

## LIST OF REFFERENCES

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## **APPENDIX A**

### **OVERVIEW OF LEED-H**

LEED for Homes Version 2008

#### **Innovation and Design Process (ID)**

##### Credit 1 Integrated Project Planning

- 1.1 Preliminary Rating
- 1.2 Integrated Project Team
- 1.3 Professional Credentialed with Respect to LEED for Homes
- 1.4 Design Charrette
- 1.5 Building Orientation for Solar Design

##### Credit 2 Durability Management Process

- 2.1 Durability Planning
- 2.2 Durability Management
- 2.3 Third Party Durability Management Verification

##### Credit 3 Innovation of Regional Design

- 3.1 Innovation #1
- 3.2 Innovation #2
- 3.3 Innovation #3
- 3.4 Innovation #4

#### **Location and Linkages (LL)**

##### Credit 1 LEED ND

##### Credit 2 Site Selection

##### Credit 3 Preferred Locations

- 3.1 Edge Development
- 3.2 Infill
- 3.3 Previously Developed

##### Credit 4 Infrastructure

##### Credit 5 Community Resources

- 5.1 Basic Community Resources

5.2 Extensive Community Resources

5.3 Outstanding Community Resources

Credit 6 Access to Open Space

**Sustainable Sites (SS)**

Credit 1 Site Stewardship

1.1 Erosion

1.2 Minimize Disturbed Area of Site

Credit 2 Landscaping

2.1 No Invasive Plants

2.2 Basic Landscape Design

2.3 Limit Conventional Turf

2.4 Drought Tolerant Plants

2.5 Reduce Overall Irrigation Demand by at Least 20%

Credit 3 Local Heat Island Effects

Credit 4 Surface Water Management

4.1 Permeable Lot

4.2 Permanent Erosion Controls

4.3 Management of Run-off from Roof

Credit 5 Nontoxic Pest Control

Credit 6 Compact Development

6.1 Moderate Density

6.2 High Density

6.3 Very High Density

**Water Efficiency (WE)**

Credit 1 Water Reuse

1.1 Rainwater Harvesting System

1.2 Graywater Reuse System

1.3 Use of Municipal Recycled Water System

Credit 2 Irrigation System

2.1 High Efficiency Irrigation System

2.2 Third Party Inspection

2.3 Reduce Overall Irrigation Demand by at Least 45%

Credit 3 Indoor Water Use

3.1 High-Efficiency Fixtures and Fittings

3.2 Very High-Efficiency Fixtures and Fittings

## **Energy and Atmosphere (EA)**

Credit 1 Optimize Energy Performance

1.1 Performance of ENERGY STAR for Homes

1.2 Exceptional Energy Performance

Credit 2 Insulation

2.1 Basic Insulation

2.2 Enhanced Insulation

Credit 3 Air Infiltration

3.1 Reduced Envelope Leakage

3.2 Greatly Reduced Envelope Leakage

3.3 Minimal Envelope Leakage

Credit 4 Windows

4.1 Good Windows

4.2 Exceptional Windows

Credit 5 Heating and Cooling Distribution System

5.1 Reduced Distribution Losses

5.2 Greatly Reduced Distribution Losses

5.3 Minimal Distribution Losses

Credit 6 Space Heating and Cooling Equipment

6.1 Good HVAC Design and Installation

6.2 High-Efficiency HVAC

6.3 Very High-Efficiency HVAC

Credit 7 Water Heating

7.1 Efficient Hot water Distribution

7.2 Pipe Insulation

Credit 8 Lighting



- 8.1 ENERGY STAR Lights
- 8.2 Improved Lighting
- 8.3 Advanced Lighting Package

Credit 9 Appliances

- 9.1 High-Efficiency Appliances
- 9.2 Water-Efficient Clothes Washer

Credit 10 Renewable Energy System

Credit 11 Residential Refrigerant Management

- 11.1 Refrigerant Charge Test
- 11.2 Appropriate HVAC Refrigerants

**Materials and Resources (MR)**

Credit 1 Material-Efficient Framing

- 1.1 Framing Order Waste Factor Limit
- 1.2 Detailed Framing Documents
- 1.3 Detailed Cut List and Lumber Order
- 1.4 Framing Efficiencies
- 1.5 Off-Site Fabrication

Credit 2 Environmentally Preferable Products

- 2.1 FSC Certified Tropical Wood
- 2.2 Environmentally Preferable Products

Credit 3 Waste Management

- 3.1 Construction Waste Management Planning
- 3.2 Construction Waste Reduction

**Indoor Environmental Quality (EQ)**

Credit 1 ENERGY STAR with IAP (Indoor Air Package)

Credit 2 Combustion Venting

- 2.1 Basic Combustion Venting Measures
- 2.2 Enhanced Combustion Venting Measures

Credit 3 Moisture Load Control

Credit 4 Outdoor Air Ventilation

- 4.1 Basic Outdoor Air Ventilation
- 4.2 Enhanced Outdoor Air Ventilation
- 4.3 Third-Party Performance Testing

Credit 5 Local Exhaust

- 5.1 Basic Local Exhaust
- 5.2 Enhanced Local Exhaust
- 5.3 Third-Party Performance Testing

Credit 6 Distribution of Space

- 6.1 Room-by-Room Load Calculations
- 6.2 Return Air Flow/Room by Room Controls
- 6.3 Third-Party Performance Testing/Multiple Zones

