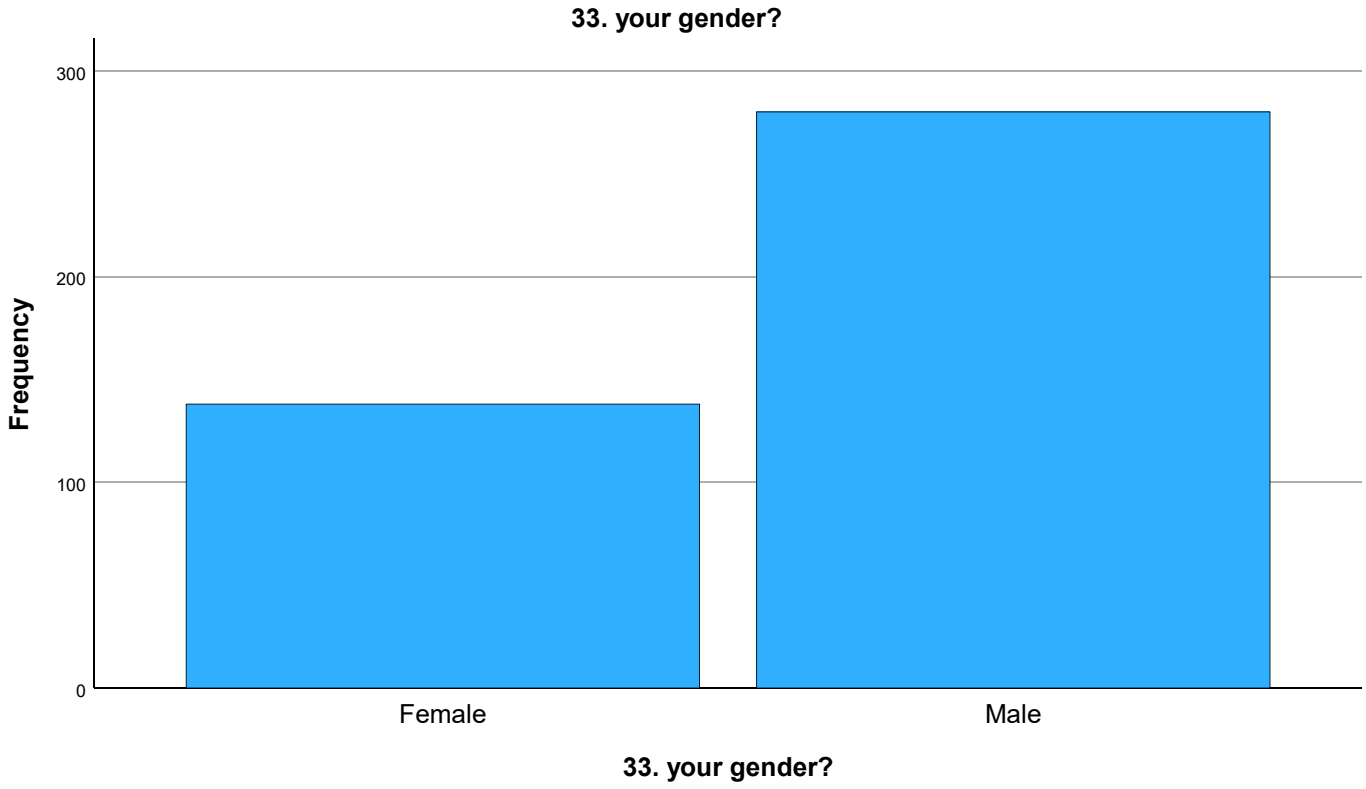

1. What is your age range?
Frequency
300
200
100
0
18-25
26-40
41-60
Above 60
1. What is your age range?

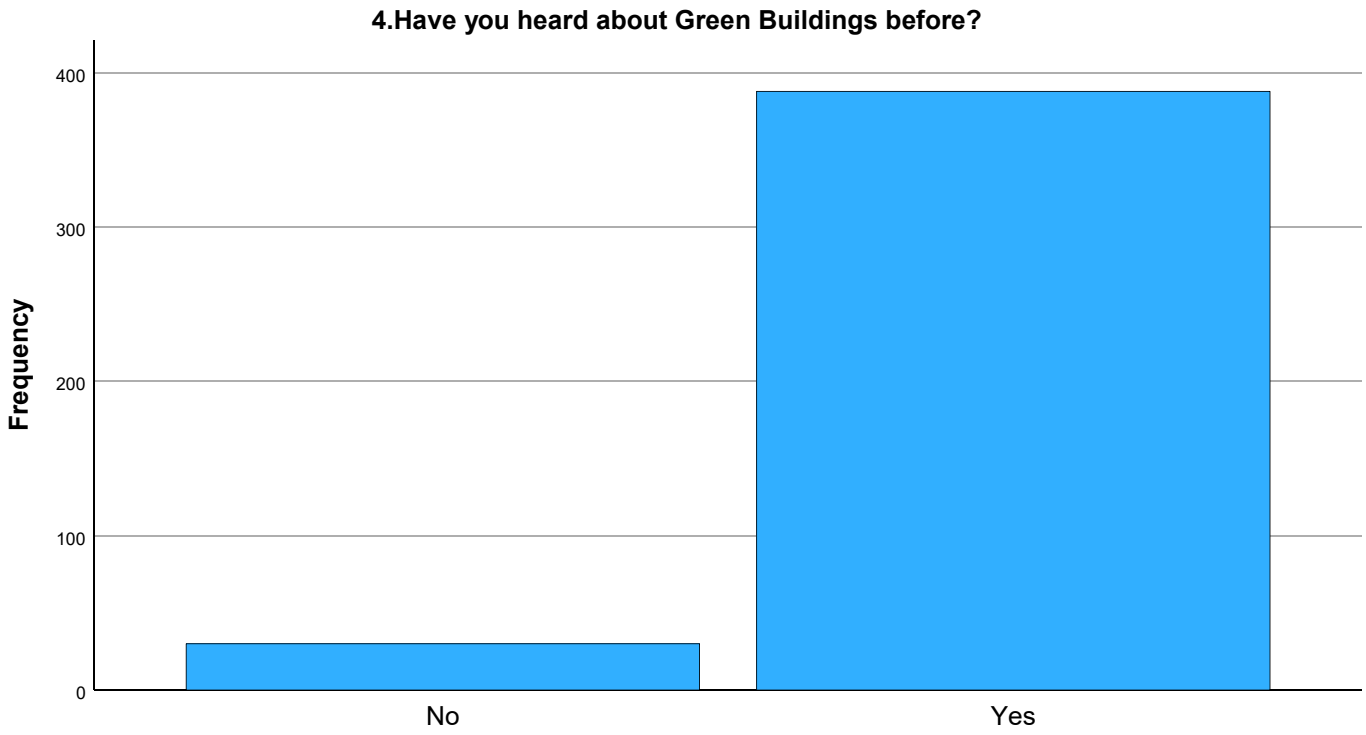

2.What is your profession?
Frequency
300
200
100
0
Architect/Engineer
Business person
Din Mojur
Jobholder
Student
2.What is your profession?


3.Where do you live?
Frequency
250
200
150
100
50
0
city
Rastay
suburb
Upazila
village
3.Where do you live?

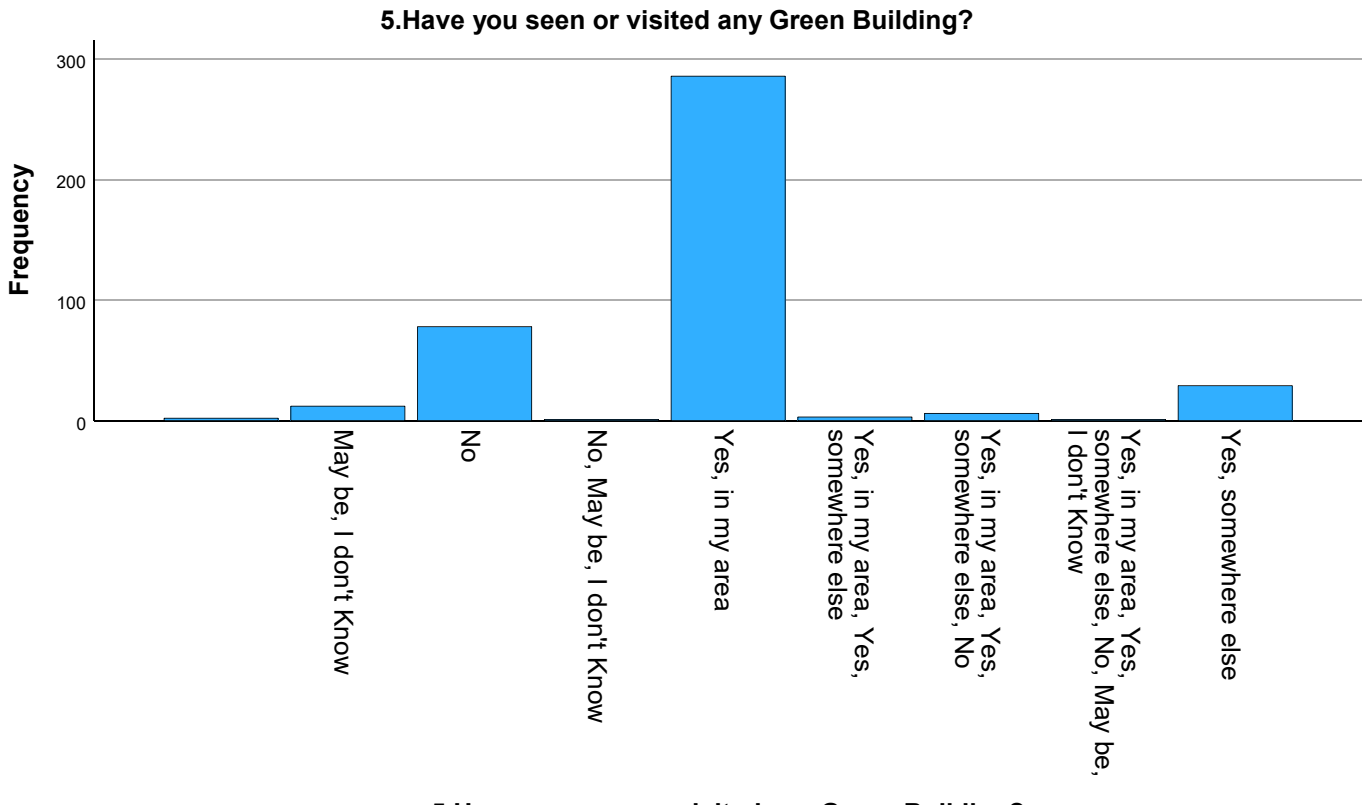

31. what is your educational qualification?
Frequency
200
150
100
50
0
Below SSC
Graduate
HSC
Post Graduate
31. what is your educational qualification?

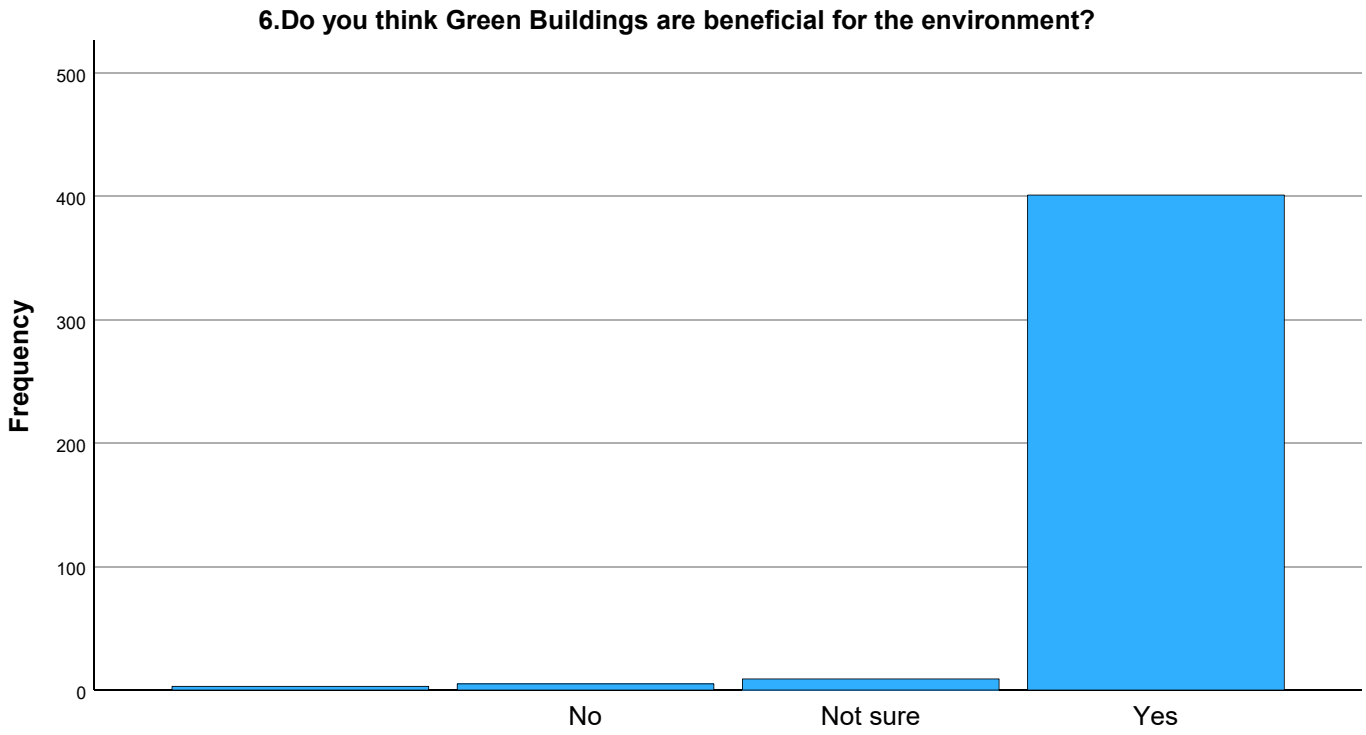

32. your monthly income range?
Frequency
200
150
100
50
0
00-20000
20000-30000
50000
50000-100000
32. your monthly income range?


33. your gender?
Frequency
300
200
100
0
Female
Male
33. your gender?

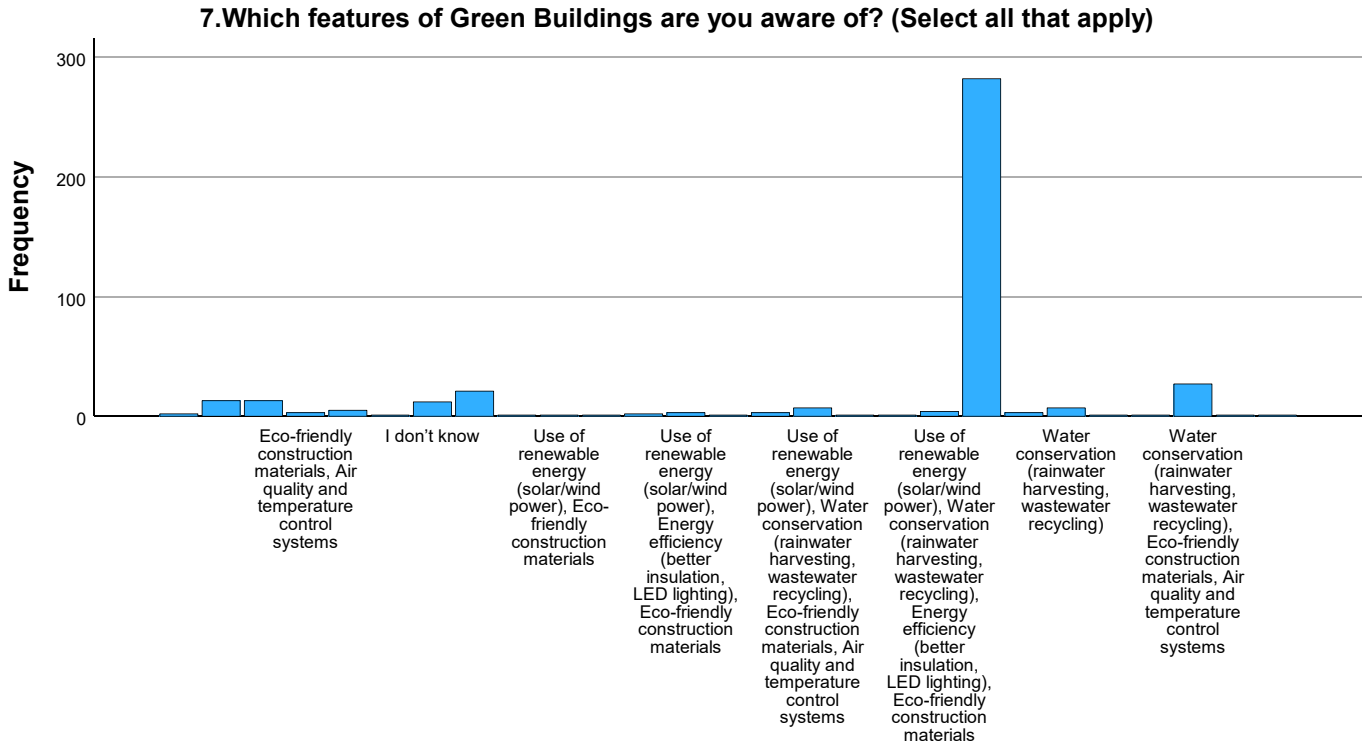


4.Have you heard about Green Buildings before?

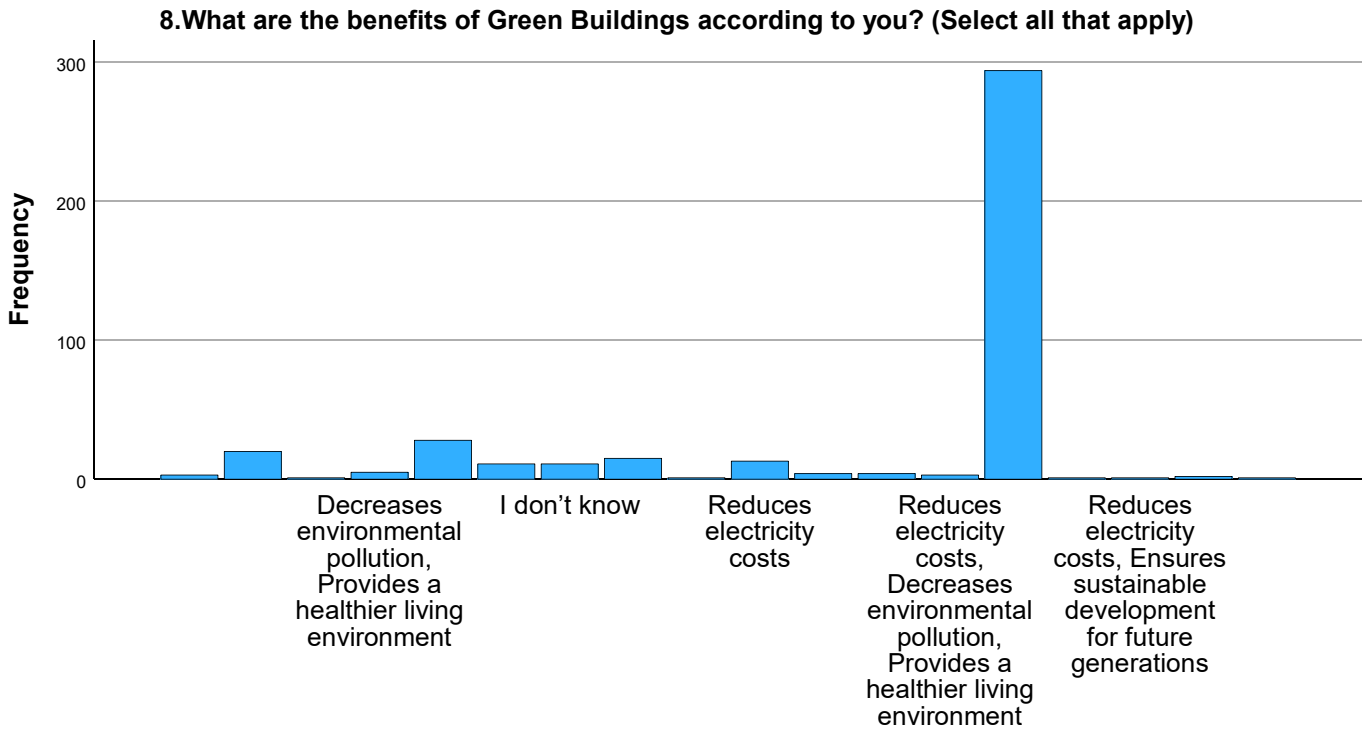




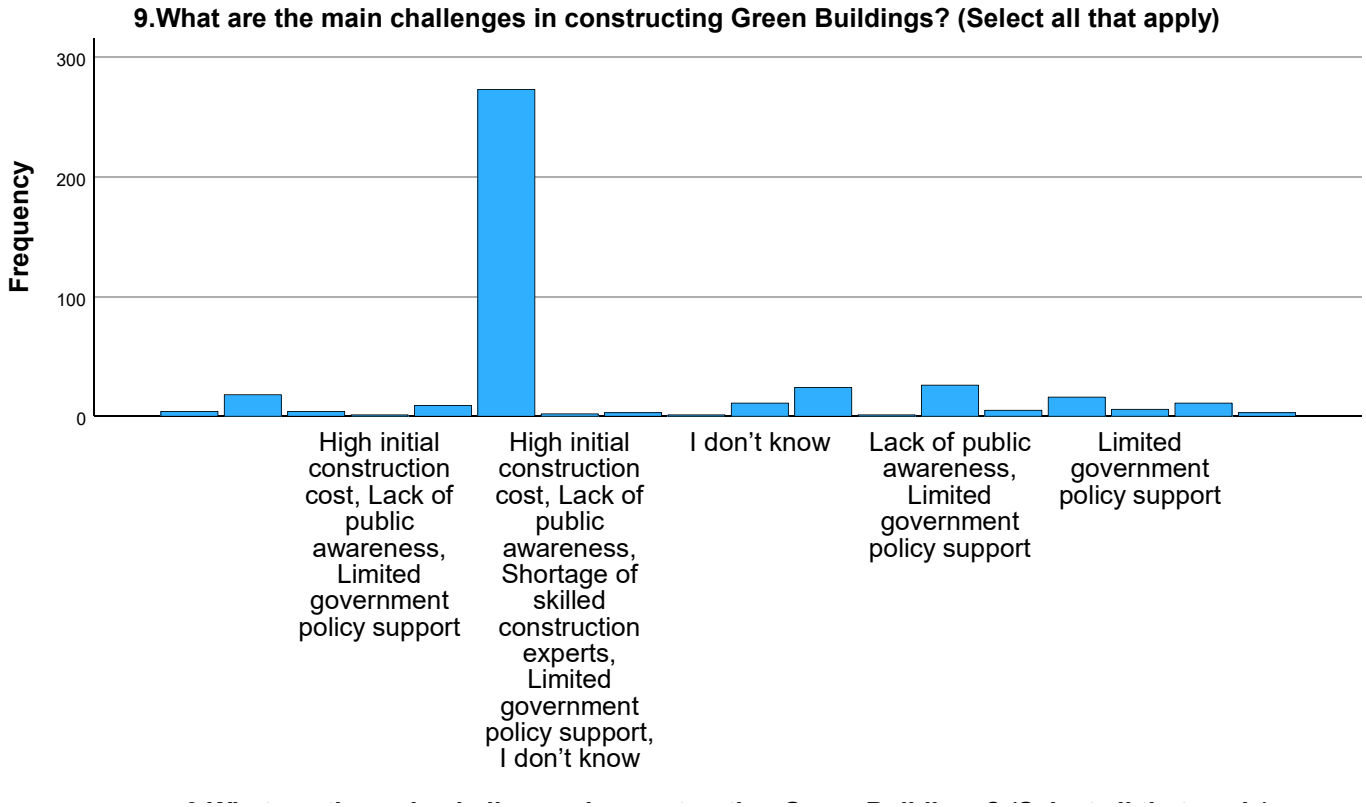
6.Do you think Green Buildings are beneficial for the environment?

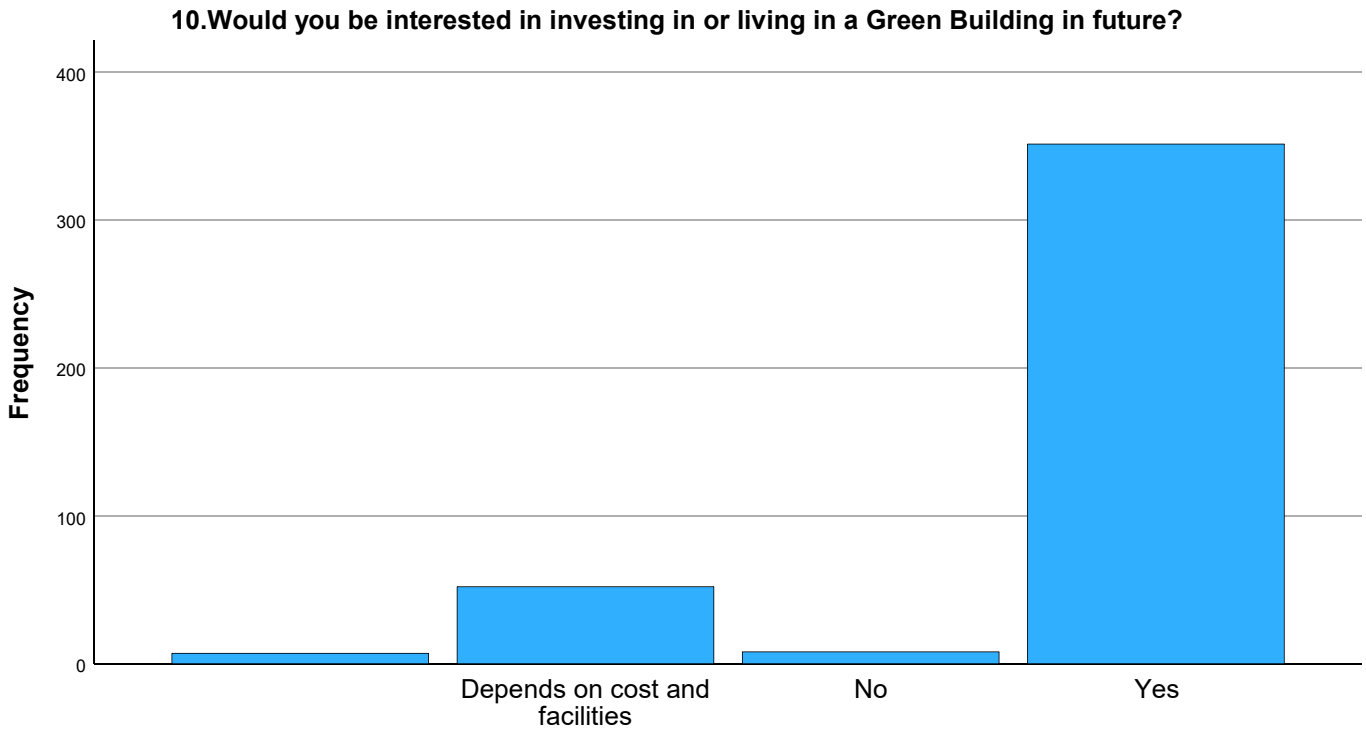


7.Which features of Green Buildings are you aware of? (Select all that apply)