Credit 7 Air Filtering

- 7.1 Good Filters
- 7.2 Better Filters
- 7.3 Best Filters

Credit 8 Contaminant Control

- 8.1 Indoor Contaminant Control during Construction
- 8.2 Indoor Contaminant Control
- 8.3 Preoccupancy Flush

Credit 9 Radon Protection

- 9.1 Radon-Resistant Construction in High-Risk Areas
- 9.2 Radon-Resistant Construction in Moderate-Risk Areas

Credit 10 Garage Pollutant Protection

- 10.1 No HVAC in Garage
- 10.2 Minimize Pollutants from Garage
- 10.3 Exhaust Fan in Garage

**Awareness and Education (AE)**

Credit 1 Education of the Homeowner or Tenant

- 1.1 Basic Operations Training
- 1.2 Enhanced Training
- 1.3 Public Awareness

## **APPENDIX B**

### **INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)**

#### ISO standards for Homes and Sustainable Buildings

ISO 21542:2011 - Building construction -- Accessibility and usability  
ISO 7730:2005 - Ergonomics of the thermal environment  
ISO 16000-7:2007 - Indoor air -- Part 7: Sampling strategy  
ISO 16032:2004 - Acoustics -- Measurement of sound pressure level  
ISO 16000-1:2004 - Indoor air -- Part 1: General aspects of sampling  
ISO 24521:2016 - Activities relating to drinking water  
ISO 140-14:2004 - Acoustics -- Measurement of sound insulation in [Withdrawn]  
ISO 16283-2:2015 - Acoustics -- Field measurement of sound  
IEC 60601-1-11:2015 - Medical electrical equipment - Part 1-11  
ISO 3055:1985 - Kitchen equipment - Coordinating sizes  
ISO 4356:1977 - Bases for the design of structures - Deformations  
ISO 21929-1:2011 - Sustainability in building construction [Under development]  
ISO/NP 21678 Sustainability in buildings and civil engineering works  
ISO/TS 21929-2:2015 - Sustainability in building construction  
ISO 15392:2008 - Sustainability in building construction  
ISO/TS 12720:2014 - Sustainability in buildings and civil  
ISO/DIS 21931-2 - Sustainability in buildings and civil engineering [Under -  
development]  
ISO 16813:2006 - Building environment design  
ISO/TR 21932:2013 - Sustainability in buildings and civil engineering  
ISO 21930:2007 - Sustainability in building construction  
ISO 37120:2014 - Sustainable development of communities  
IWA 9:2011 - Framework for managing sustainable developments  
ISO 37101:2016 - Sustainable development in communities  
ISO 17989-1:2015 - Tractors and machinery for agriculture and forestry  
ISO 10987:2012 - Earth-moving machinery - Sustainability  
ISO 50001:2011 - Energy management systems - Requirements  
ISO 26000:2010 - Guidance on social responsibility  
ISO 14040:2006 - Environmental management - Life cycle  
ISO 14955-1:2014 - Machine tools -- Environmental evaluation  
ISO/TS 14067:2013 - Greenhouse gases -- Carbon footprint  
ISO 14044:2006 - Environmental management - Life cycle

ISO/TS 16095:2014 - Reclaimed rubber derived from products  
ISO 14001:2015 - Environmental management systems  
ISO 14046:2014 - Environmental management -- Water footprint  
ISO 14025:2006 - Environmental labels and declarations - Type III  
ISO 14001:2004 - Environmental management systems ... [Withdrawn]

## **APPENDIX C**

### **GREEN-SL RATING SYSTEM**

Green-SL® rating system for built environment

#### **Credit 1 Management**

- 1.1 Building Tuning
  - 1.1.1 Optimizing Occupants Comport and Energy Efficiency
- 1.2 Building User Guide
  - 1.2.1 Building User Guide
- 1.3 Environment Management
  - 1.3.1 Environment Management Plan
  - 1.3.2 Environment Management System (complying with ISO 14001)

#### **Credit 2 Sustainable Sites**

- 2.1 Site Selection
- 2.2 Development Density and Community Connectivity
- 2.3 Brownfield Redevelopment
- 2.4 Alternative Transportation
  - 2.4.1 Public Transportation Access
  - 2.4.2 Parking Capacity
- 2.5 Reduce Site Disturbance
  - 2.5.1 Protect or Restore Habitat
  - 2.5.2 Development Foot Print
- 2.6 Storm water Design, Quantity control - I
- 2.7 Storm water Design, Quantity control - II
- 2.8 Heat island Effect, Non-Roof
- 2.9 Heat island Effect, Roof
- 2.10 Light Pollution Reduction

#### **Credit 3 Water Efficiency**

- 3.1 Water Efficiency Landscaping
  - 3.1.1 Reduce Potable Water Consumption
  - 3.1.2 Eliminate Potable Water Consumption
- 3.2 Water Efficiency in Air-Conditioning System
- 3.3 Innovative West Water Technologies
  - 3.3.1 Reduce Potable Water Use or Treat West Water
  - 3.3.2 harvested Rainwater
- 3.4 Water Use Reduction

#### **Credit 4 Energy and Atmosphere**

- 4.1 Optimize Energy Performance
- 4.2 Renewable Energy
- 4.3 Additional Commissioning
- 4.4 Ozone Depletion
- 4.5 Measurements and Verifications
- 4.6 Green Power