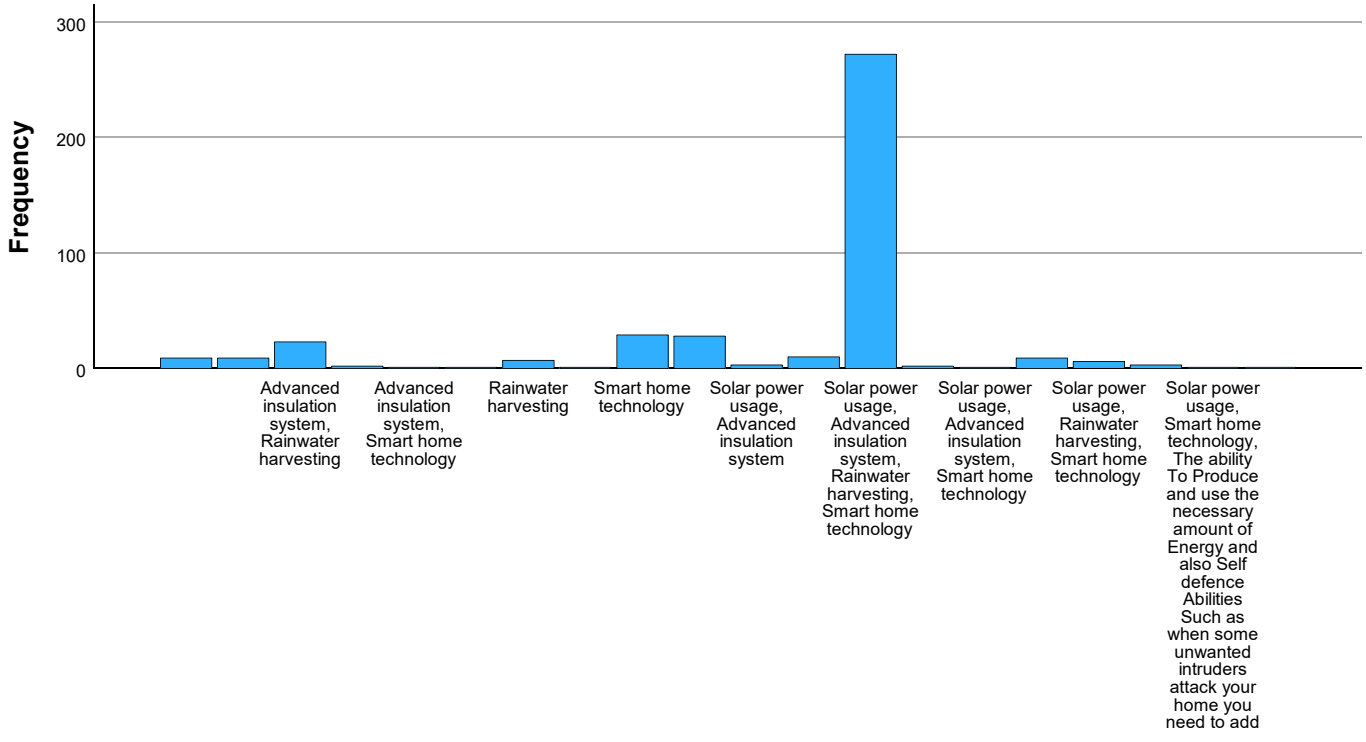


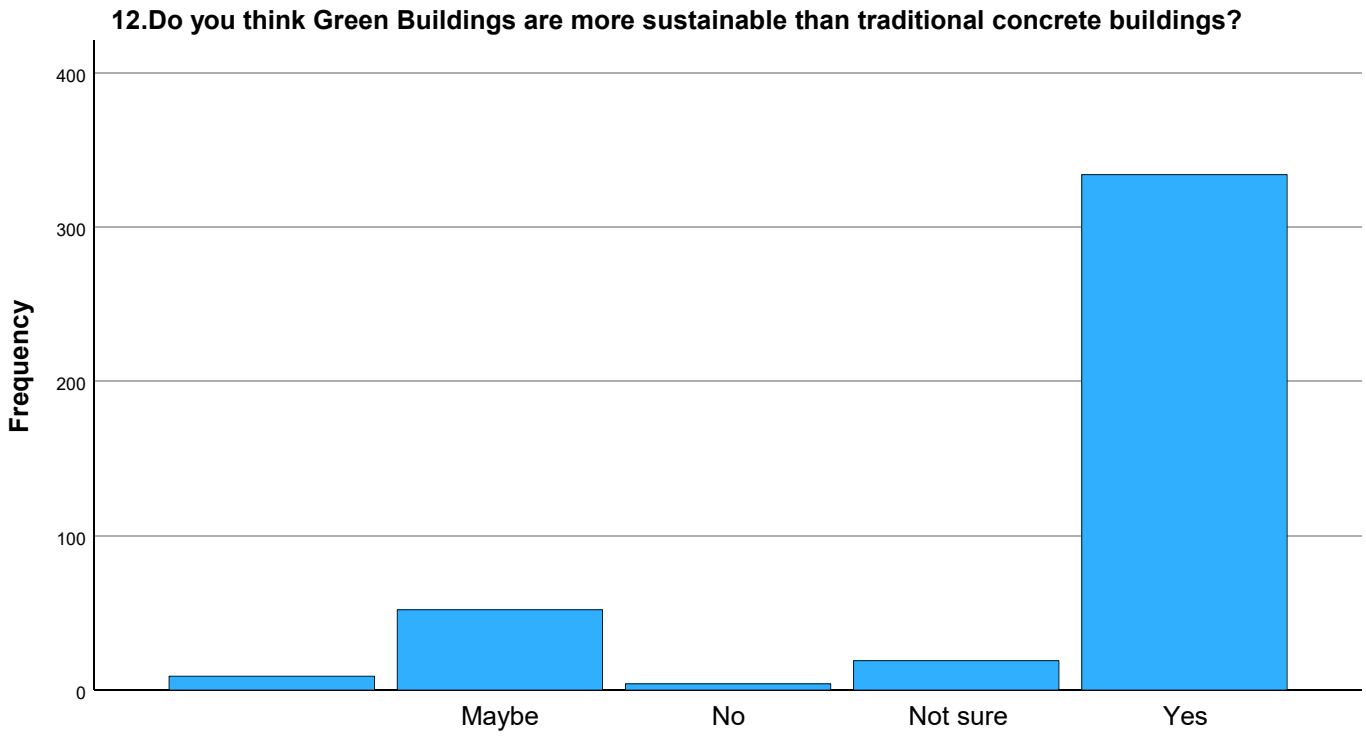
8.What are the benefits of Green Buildings according to you? (Select all that apply)



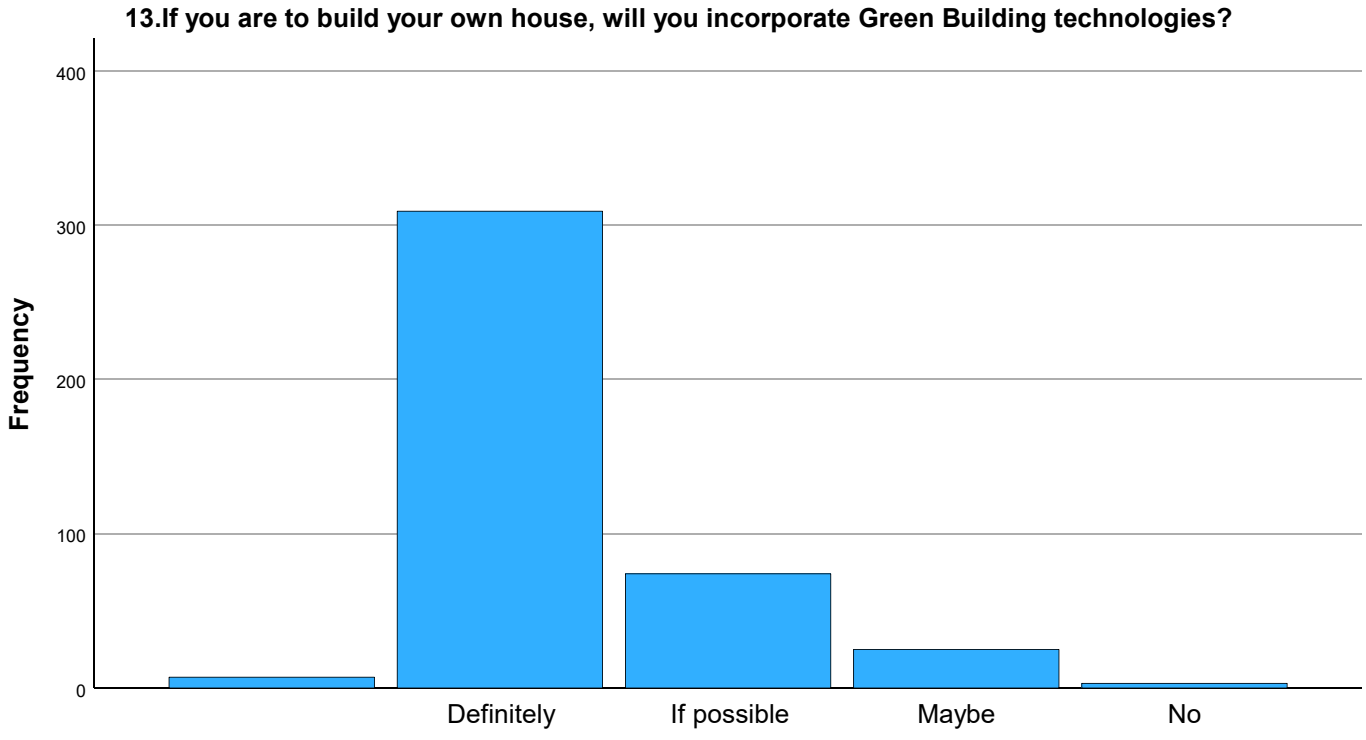


10.Would you be interested in investing in or living in a Green Building in future?



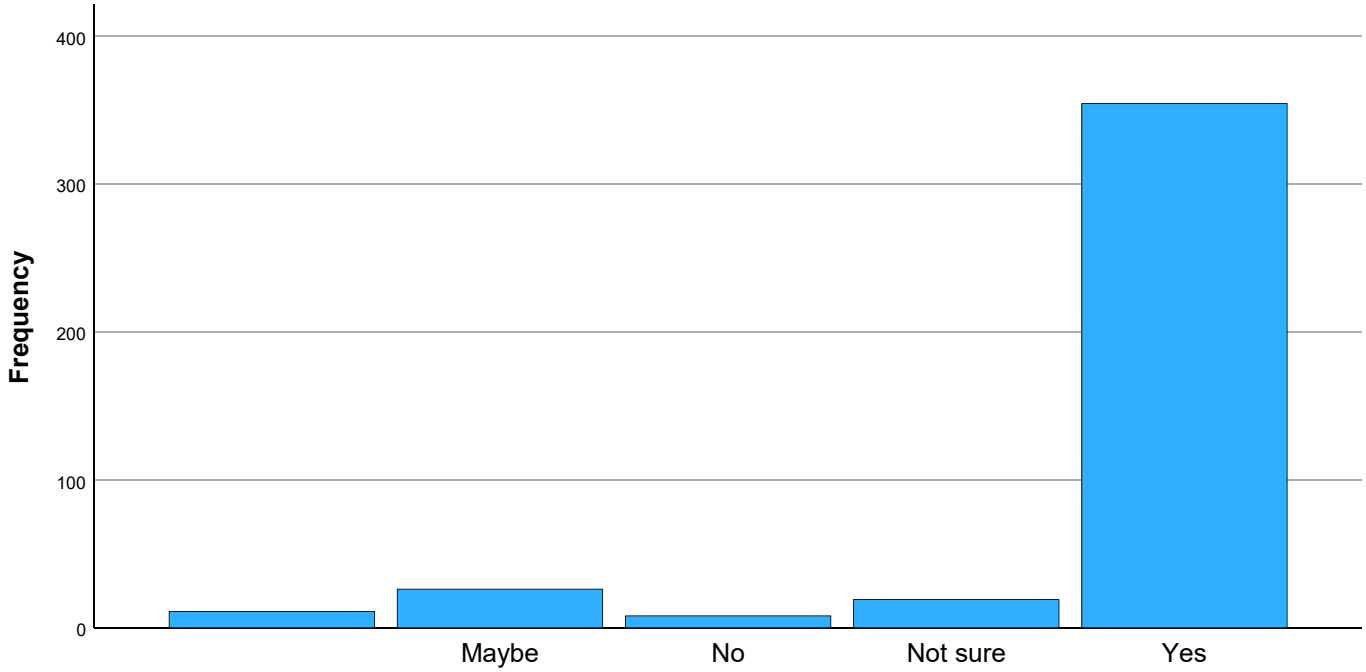


12.Do you think Green Buildings are more sustainable than traditional concrete buildings?



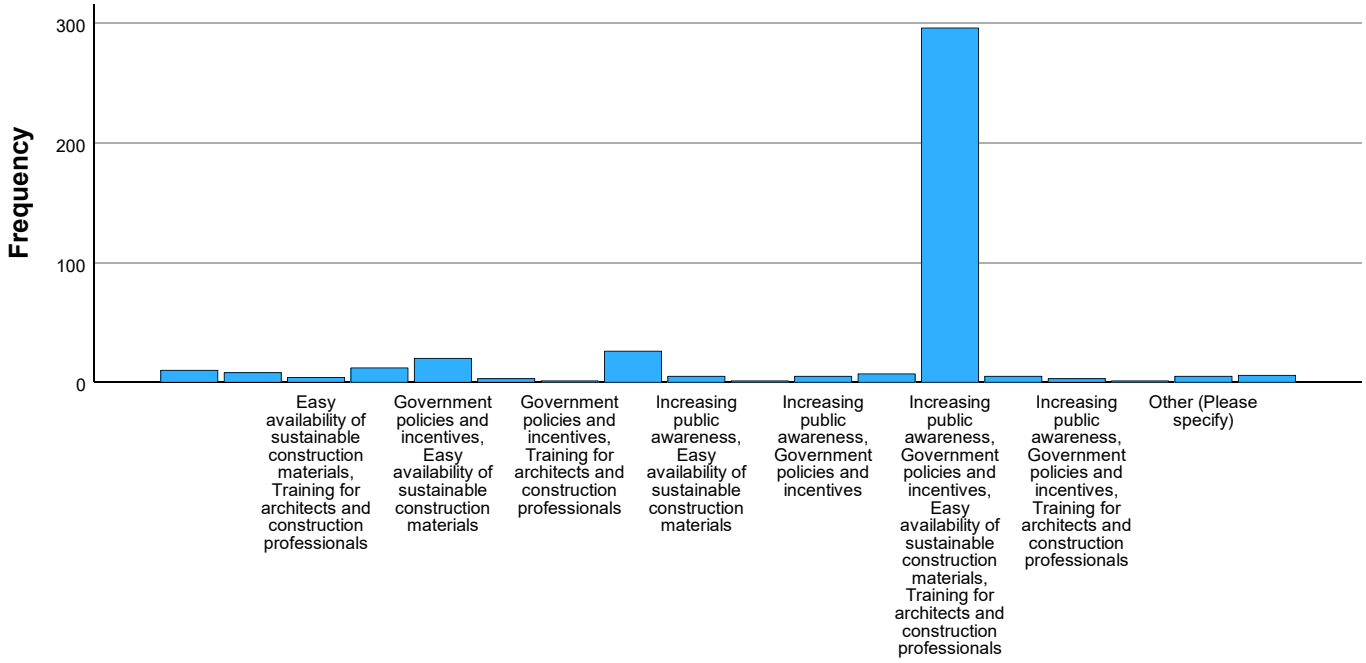
13.If you are to build your own house, will you incorporate Green Building technologies?

14.Do you think government and private sector support is crucial for Green Building development?

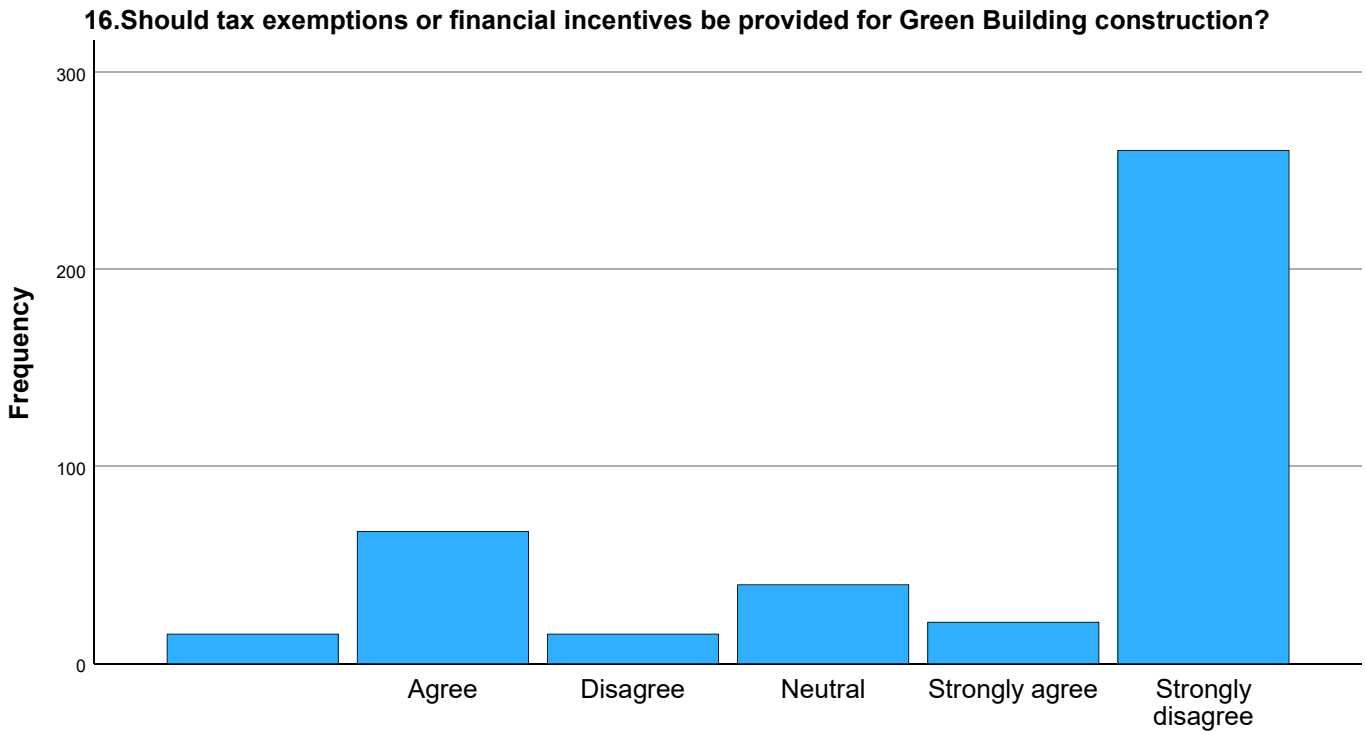


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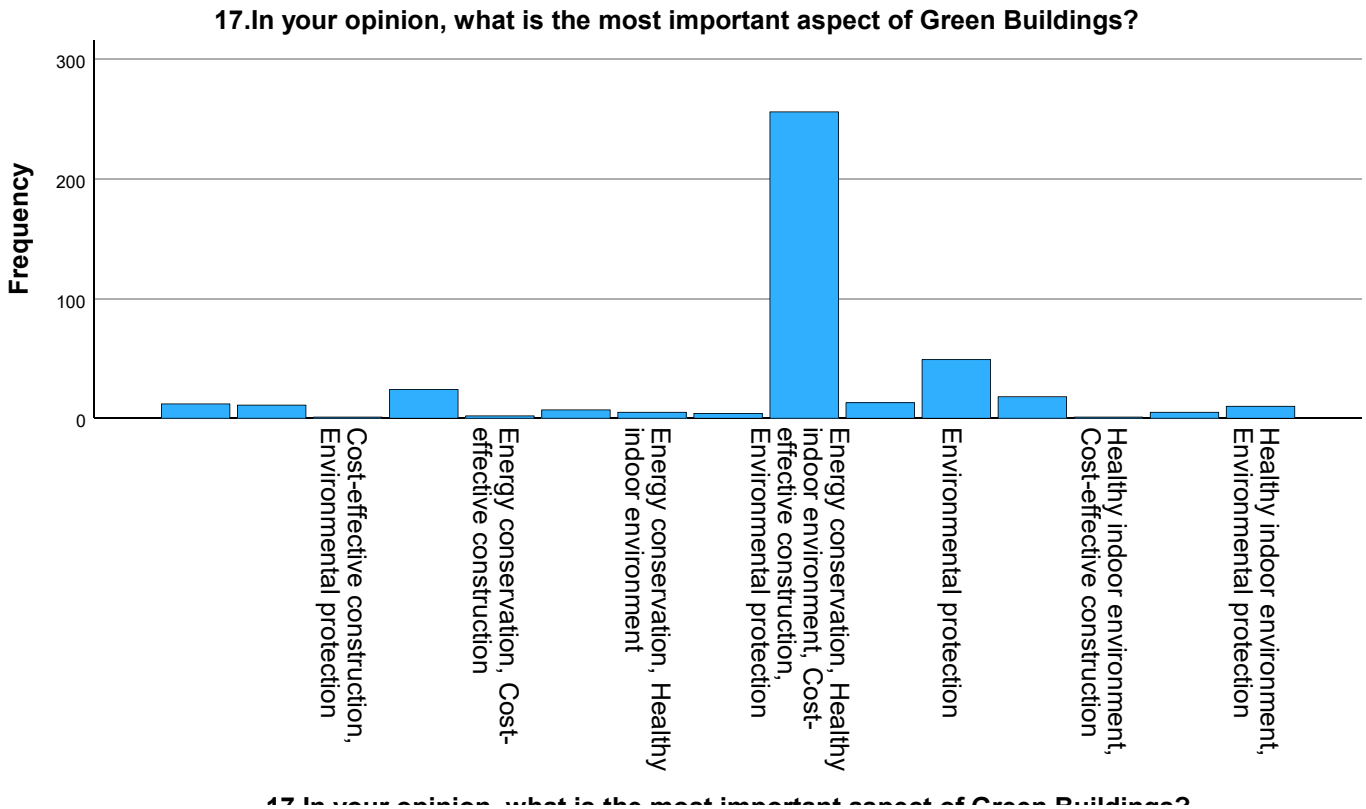
15.What initiatives should be taken to promote Green Buildings? (Select all that apply)