## **Credit 5 Materials and Resources**

- 5.1 Building resource
  - 5.1.1 Maintaining 50% of Existing Building Structure and Shell
  - 5.1.2 Maintaining 75% of Existing Building Structure and Non-Shell
- 5.2 Construction Waste Management
  - 5.2.1 For 50% Recycling
  - 5.2.2 For 75% Recycling
- 5.3 Resource Reuse
  - 5.3.1 For at least 5% of the Building
  - 5.3.2 For at least 10% of the Building
- 5.4 Recycled Content
  - 5.4.1 For At Least 10% of Total Value of Materials
  - 5.4.2 For At Least 20% of Total Value of Materials
- 5.5 Local/Regional Materials
  - 5.5.1 For Minimum of 20% Usage
  - 5.5.2 For Minimum of 50% Usage
- 5.6 Rapidly Renewable Materials
- 5.7 Certified Wood

## **Credit 6 Indoor Environmental Quality**

- 6.1 Outdoor Air Delivery Monitoring
- 6.2 Increased Ventilation
- 6.3 Construction IAQ Management Plan
  - 6.3.1 Construction IAQ Management Plan Before and After Construction
- 6.4 Low – Emitting Materials
  - 6.4.1 Paints and Coatings
  - 6.4.2 Carpet Systems
  - 6.4.3 Composite Wood and Agrifiber Products
- 6.5 Indoor Chemical and Pollution Source Control
- 6.6 Controllability of Systems
  - 6.6.1 Lighting Controls
  - 6.6.2 Contract Controls
- 6.7 Thermal Comfort, Design
- 6.8 Thermal Comfort, Verification
- 6.9 Daylight and Views
  - 6.9.1 Daylight
  - 6.9.2 Views

## **Credit 7 Innovation and Design Process**

- 7.1 Innovation and Design
  - 7.1.1 Innovation and Design
  - 7.1.2 Exemplary Performance

## **Credit 8 Social and Cultural Awareness**

- 8.1 Social Wellbeing, Public Health and Safety
- 8.1 Cultural Identity

**APPENDIX D**  
**QUESTIONNAIRE**

**SUSTAINABLE PRACTICES IN RESIDENTIAL PROJECTS IN SRI LANKA**

Dear Sir/Madam,

Request for Filling Questionnaire

I am Nishadi Kulatilake currently a postgraduate student undertaking Degree of Master of Science/ Project Management at University of Moratuwa. In order to satisfy the requirement of the Master's Degree Certification, I am required to undertake a research and produce a Dissertation. My selected topic is "Sustainable Practices in Residential Projects in Sri Lanka". My intention is to find solutions to practice sustainability in residential projects in Sri Lanka, by developers and contractors.

I would be very much great full if you can complete the attached questionnaire and also provide time allocation for an interview despite from your busy work schedule. The information disclosed here will only be used to complete my research and all information shall be treated as strictly confidential. Your early response will be highly appreciated.

Thank you.

Yours Faithfully,  
Nishadi Kulatilake  
Postgraduate student

Department of Building Economics  
Faculty of Architecture  
University of Moratuwa

Mobile No: 0779520515  
Email: nishadi.kulatilake@gmail.com

**QUESTIONNAIRE**  
**Informed Consent Disclosure Agreement for Participants**

- A) *Research Topic*  
Sustainable Practices in Residential Projects in Sri Lanka
- B) *Purpose of the study*  
The purpose of the study is to investigate the incentives, the motives, and the affordability of green buildings in residential applications for developers and contractors. The research study is to find the current consensus of home developers and contractors on “going green,”
- C) *Research Objectives*
1. To define what is sustainability in design and construction field.
  2. To analyse why contractors and developers do not use sustainable design concepts frequently in residential projects in Sri Lanka.
  3. To understand the decision making process from the construction point of view on residential sustainability among residential contractors and developers.
  4. To understand the residential contractors’ and developers’ knowledge of sustainability in design and construction based on: occurrence, importance, opening, experience and awareness.
  5. To understand the level of knowledge of sustainable rating systems among contractors and developers.
- D) *Instructions to Respondents*  
You will undergo a short survey which consists of the series of questions related to their company’s views and practices on sustainability design and green construction.
- E) *Time Required*  
15 to 20 minutes
- F) *Risks, benefits and Compensations*  
There are no personal risks or discomfort associated with participating in this study and also there are no direct benefits for participation in this study. Participating in this study will not receive any compensation.
- G) *Confidentiality*  
The information disclosed will be strictly confidential to the extent provided by law.
- H) *Contact personal if you have questions about the study:*  
The faculty supervisor, Master of Science/ Project Management, Department of Building Economics, Faculty of Architecture, University of Moratuwa, Sri Lanka
- I) *Agreement*



I have read the procedure described above. I voluntarily agree to participate in the procedure and if requested can received a copy of this description.

Participant Signature:..... Date:.....

Principal Investigator:..... Date: .....

*J) Demographic Information*

Name of the organization (optional): \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Type of Company: \_\_\_\_\_  
(developer, contractor, etc.)

ICTAD Registered \_\_\_\_\_

Typical residences constructed: \_\_\_\_\_  
(townhomes, single-family, apartments, etc.)