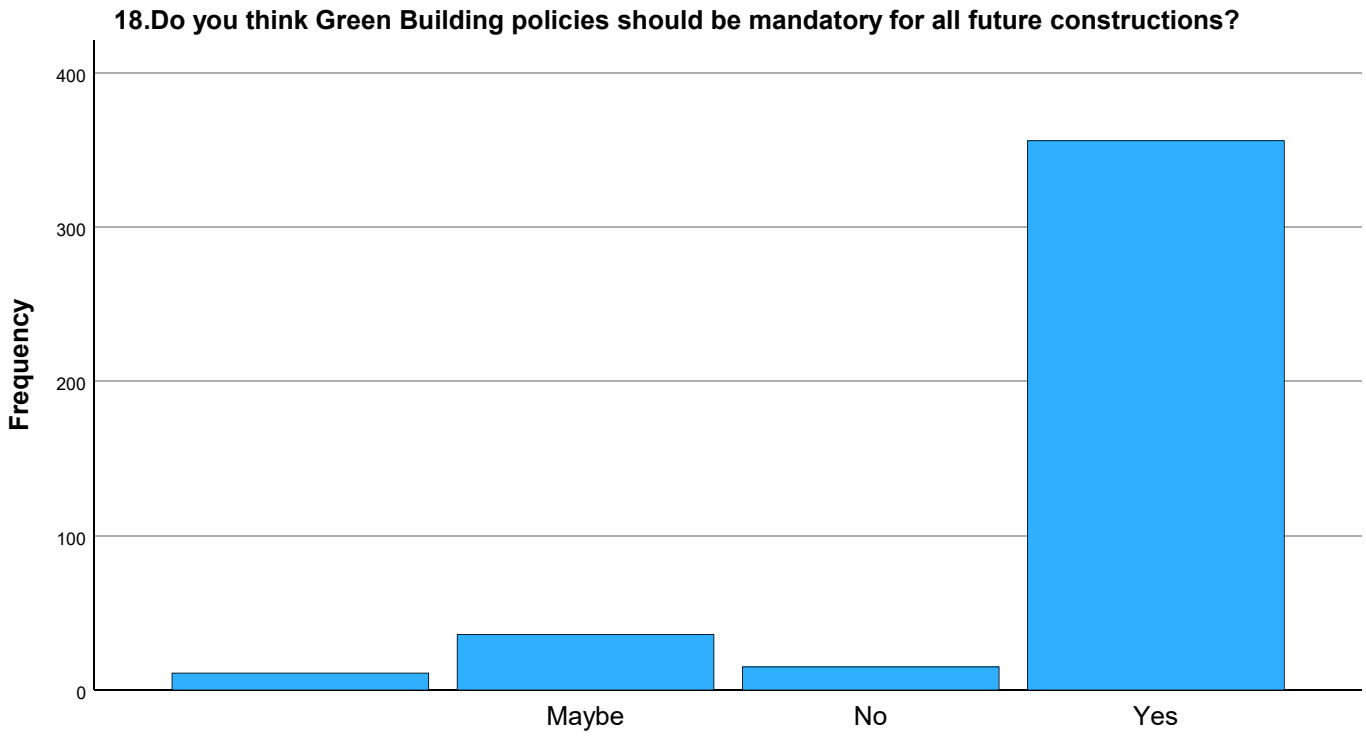


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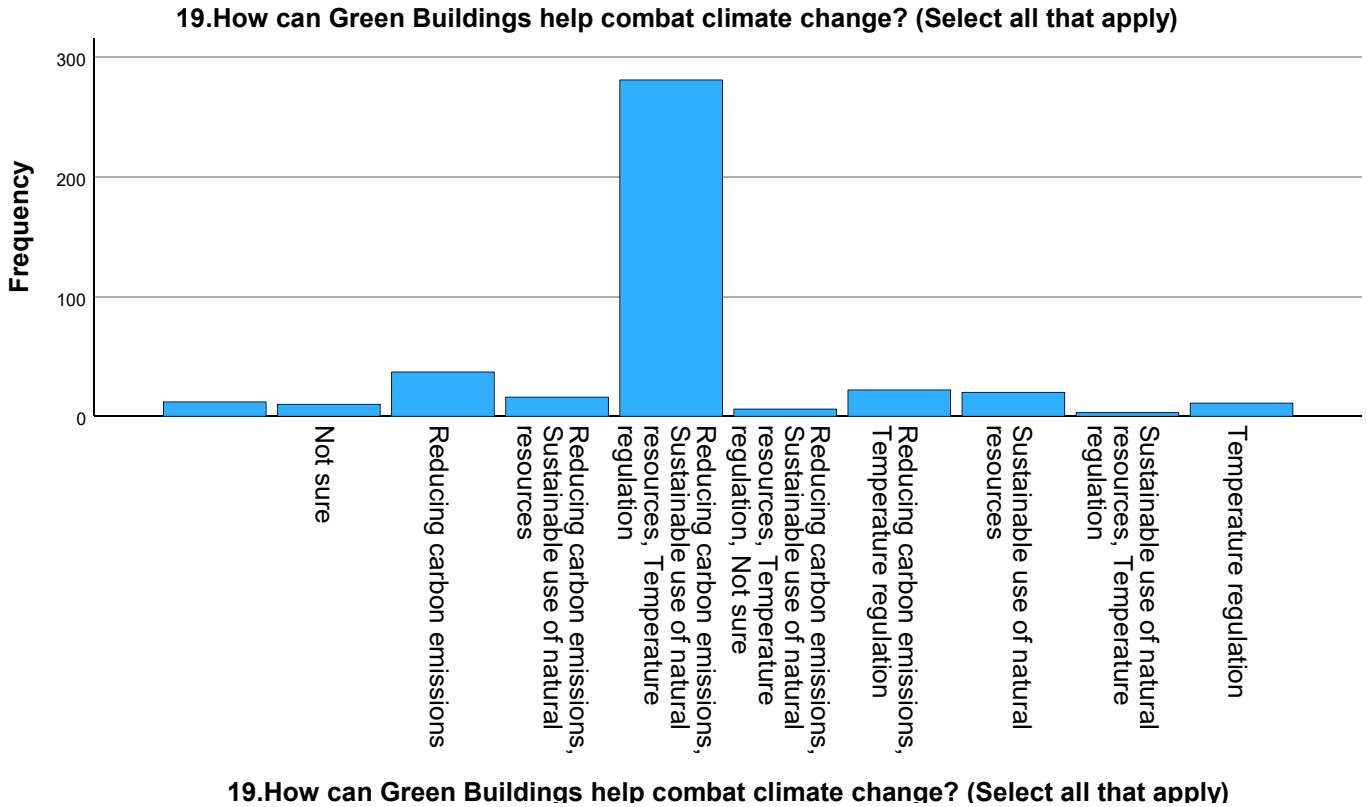


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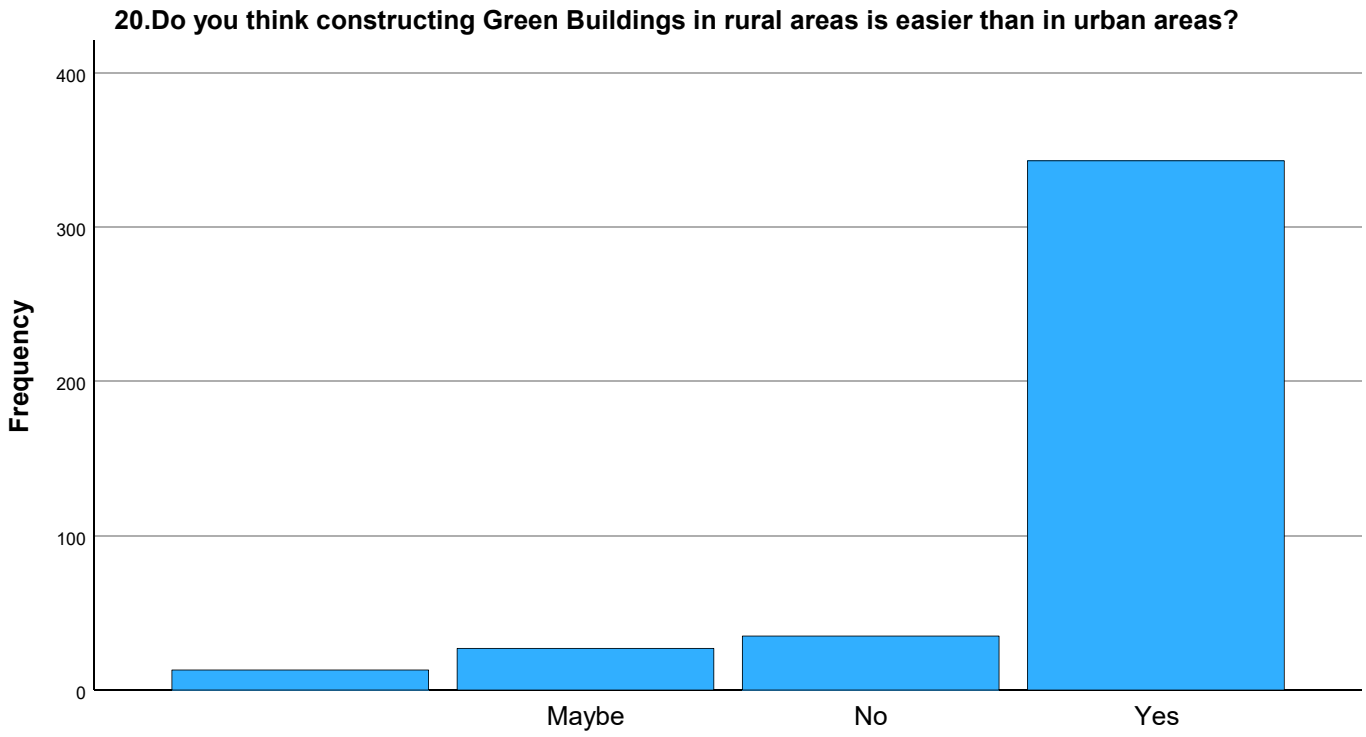




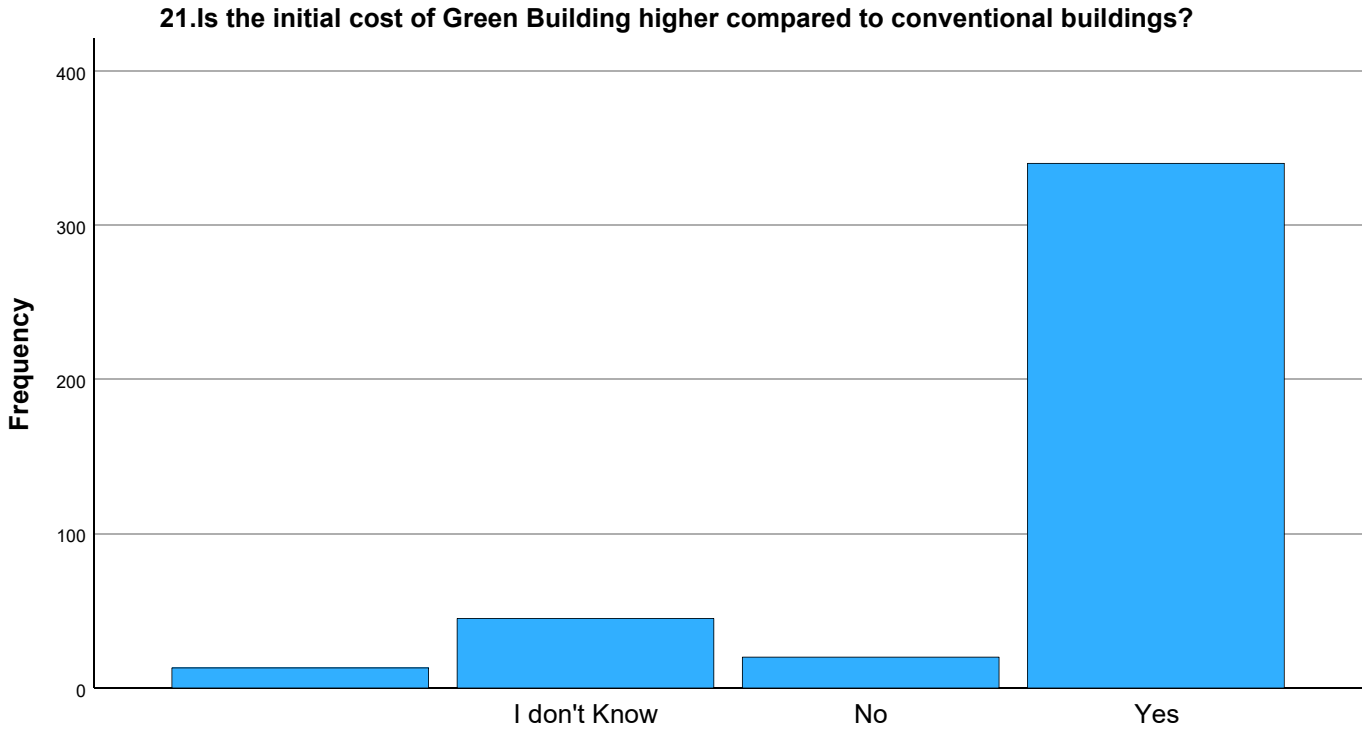
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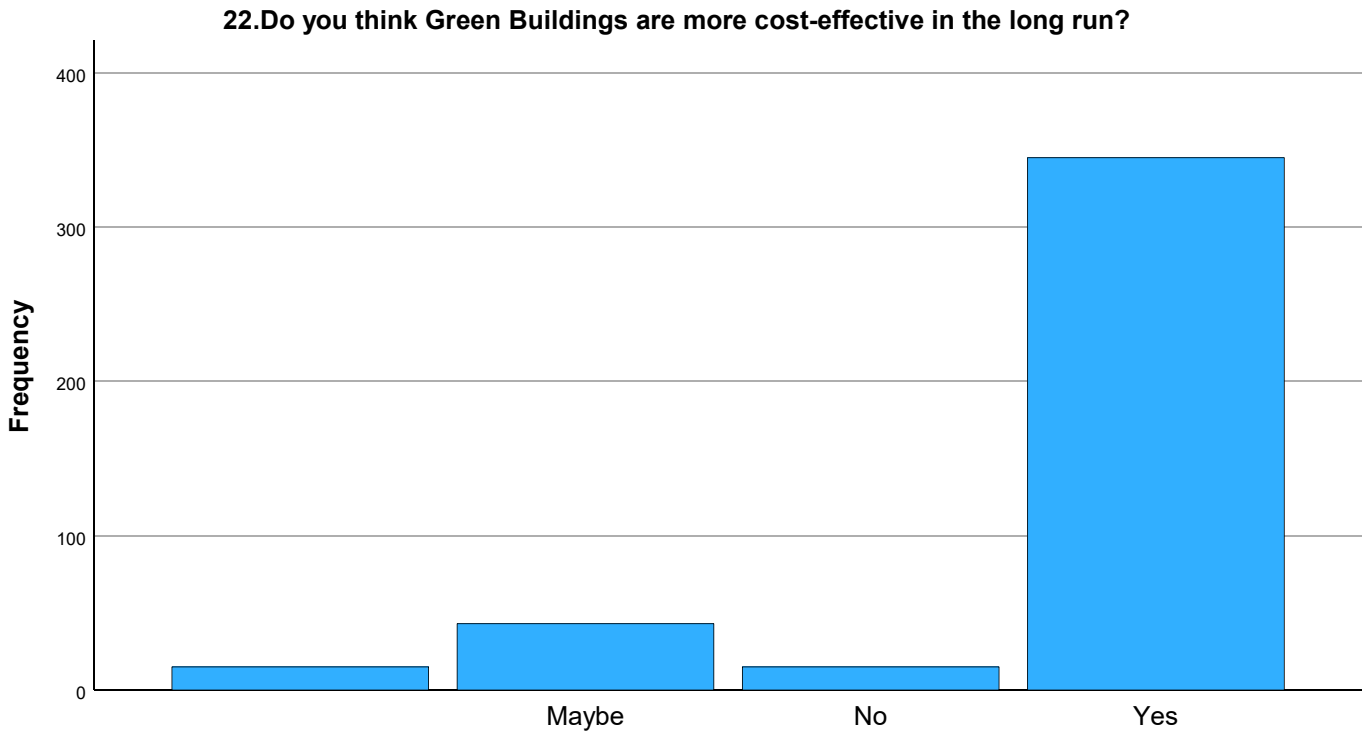
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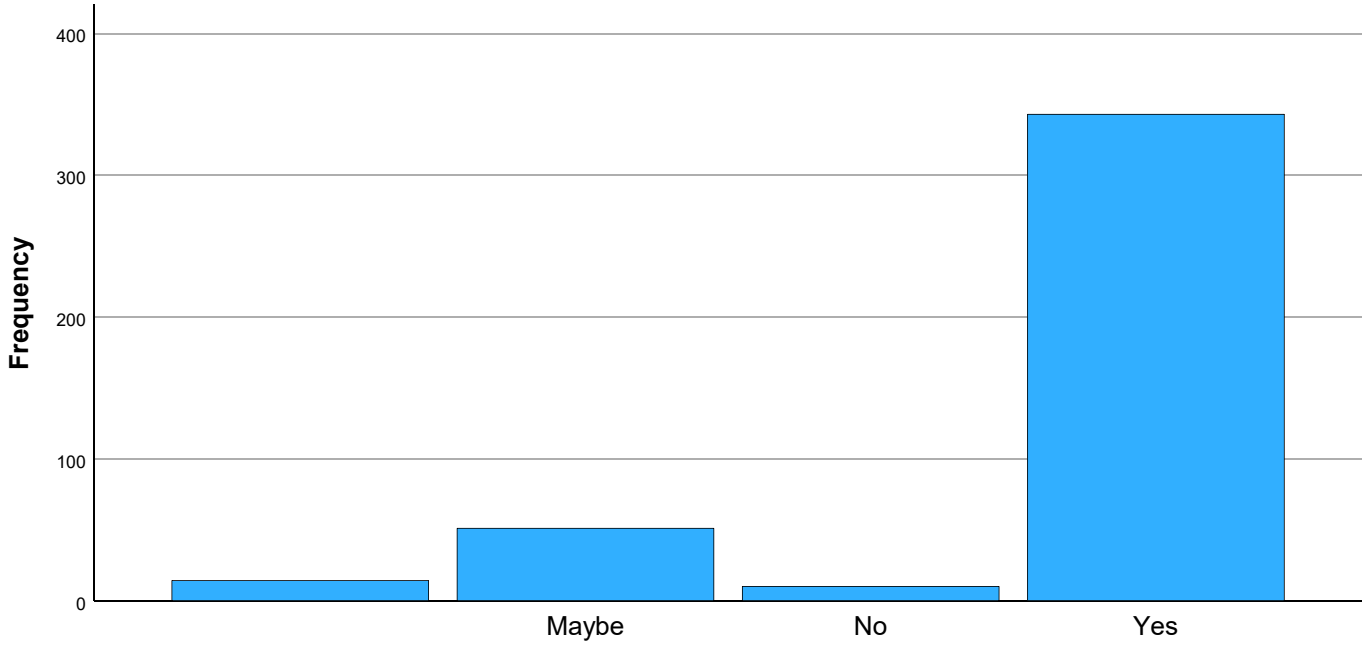


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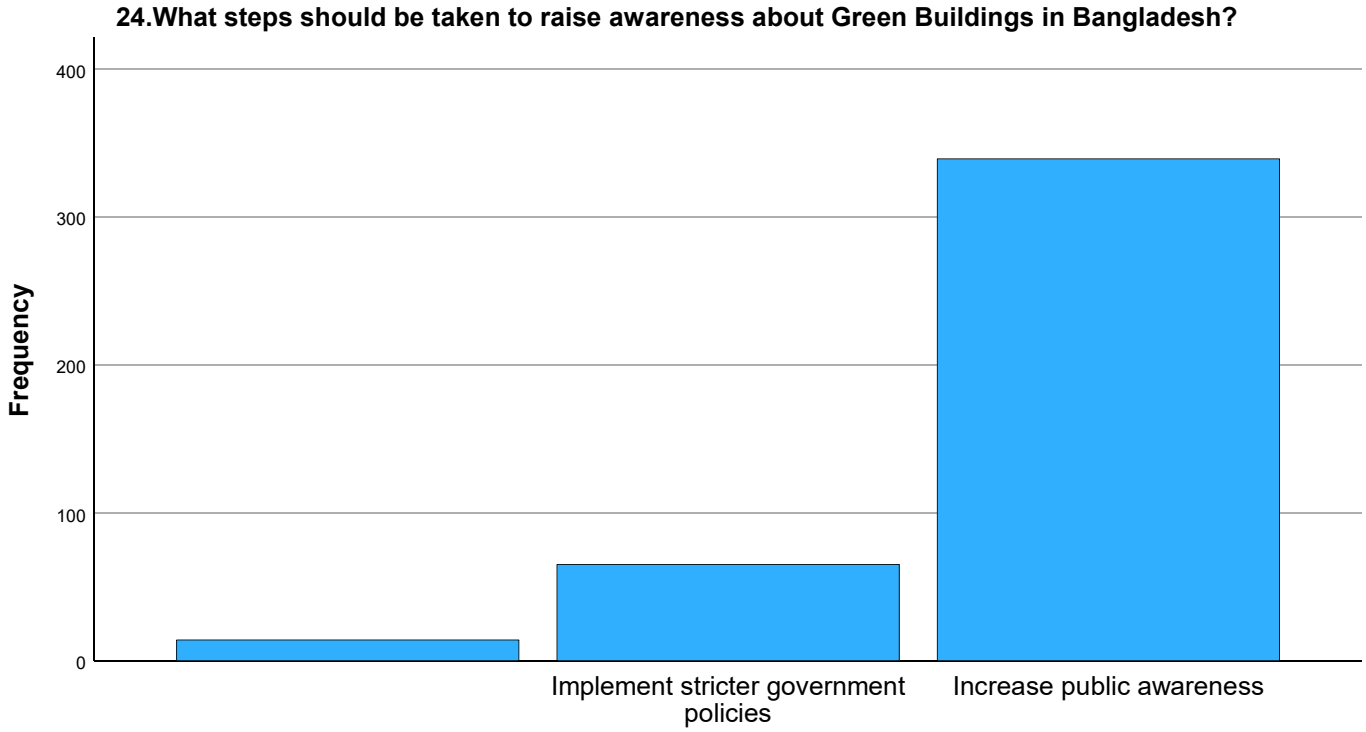


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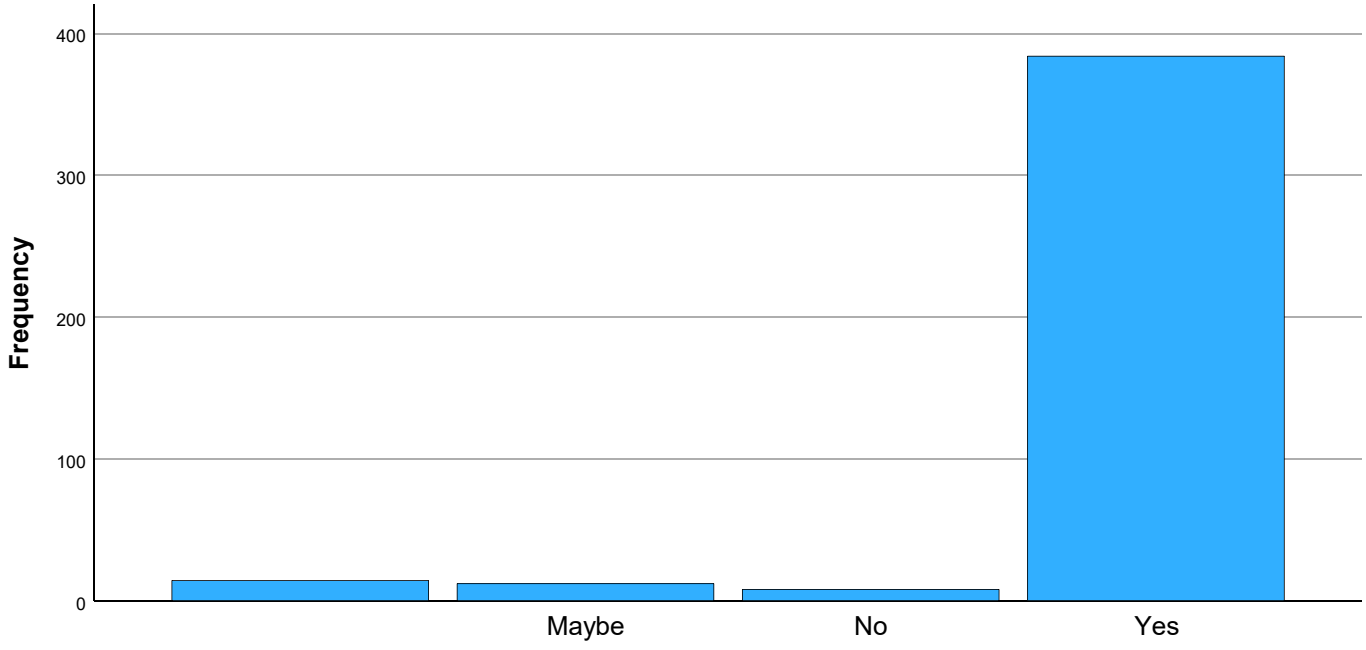
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23.If the government provides financial incentives for Green Building construction, would you convert your home into a Green Building?

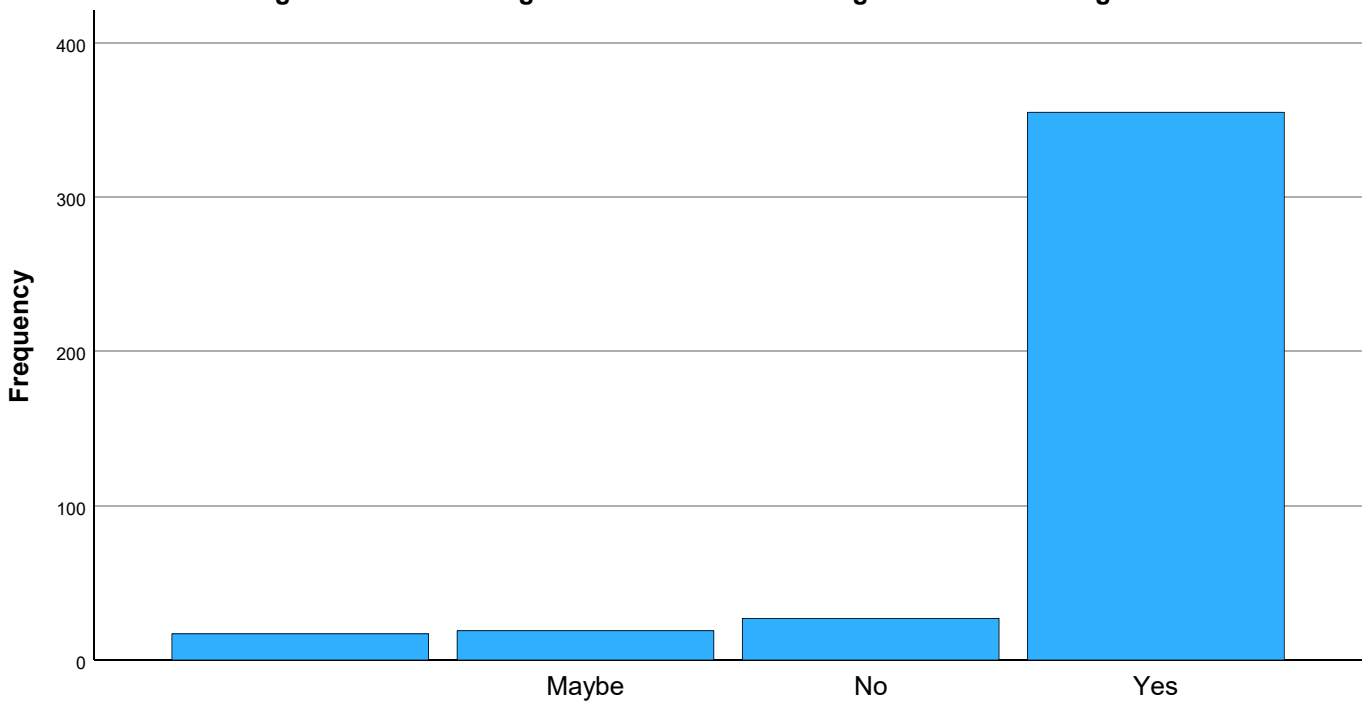


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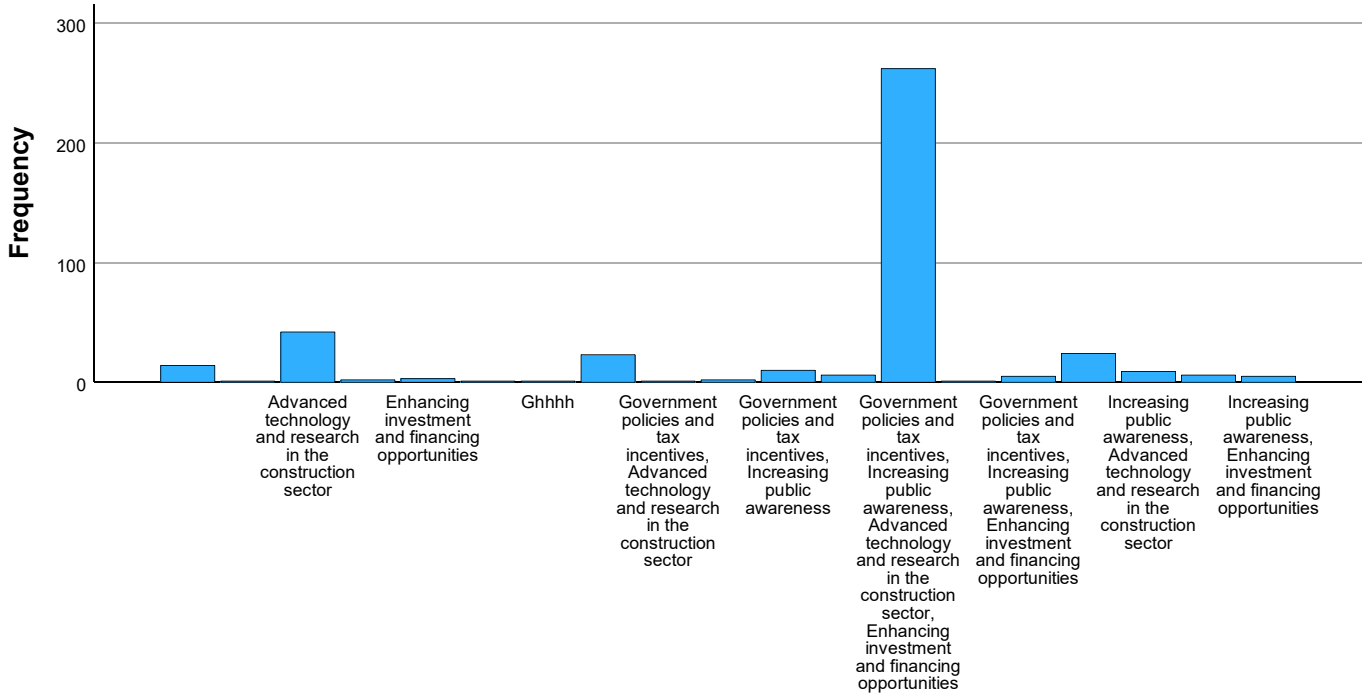
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26.Should government buildings be constructed following the Green Building model?