Number of residences constructed: \_\_\_\_\_  
(years of 2013 to 2017)

Average Sq.ft. area of residence constructed: \_\_\_\_\_  
(years of 2013 to 2017)

Annual Total of Work in Sri Lankan Rupees: \_\_\_\_\_  
(years of 2013 to 2017)

Typical size of residences: \_\_\_\_\_

Typical price of residences in Sri Lankan Rupees: \_\_\_\_\_  
(years of 2013 to 2017)

Experience in construction Industry: \_\_\_\_\_

## Perception of the Respondents

Please rate below statements on your level of agreement according to your company's views

Question	No Exp. 0	Hardly Exp. 0 - 10	Somewhat Exp. 11 - 20	Exp. 21 - 30	Very Exp. 31 - 40
1. Company experience in sustainable buildings projects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. How an experience is (are) the primary designer/s in your company with sustainable concepts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. How experiences is (are) the primary contractor/s in your company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question	Not Important 1	Rarely Important 2	Somewhat Important 3	Important 4	Very Important 5
4. How important is green design or building sustainable homes to your company?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Question	Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Agree 4	Strongly Agree 5
5. Do you agree that your company actively incorporates green or sustainable design?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Do you agree that green or sustainable practices equate to increased costs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Do you agree that green or sustainable homes should be sold at a premium?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Do you agree there is a growing demand for green or sustainable homes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Question</b>	<b>Strongly Disagree</b> <b>1</b>	<b>Disagree</b> <b>2</b>	<b>Somewhat Disagree</b> <b>3</b>	<b>Agree</b> <b>4</b>	<b>Strongly Agree</b> <b>5</b>
<b>9.</b> Do you agree that consumer demand for sustainable homes has affected construction and/or design of your homes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.</b> Do you agree there is increased confusion over which green standards to use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.</b> Does your company agree that the rating systems are worth the extra costs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>12.</b> Do you agree that there is a consumer preference of green or sustainable homes over traditional or non-green homes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>10.</b> Green or sustainable designs and/or construction help you to sell your homes faster?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.</b> Green or sustainable designs and/or construction benefit the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Question</b>	<b>Unfamiliar</b> <b>1</b>	<b>Less Familiar</b> <b>2</b>	<b>Somewhat Familiar</b> <b>3</b>	<b>Familiar</b> <b>4</b>	<b>Very Familiar</b> <b>5</b>
<b>12.</b> How familiar is your company with the green building council in sri lnaka, leadership in energy & environmental designs for homes (leed-h)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>13.</b> How familiar is your company with national green building standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>14.</b> How familiar is your company with energy star brands? (appliances, HVAC systems)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Question</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Frequently</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>15.</b> How often does your company actively use a rating system for assessing green or sustainable design?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>16.</b> How often does your company actively train its employees in green techniques?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 17. Familiarity of Respondents

Please tick below Sustainable/Green building concepts your company is familiar

Answer Option	Response	Answer Option	Response
Site Selection		Photovoltaic Energy	
Minimal Disturbance To Surrounding Area		Thermal Bridge	
Access To Open Space		Vegetated Roof	
Drought Tolerant Plants & Landscape Design		Rain Garden	
Drip Irrigation		Compact Development Density	
Xeriscaping		Pipe Insulation	
Permeable Pavement		Day lighting	
Erosion Control		Framing Efficiency	
Reduction Of Heat Island Effect		Energy Modeling	
Pest Control Alternatives		Solar Orientation	
Gray water Reuse		VOCs	
Energy Star Appliances		Green Globes	
Storm Water Treatment		Carbon Dioxide Monitoring	
SIP's		Use Of Readily-Renewable Material	
Value Engineering		Radon Protection	
Green label TM		Use Of Recycled Or Salvaged Material	
Refrigerant Management Systems		FSC Certified Wood	
Solar Water Heating Systems		Renewable Energy Systems	
Low-E-Gases		Passive Design	
Rainwater Collection Systems		Construction Waste Management	

Please rate below statements on your level of agreement according to your company's views

**Most important aspect to your company in the design phase of residential projects against other factors (ex: sustainability)**

Question	Most Imp.	Imp.	Somewhat Imp.	Rarely Imp.	Least Imp.
	1	2	3	4	5
18. Aesthetically pleasing designs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Energy/Sustainable certified designer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Energy Rating System approved (i-e LEED-H)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Energy efficient designs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Low initial cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Marketable designs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Most important aspect to your company in the construction Phase of residential projects against other factors (ex: sustainability)**

24. Energy /Sustainable Certified Contractor (ex: LEED-H)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Energy Rating System Approved (ex: LEED-H)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Energy Efficient Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Most important aspect to your company in the marketing Phase of residential projects against other factors (ex: sustainability)**

<b>Question</b>	<b>Most Imp. 1</b>	<b>Imp. 2</b>	<b>Somewhat Imp. 3</b>	<b>Rarely Imp. 4</b>	<b>Least Imp. 5</b>
<b>28.</b> Options & Extras	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>29.</b> Energy Efficiency Of Entire Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>30.</b> Energy Efficient Appliances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>31.</b> Energy Rating System Approved (ex: LEED-H)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Open Ended Questions

Please rate below statements on your level of agreement according to your company's views

**32.** Does your company access sustainable or energy rating systems?  
(i.e. LEED-H, GREEN-SL, ISO, EMIS etc.)

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**33.** What is your company's opinion of sustainable rating methods?  
(i.e. LEED-H, GREEN-SL, ISO, EMIS etc.)

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**34.** Do you believe there is confusion within the sustainable or energy rating systems?

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**35.** What is the main reason for using sustainability design concepts in your projects?

---

**36.** How does your company go towards green or sustainability in residential projects?

---

**37.** What is your company's approach toward sustainability in the residential construction sector?

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## APPENDIX E

### SUSTAINABLE RATING SYSTEMS

Table 2.1: Similarities and differences of categories in sustainable rating systems

Category	LEED-H	ISO	EMIS	GREEN-SL
Site selection	Sustainable sites	Preparation development and sustainable lot design	Testings for site components/lot choice	Sustainable site
Material selection	Materials and resources	Resource efficiency	Material evaluation, selection and resources	Conservation of materials and resources
Energy	Energy and atmosphere	Design guidelines for design energy-related efficiency in parts of buildings	Energy efficiency and emission, energy efficiency technology	Energy efficiency and usage of renewable energy
Water	Water efficiency	Harmonized technology and terminology, allowing countries sharing the same water resources to work together efficiently/pipes and irrigation to water quality, water re-use, water management and sanitation.	Water efficiency standards	Safeguarding water and water efficiency
Indoor environment	Indoor environmental quality	environmental specifications of different building materials, analysing their possibilities for improvement	Indoor environmental quality	Indoor environmental quality
Owner education	Awareness and education	Operation, Maintenance and refurbishment education	Operation, maintenance and homeowner education	Educate end users

Site design	Location and linkages	Decision making process from inception of a project (site selection and framework-for design process)	Conceptual overview and location	Sustainable site planning
Innovation	Innovation and design process	Framework for sustainability indicators to assess economic, environmental and social impacts of buildings, calculation of energy consumption ratio's, ISO 9126 model to the evaluation of an e-learning system.	Simplify and automate, environmental management	Additional points
Regional sensitivity	Regional priority	Regional labour productivity	Site selection, design and performances	Not specified
Social and cultural awareness	Not specified	Social responsibility efficiency		Enhancing social and cultural-values
Management	Not specified	Management standards, Eco-management and audit scheme, health and safety management, Environmental management system	Organizational-technical systems for systematically obtaining, processing, and making available in companies	Project-specific management plan (EMP) is implemented and internal audit trail tracking compliance at construction.

**APPENDIX F**  
**STATISTICAL ANALYSIS**

Table 4.1: Responses to Likert Scale Questions Related to Experience in Sustainable Practices Between Developers & Contractor

Question	No Exp. 0	Hardly Exp. 0 - 10	Somewhat Exp. 11 - 20	Exp. 21 - 30	Very Exp. 31 - 40	Rating Avg	Response Count
<b>Q1. Does your Company Have Experience in Sustainable/Green Buildings?</b>							
Developer	0 0.00%	4 16.00%	5 20.00%	16 64.00%	0 0.00%	3.48	25
Contractors	0 0.00%	15 50.00%	9 30.00%	6 20.00%	0 0.00%	2.70	30
<b>Q2. The Primary Designer(s) Experienced With Sustainable/Green Practices?</b>							
Developer	0 0.00%	0 0.00%	2 8.00%	4 16.00%	19 76.00%	4.68	25
Contractors	3 10.00%	6 20.00%	7 23.00%	7 23.00%	7 23.00%	3.30	30
<b>Q3. The Primary Contractor Is Experienced With Sustainable/Green Practices?</b>							
Developer	0 0.00%	2 8.00%	4 16.00%	19 76.00%	0 0.00%	3.68	25
Contractors	0 0.00%	2 6.70%	14 46.70%	12 40.00%	2 6.70%	3.47	30

Table 4.2: Responses to Likert Scale Questions Related To Importance Of Sustainable Practices Between Developers & Contractor

Question	Not Imp. 1	Rarely Imp. 2	Somewhat Imp. 3	Imp. 4	Very Imp. 5	Rating Avg	Response Count
<b>Q1. How Important Is Green Design Or Building Sustainable Homes To Your Company?</b>							
Developer	0 0.00%	3 12.00%	11 44.00%	0 0.00%	11 44.00%	3.76	25
Contractors	2 6.67%	8 26.67%	14 46.67%	3 10.00%	3 10.00%	2.90	30

Table 4.3: Ratings Of Importance Of Sustainable Practices Against Other Factors During The Design Phase Between Developer & Contractor

Question	Most Imp. 1	Imp. 2	Somewhat Imp. 3	Rarely Imp. 4	Least Imp. 5	Rating Avg	Resp. Count
<b>Q1.</b>							
Aesthetically Pleasing Designs Developer	20 80.00%	5 20.00%	0 0.00%	0 0.00%	0 0.00%	1.20	25
Contractors	4 13.33%	13 43.33%	9 30.00%	2 6.67%	2 6.67%	2.50	30
<b>Q2.</b>							
Energy/Sustainable Certified Designer Developer	0 0.00%	11 44.00%	11 44.00%	3 12.00%	0 0.00%	2.68	25
Contractors	0 0.00%	1 3.33%	4 13.33%	13 43.33%	12 40.00%	4.20	30
<b>Q3. Energy Rating System Approved (i-e LEED-H)</b>							
Developer	8 32.00%	8 32.00%	1 4.00%	8 32.00%	0 0.00%	2.36	25
Contractors	4 13.33%	2 6.67%	2 6.67%	4 13.33%	18 60.00%	4.00	30
<b>Q4. Energy Efficient Designs</b>							
Developer	1 4.00%	8 32.00%	8 32.00%	8 32.00%	0 0.00%	2.92	25
Contractors	2 6.67%	4 13.33%	8 6.67%	14 46.67%	2 6.67%	3.33	30
<b>Q5. Low Initial Cost</b>							
Developer	23 92.00%	2 8.00%	0 0.00%	0 0.00%	0 0.00%	1.08	25
Contractors	16 53.33%	4 13.33%	9 30.00%	0 0.00%	1 3.33%	1.87	30