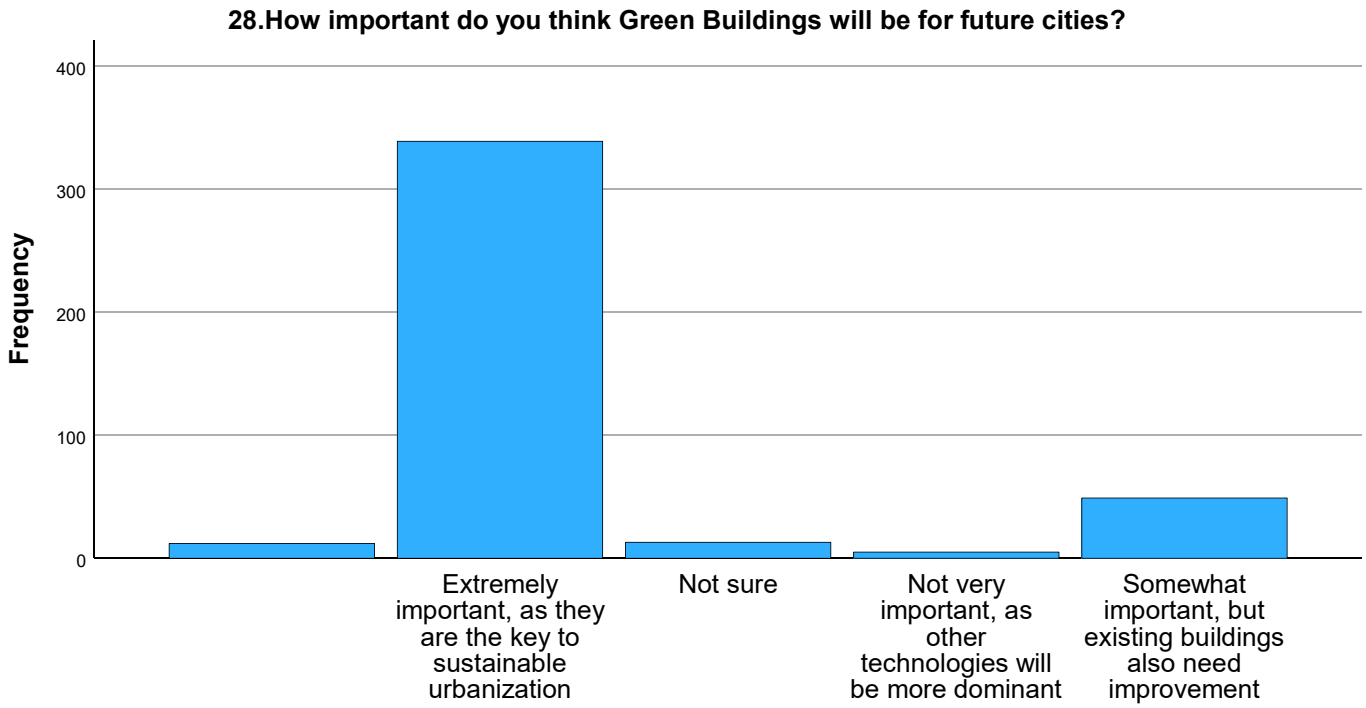


26.Should government buildings be constructed following the Green Building model?

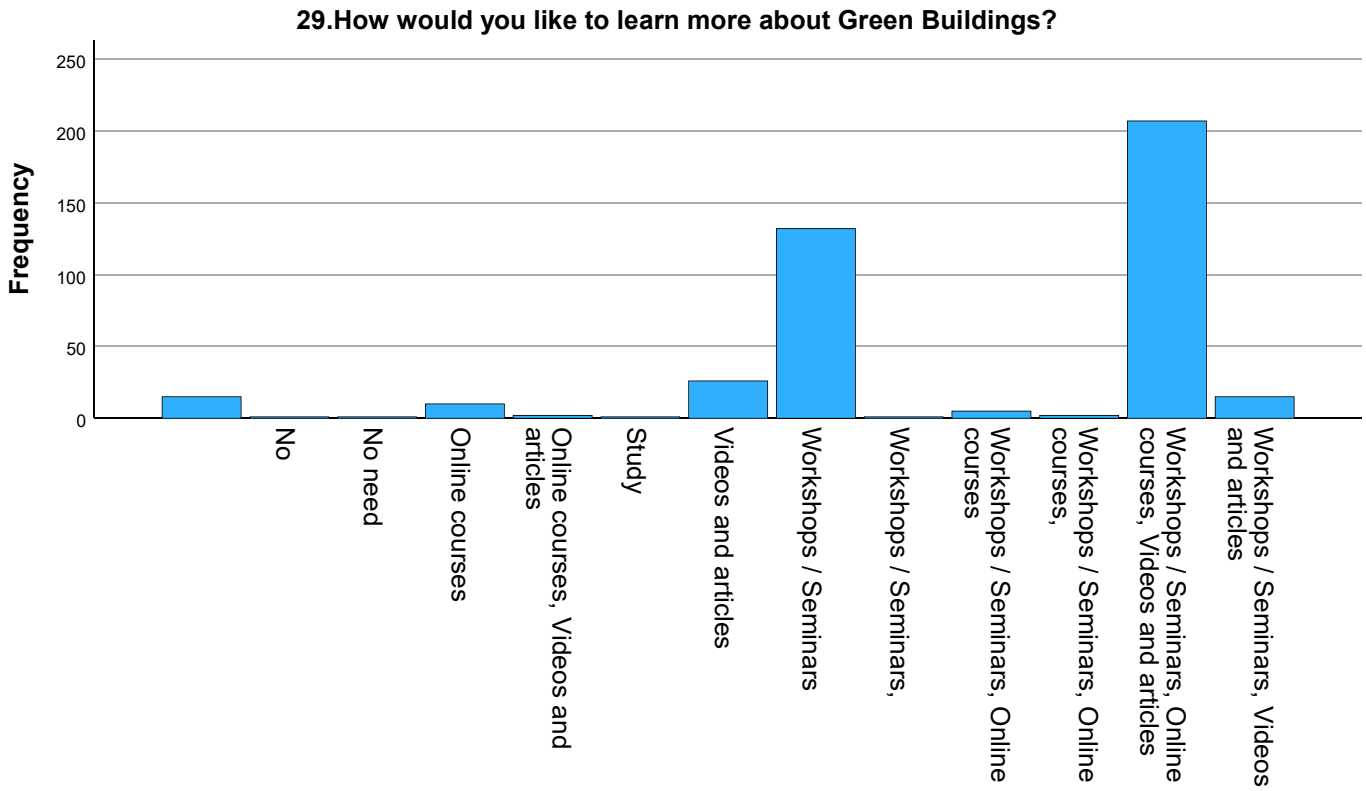
27.What should be the most important initiative to popularize the concept of Green Buildings?

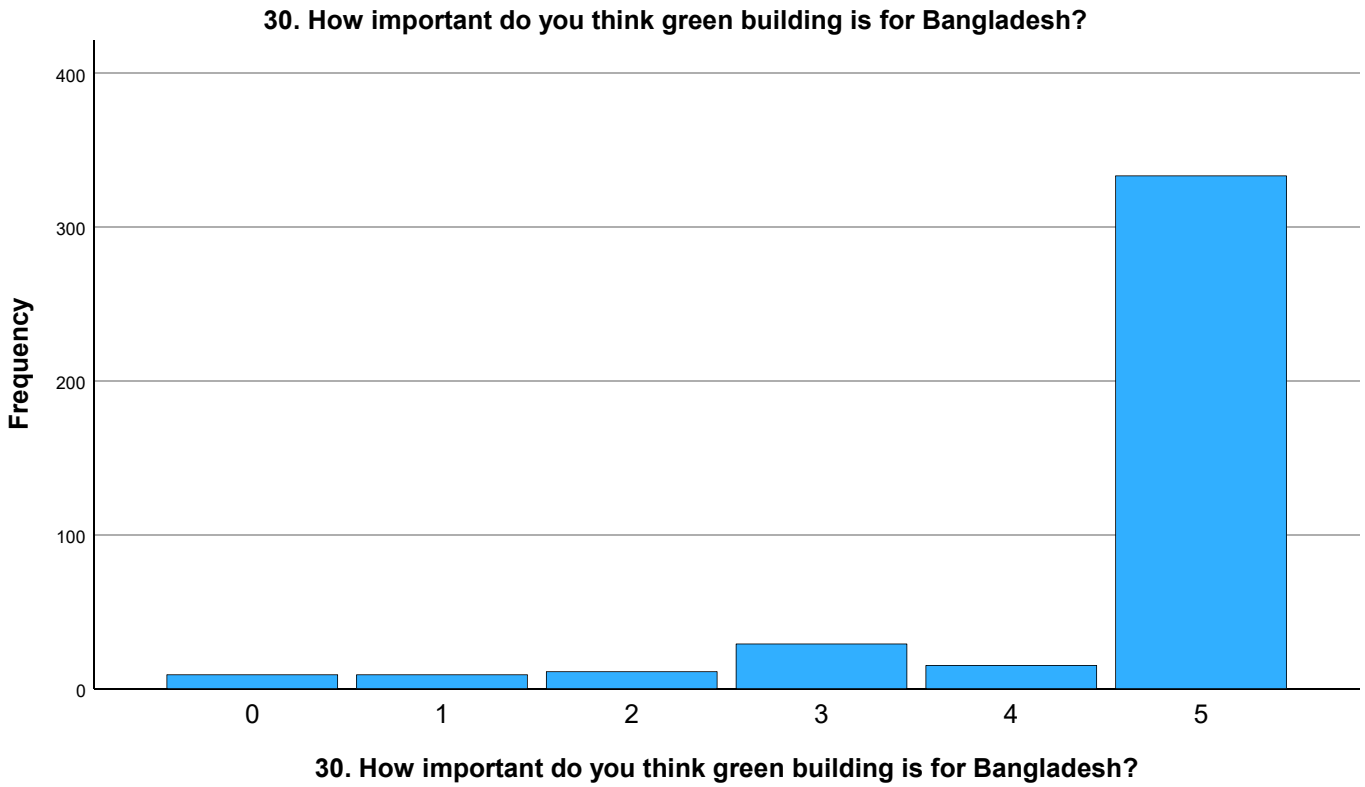


27.What should be the most important initiative to popularize the concept of Green Buildings?



28.How important do you think Green Buildings will be for future cities?




30. How important do you think green building is for Bangladesh?
Frequency
400
300
200
100
0
0
1
2
3
4
5
30. How important do you think green building is for Bangladesh?

6.2 Crosstab Gender Vs awareness with Chi-Square test

Crosstabs

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
33. your gender? * 4.Have you heard about Green Buildings before?	418	100.0%	0	0.0%	418	100.0%

33. your gender? * 4.Have you heard about Green Buildings before? Crosstabulation

Count

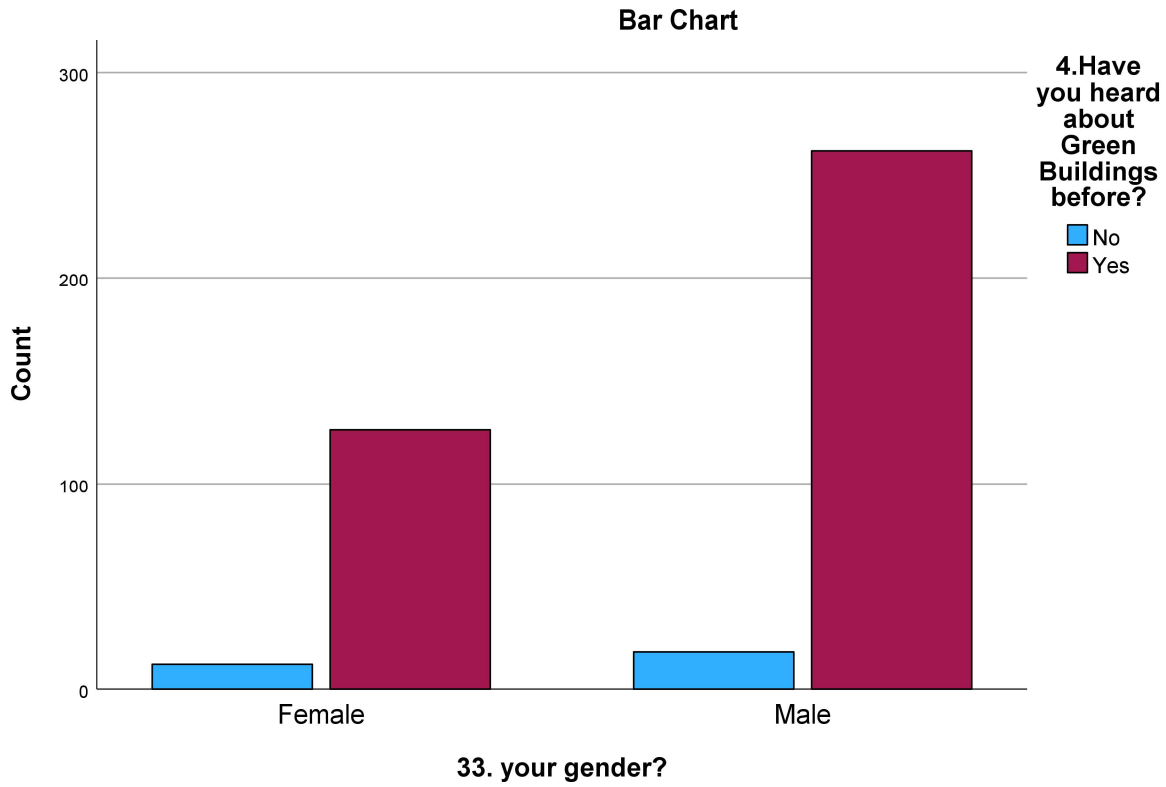
		4.Have you heard about Green Buildings before?		
		No	Yes	Total
33. your gender?	Female	12	126	138
	Male	18	262	280
Total		30	388	418

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.713[a]	1	.398		
Continuity Correction[b]	.413	1	.520		
Likelihood Ratio	.693	1	.405		
Fisher's Exact Test				.423	.257
N of Valid Cases	418				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.90.

b. Computed only for a 2x2 table


Bar Chart
300
200
100
0
Count
Female
Male
33. your gender?
4.Have you heard about Green Buildings before?
No
Yes

6.3 bivariate analyses Age VS Important of green building_with Pearson Corelation

Correlations

Descriptive Statistics

	Mean	Std. Deviation	N
1. What is your age range?	38.09	11.553	418
30. How important do you think green building is for Bangladesh?	4.54	1.125	406

Correlations

		1. What is your age range?	30. How important do you think green building is for Bangladesh?
1. What is your age range?	Pearson Correlation	1	-.015
	Sig. (2-tailed)		.766
	N	418	406
30. How important do you think green building is for Bangladesh?	Pearson Correlation	-.015	1
	Sig. (2-tailed)	.766	
	N	406	406

6.4 Regression analyses

Curve Fit

Model Description

Model Name		MOD_4
Dependent Variable	1	1. What is your age range?
	2	32. your monthly income range?
Equation	1	Linear
	2	Logarithmic
	3	Inverse
	4	Quadratic
	5	Cubic
	6	Compound[a]
	7	Power[a]
	8	S[a]
	9	Growth[a]
	10	Exponential[a]
	11	Logistic[a]
Independent Variable		30. How important do you think green building is for Bangladesh?
Constant		Included
Variable Whose Values Label Observations in Plots		33. your gender?
Tolerance for Entering Terms in Equations		.0001

a. The model requires all non-missing values to be positive.

Case Processing Summary

	N
Total Cases	418
Excluded Cases[a]	12
Forecasted Cases	0
Newly Created Cases	0

a. Cases with a missing value in any variable are excluded from the analysis.

Variable Processing Summary

		Variables		
		Dependent		Independent
		1. What is your age range?	32. your monthly income range?	30. How important do you think green building is for Bangladesh?
Number of Positive Values		418	418	397
Number of Zeros		0	0	9[a,b]
Number of Negative Values		0	0	0
Number of Missing Values	User-Missing	0	0	0
	System-Missing	0	0	12

a. The Inverse or S model cannot be calculated.

b. The Logarithmic or Power model cannot be calculated.

1. What is your age range?

Linear

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.015	.000	-.002	11.564

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	11.859	1	11.859	.089	.766
Residual	54024.725	404	133.725		
Total	54036.584	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
30. How important do you think green building is for Bangladesh?	-.152	.511	-.015	-.298	.766
(Constant)	38.658	2.388		16.189	<.001

Quadratic

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.015	.000	-.005	11.578

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	11.859	2	5.929	.044	.957
Residual	54024.725	403	134.056		
Total	54036.584	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	-.150	2.492	-.015	-.060	.952
30. How important do you think green building is for Bangladesh? ** 2	.000	.396	.000	-.001	.999
(Constant)	38.657	3.397		11.378	<.001

Cubic

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.078	.006	-.001	11.559

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	325.101	3	108.367	.811	.488
Residual	53711.483	402	133.611		
Total	54036.584	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	9.491	6.771	.925	1.402	.162
30. How important do you think green building is for Bangladesh? ** 2	-4.786	3.151	-2.935	-1.519	.130
30. How important do you think green building is for Bangladesh? ** 3	.592	.387	2.026	1.531	.127
(Constant)	36.190	3.755		9.638	<.001

Compound

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.014	.000	-.002	.320

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.008	1	.008	.076	.783
Residual	41.441	404	.103		
Total	41.449	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	.996	.014	.986	70.710	<.001
(Constant)	36.796	2.434		15.120	<.001

The dependent variable is ln(1. What is your age range?).

Growth

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.014	.000	-.002	.320

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.008	1	.008	.076	.783
Residual	41.441	404	.103		
Total	41.449	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	-.004	.014	-.014	-.275	.783
(Constant)	3.605	.066		54.515	<.001

The dependent variable is ln(1. What is your age range?).

Exponential

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.014	.000	-.002	.320

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.008	1	.008	.076	.783
Residual	41.441	404	.103		
Total	41.449	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	-.004	.014	-.014	-.275	.783
(Constant)	36.796	2.434		15.120	<.001

The dependent variable is ln(1. What is your age range?).

Logistic

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.014	.000	-.002	.320

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

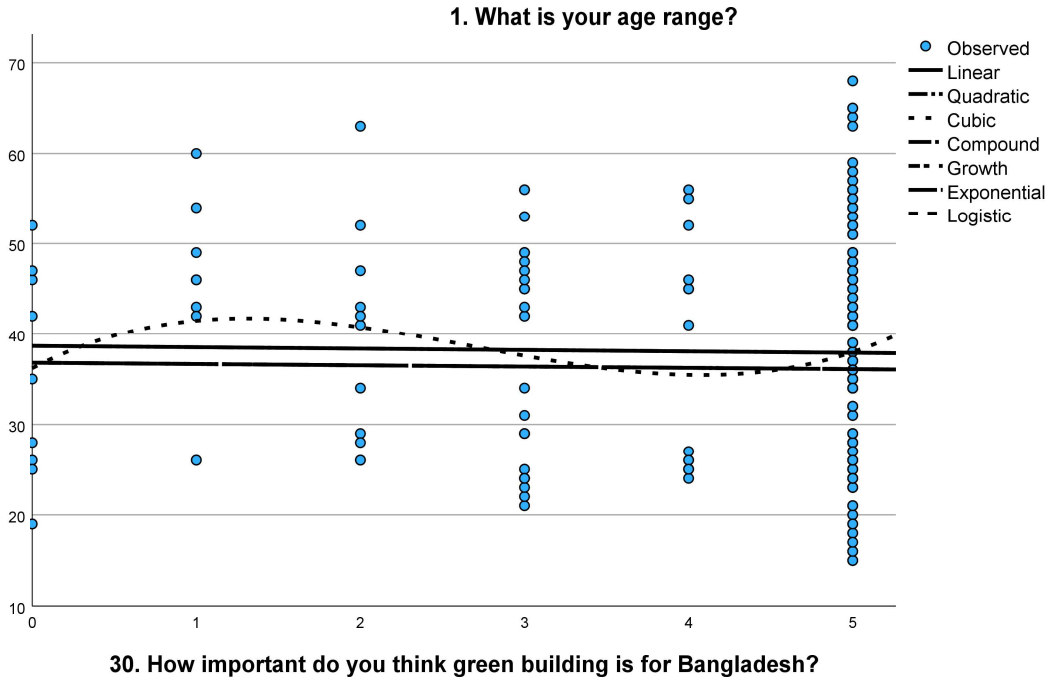
	Sum of Squares	df	Mean Square	F	Sig.
Regression	.008	1	.008	.076	.783
Residual	41.441	404	.103		
Total	41.449	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	1.004	.014	1.014	70.710	<.001
(Constant)	.027	.002		15.120	<.001

The dependent variable is ln(1 / 1. What is your age range?).



32. your monthly income range?

Linear

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.020	.000	-.002	22754.951

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	84730758.221	1	84730758.221	.164	.686
Residual	2.092E+11	404	517787789.06		
Total	2.093E+11	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	406.459	1004.783	.020	.405	.686
(Constant)	37157.378	4698.849		7.908	<.001

Quadratic

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.022	.000	-.004	22782.140

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	103559343.16	2	51779671.582	.100	.905
Residual	2.092E+11	403	519025901.23		
Total	2.093E+11	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	-507.711	4903.977	-.025	-.104	.918
30. How important do you think green building is for Bangladesh? ** 2	148.390	779.093	.046	.190	.849
(Constant)	38061.971	6684.968		5.694	<.001

Cubic

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.070	.005	-.002	22759.733

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1032810090.3	3	344270030.09	.665	.574
Residual	2.082E+11	402	518005441.41		
Total	2.093E+11	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	16098.285	13331.242	.797	1.208	.228
30. How important do you think green building is for Bangladesh? ** 2	-8094.913	6203.649	-2.522	-1.305	.193
30. How important do you think green building is for Bangladesh? ** 3	1019.492	761.175	1.773	1.339	.181
(Constant)	33813.689	7393.351		4.574	<.001

Compound

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.018	.000	-.002	.493

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.032	1	.032	.132	.716
Residual	98.333	404	.243		
Total	98.365	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	1.008	.022	1.018	45.903	<.001
(Constant)	32891.520	3350.869		9.816	<.001

The dependent variable is ln(32. your monthly income range?).

Growth

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.018	.000	-.002	.493

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.032	1	.032	.132	.716
Residual	98.333	404	.243		
Total	98.365	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	.008	.022	.018	.363	.716
(Constant)	10.401	.102		102.094	<.001

The dependent variable is ln(32. your monthly income range?).

Exponential

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.018	.000	-.002	.493

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.032	1	.032	.132	.716
Residual	98.333	404	.243		
Total	98.365	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	.008	.022	.018	.363	.716
(Constant)	32891.520	3350.869		9.816	<.001

The dependent variable is ln(32. your monthly income range?).

Logistic

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.018	.000	-.002	.493

The independent variable is 30. How important do you think green building is for Bangladesh?.

ANOVA

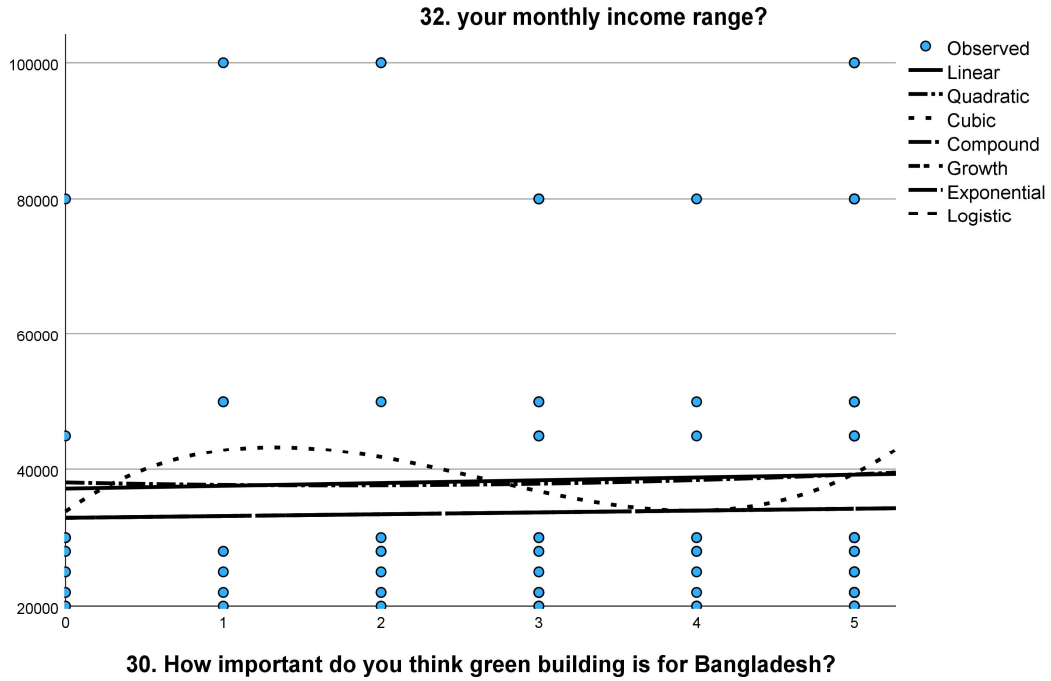
	Sum of Squares	df	Mean Square	F	Sig.
Regression	.032	1	.032	.132	.716
Residual	98.333	404	.243		
Total	98.365	405			

The independent variable is 30. How important do you think green building is for Bangladesh?.

Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
30. How important do you think green building is for Bangladesh?	.992	.022	.982	45.903	<.001
(Constant)	3.040E-5	.000		9.816	<.001

The dependent variable is ln(1 / 32. your monthly income range?).



6.5 Cronbach's alpha

Reliability

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	406	97.1
	Excluded[a]	12	2.9
	Total	418	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha[a]	Cronbach's Alpha Based on Standardized Items[a]	N of Items
-.006	-.030	2

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

Item Statistics

	Mean	Std. Deviation	N
1. What is your age range?	37.97	11.551	406
30. How important do you think green building is for Bangladesh?	4.54	1.125	406

Inter-Item Correlation Matrix

	1. What is your age range?	30. How important do you think green building is for Bangladesh?
1. What is your age range?	1.000	-.015
30. How important do you think green building is for Bangladesh?	-.015	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance
Item Means	21.254	4.539	37.968	33.429	8.364	558.735
Inter-Item Correlations	-.015	-.015	-.015	.000	1.000	.000

Summary Item Statistics

	N of Items
Item Means	2
Inter-Item Correlations	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation
1. What is your age range?	4.54	1.266	-.015	.000
30. How important do you think green building is for Bangladesh?	37.97	133.424	-.015	.000

Item-Total Statistics

	Cronbach's Alpha if Item Deleted
1. What is your age range?	.
30. How important do you think green building is for Bangladesh?	.

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
42.51	134.305	11.589	2

ANOVA with Friedman's Test

		Sum of Squares	df	Mean Square	Friedman's Chi-Square
Between People		27196.739	405	67.152	
Within People	Between Items	226846.286[a]	1	226846.286	362.313
	Residual	27352.714	405	67.538	
	Total	254199.000	406	626.106	
Total		281395.739	811	346.974	

ANOVA with Friedman's Test

		Sig
Between People		
Within People	Between Items	<.001
	Residual	
	Total	
Total		

Grand Mean = 21.25

a. Kendall's coefficient of concordance W = .806.