**Q6.**  
Markatable  
Designs

Developer	25	0	0	0	0	1.00	25
	100.00%	0.00%	0.00%	0.00%	0.00%		
Contractors	8	14	8	0	0	2.00	30
	26.67%	46.67%	26.67%	0.00%	0.00%		

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Table 4.4: Ratings Of Importance Of Sustainable Practices Against Other Factors During The Construction Phase Between Developer & Contractor

Question	Most Imp. 1	Imp. 2	Somewhat Imp. 3	Rarely Imp. 4	Least Imp. 5	Rating Avg	Res. Count
<b>Q1. Energy /Sustainable Certified Contractor (i-e LEED-H, State Program)</b>							
Developer	13 52.00%	2 8.00%	8 32.00%	2 8.00%	0 0.00%	1.96	25
Contractors	2 6.67%	0 0.00%	8 26.67%	8 26.67%	12 40.00%	3.93	30
<b>Q2. Energy Rating System Approved (i.e LEED-H, State Program)</b>							
Developer	13 52.00%	8 32.00%	2 8.00%	2 8.00%	0 0.00%	1.72	25
Contractors	2 6.67%	1 3.33%	1 3.33%	14 46.67%	12 40.00%	4.10	30
<b>Q3. Cost</b>							
Developer	25 100.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1.00	25
Contractors	28 93.33%	2 6.67%	0 0.00%	0 0.00%	0 0.00%	1.07	30
<b>Q4. Constructability</b>							
Developer	17 68.00%	8 32.00%	0 0.00%	0 0.00%	0 0.00%	1.32	25
Contractors	30 100.00%	0 0.00%	0 0.00%	0 0.00%	0 0.00%	1.00	30
<b>Q5. Energy Efficient Building</b>							
Developer	4 16.00%	4 16.00%	17 68.00%	0 0.00%	0 0.00%	2.52	25
Contractors	0 0.00%	0 0.00%	20 66.67%	8 26.67%	2 6.67%	3.40	30

Table 4.5: Responses Related Ranking Of Importance Of Sustainable Practices During The Marketing Phase Between Developer & Contractor

Question	Most Imp. 1	Imp. 2	Somewhat Imp. 3	Rarely Imp. 4	Least Imp. 5	Rating Avg	Res. Count
<b>Q1. Options &amp; Extras</b>							
Developer	3 12.00%	3 12.00%	13 52.00%	3 12.00%	3 12.00%	3.00	25
Contractors	2 6.67%	2 6.67%	2 6.67%	8 26.67%	16 53.33%	4.13	30
<b>Q2. Energy Efficiency Of Entire Building</b>							
Developer	8 32.00%	7 28.00%	7 28.00%	0 0.00%	3 12.00%	2.32	25
Contractors	0 0.00%	0 0.00%	9 30.00%	17 56.67%	4 13.33%	3.83	30
<b>Q3. Energy Efficient Appliances</b>							
Developer	0 0.00%	3 12.00%	3 12.00%	16 64.00%	3 12.00%	3.76	25
Contractors	0 0.00%	0 0.00%	2 6.70%	17 0.00%	11 36.70%	4.30	30
<b>Q4. Energy Rating System Approved (i.e. LEED-H Gold, Local or State Program)</b>							
Developer	13 52.00%	3 12.00%	3 12.00%	6 24.00%	0 0.00%	2.08	25
Contractors	0 0.00%	0 0.00%	6 20.00%	6 20.00%	18 60.00%	4.40	30



Table 4. 6: Responses To Likert Scale Questions Related To Opinion Of Sustainable Practices For Developer & Contractor

Question	Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Agree 4	Strongly Agree 5	Rating Avg	Res. Count
<b>Q1. Do You Agree That Your Company Actively Incorporates Green Or Sustainable Design?</b>							
Developer	0 0.00%	13 52.00%	7 28.00%	3 12.00%	2 8.00%	2.76	25
Contractors	6 20.00%	9 30.00%	9 30.00%	6 20.00%	0 0.00%	2.50	30
<b>Q2. Do You Agree That Green Or Sustainable Practices Equate To Increased Costs?</b>							
Developer	0 0.00%	0 0.00%	2 8.00%	7 28.00%	16 64.00%	4.56	25
Contractors	0 0.00%	0 0.00%	0 0.00%	15 50.00%	15 50.00%	4.50	30
<b>Q3. Do You Agree That Green Or Sustainable Designs Are More Complicated To Build?</b>							
Developer	0 0.00%	0 0.00%	7 28.00%	18 72.00%	0 0.00%	3.72	25
Contractors	0 0.00%	0 0.00%	9 30.00%	15 50.00%	6 20.00%	3.90	30

**Q4. Do You Agree That Green Or Sustainable Homes Should Be Sold At A Premium?**

Developer	0	0	0	7	18	4.72	25
	0.00%	0.00%	0.00%	28.00%	72.00%		
Contractors	0	0	2	16	12	4.33	30
	0.00%	0.00%	6.67%	53.33%	40.00%		

**Q5. Do You Agree There Is A Growing Demand For Green Or Sustainable Homes?**

Developer	0	0	3	14	8	4.20	25
	0.00%	0.00%	12.00%	56.00%	32.00%		
Contractors	0	6	16	8	0	3.07	30
	0.00%	20.00%	53.33%	26.67%	0.00%		

**Q6. Do You Agree That Consumer Demand For Sustainable Homes Has Affected Construction And/Or Design Of Your Homes?**

Developer	0	11	8	3	3	2.92	25
	0.00%	44.00%	32.00%	12.00%	12.00%		
Contractors	0	18	8	2	2	2.60	30
	0.00%	60.00%	26.67%	6.67%	6.67%		

**Q7. Do You Agree There Is Increased Confusion Over Which Green Standards To Use?**

Developer	8	8	3	3	3	2.40	25
	32.00%	32.00%	12.00%	12.00%	12.00%		
Contractors	2	5	8	8	7	3.43	30
	6.67%	16.67%	26.67%	26.67%	23.33%		

**Q8. Does Your**

Company Agree  
That The Rating  
Systems Are Worth  
The Extra Costs?

Developer	4 16.00%	5 20.00%	11 44.00%	0 0.00%	5 20.00%	2.88	25
Contractors	6 20.00%	13 43.33%	2 6.67%	7 23.33%	2 6.67%	2.53	30

**Q9.** Do You Agree  
That There Is A  
Consumer  
Preference Of Green  
Or Sustainable  
Homes Over  
Traditional Or Non-  
Green Homes?

Developer	0 0.00%	4 16.00%	20 80.00%	0 0.00%	1 4.00%	2.92	25
Contractors	4 13.33%	20 66.67%	6 20.00%	0 0.00%	0 0.00%	2.07	30

**Q10.** Green Or  
Sustainable Designs  
And/Or  
Construction Help  
You To Sell Your  
Homes Faster?

Developer	0 0.00%	0 0.00%	19 76.00%	4 16.00%	2 8.00%	3.32	25
Contractors	0 0.00%	21 70.00%	7 23.33%	2 6.67%	0 0.00%	2.37	30

**Q11.** Green Or  
Sustainable Designs  
And/Or Construction  
Benefit The  
Environment?

Developer	0 0.00%	0 0.00%	0 0.00%	0 0.00%	25 100.00%	5.00	25
Contractors	0 0.00%	0 0.00%	0 0.00%	2 6.67%	28 93.33%	4.93	30

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Table 4. 7: Responses To Likert Scale Questions Related To Familiarity With Sustainable Practices For Developers & Contractors

Question	Unfamiliar 1	Less Familiar 2	Somewhat Familiar 3	Familiar 4	Very Familiar 5	Rating Avg	Res. Count
<b>Q1. How Familiar Is Your Company With The Green Building Council In Sri Lanka, Leadership In Energy &amp; Environmental Designs For Homes (LEED-H)?</b>							
Developer	0 0.00%	0 0.00%	19 76.00%	0 0.00%	6 24.00%	3.48	25
Contractors	0 0.00%	9 30.00%	12 40.00%	5 16.67%	4 13.33%	3.13	30
<b>Q2. How Familiar Is Your Company With National Green Building Standards?</b>							
Developer	0 0.00%	0 0.00%	11 44.00%	3 12.00%	11 44.00%	4.00	25
Contractors	0 0.00%	11 36.70%	11 36.70%	7 23.30%	1 3.30%	2.93	30
<b>Q3. How Familiar Is Your Company With Energy Star Brands? (i.e. Appliances, HVAC Systems)?</b>							
Developer	0 0.00%	2 8.00%	19 0.00%	2 8.00%	2 8.00%	3.16	25
Contractors	6 20.00%	6 20.00%	11 36.70%	6 20.00%	1 3.30%	2.67	30

Table 4 .8: Familiarity With Green Building Concepts & Practices For Developers & Contractors

<b>Answer Option</b>	<b>No of Developer Response</b>		<b>No of Contractor Response</b>	
<b>Q1.</b> Site Selection	25	<b>100</b>	30	<b>100</b>
<b>Q2.</b> Minimal Disturbance To Surrounding Area	25	<b>100</b>	30	<b>100</b>
<b>Q3.</b> Access To Open Space	25	<b>100</b>	30	<b>100</b>
<b>Q4.</b> Drought Tolerant Plants & Landscape Design	25	<b>100</b>	30	<b>100</b>
<b>Q5.</b> Drip Irrigation	16	64	25	83
<b>Q6.</b> Xeriscaping	8	32	17	57
<b>Q7.</b> Permeable Pavement	2	8	15	50
<b>Q8.</b> Erosion Control	25	<b>100</b>	30	<b>100</b>
<b>Q9.</b> Reduction Of Heat Island Effect	10	40	25	83
<b>Q10.</b> Pest Control Alternatives	2	8	11	37
<b>Q11.</b> Graywater Reuse	25	<b>100</b>	30	<b>100</b>
<b>Q12.</b> Energy Star Appliances	13	52	25	83
<b>Q13.</b> Storm Water Treatment	25	<b>100</b>	30	<b>100</b>
<b>Q14.</b> SIP's	5	20	2	7
<b>Q15.</b> Value Engineering	25	<b>100</b>	14	47
<b>Q16.</b> Green lable TM	2	8	1	3
<b>Q17.</b> Refrigerant Management Systems	2	8	2	7
<b>Q18.</b> Solar Water Heating Systems	25	<b>100</b>	30	<b>100</b>
<b>Q19.</b> Low-E-Gases	0	0	11	37
<b>Q20.</b> Rainwater Collection Systems	25	<b>100</b>	30	<b>100</b>
<b>Q21.</b> FSC Certified Wood	0	0	1	3
<b>Q22.</b> Renewable Energy Systems	5	20	2	7
<b>Q23.</b> Passive Design	24	96	14	47
<b>Q24.</b> Construction Waste Management	10	40	25	83
<b>Q25.</b> Photovoltaic Energy	2	8	0	0
<b>Q26.</b> Thermal Bridge	1	4	0	0
<b>Q27.</b> Vegetated Roof	25	<b>100</b>	30	<b>100</b>
<b>Q28.</b> Rain Garden	16	64	15	50
<b>Q29.</b> Compact Development Density	7	28	1	3
<b>Q30.</b> Pipe Insulation	25	<b>100</b>	30	<b>100</b>
<b>Q31.</b> Daylighting	25	<b>100</b>	30	<b>100</b>
<b>Q32.</b> Framing Efficiency	8	32	0	0
<b>Q33.</b> Energy Modeling	3	12	0	0
<b>Q34.</b> Solar Orientation	25	<b>100</b>	30	<b>100</b>
<b>Q35.</b> VOCs	0	0	0	0
<b>Q36.</b> Green Globes	0	0	0	0
<b>Q37.</b> Carbon Dioxide Monitoring	14	56	1	3
<b>Q38.</b> Use Of Readily-Renewable Material	16	64	18	60
<b>Q39.</b> Radon Protection	1	4	0	0
<b>Q40.</b> Use Of Recycled Or Salvaged	24	96	25	83

Table 4-9 Responses To Likert Scale Questions Related To Frequency Of Use Of Sustainable Practices For Developers & Contractors

Question	Never	Rarely	Sometimes	Often	Frequently	Rating	Res.	
	1	2	3	4	5	Avg	Count	
<b>Q1.</b> How Often Does Your Company Actively Use A Rating System For Assessing Green Or Sustainable Design?								
	Developer	3	11	8	3	0	2.44	25
		12.00%	44.00%	32.00%	12.00%	0.00%		
	Contractor	13	11	0	6	0	1.97	30
	43.33%	36.67%	0.00%	20.00%	0.00%			
<b>Q2.</b> How Often Does Your Company Actively Train Its Employees In Green Techniques?								
	Developer	7	7	0	8	3	2.72	25
		28.00%	28.00%	0.00%	32.00%	12.00%		
	Contractor	9	12	6	2	1	2.13	30
	30.00%	40.00%	20.00%	6.67%	3.33%			

## APPENDIX G

### RANKING OF EXPERIENCE, IMPORTANCE AND FERMILIARITY ON BAR CHARTS

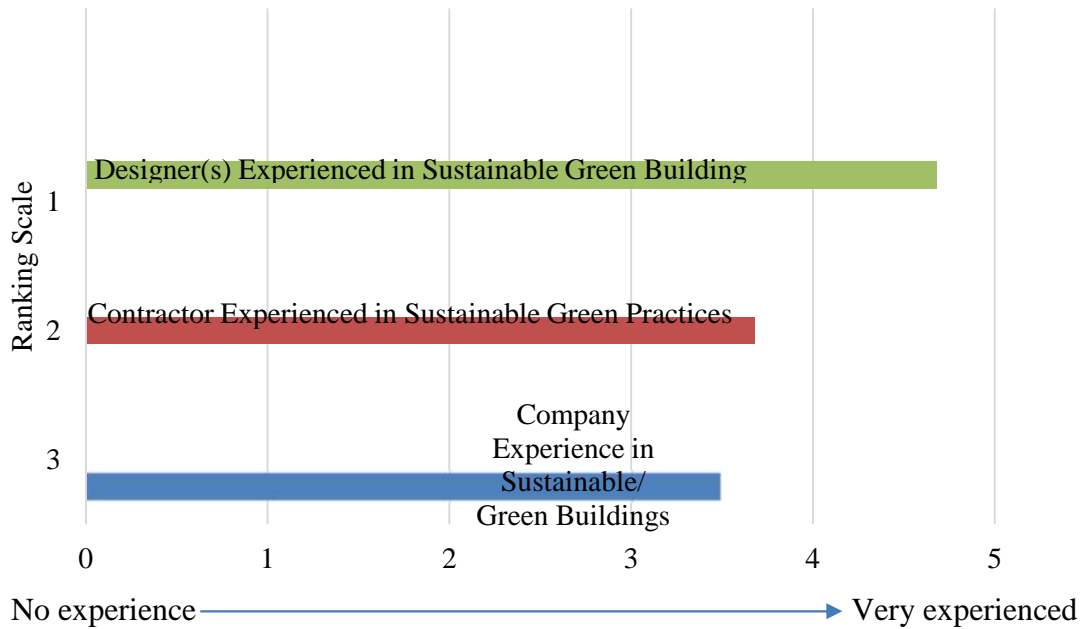


Figure 4.1.1: Ranking of Experience in Sustainable Practices for Developers

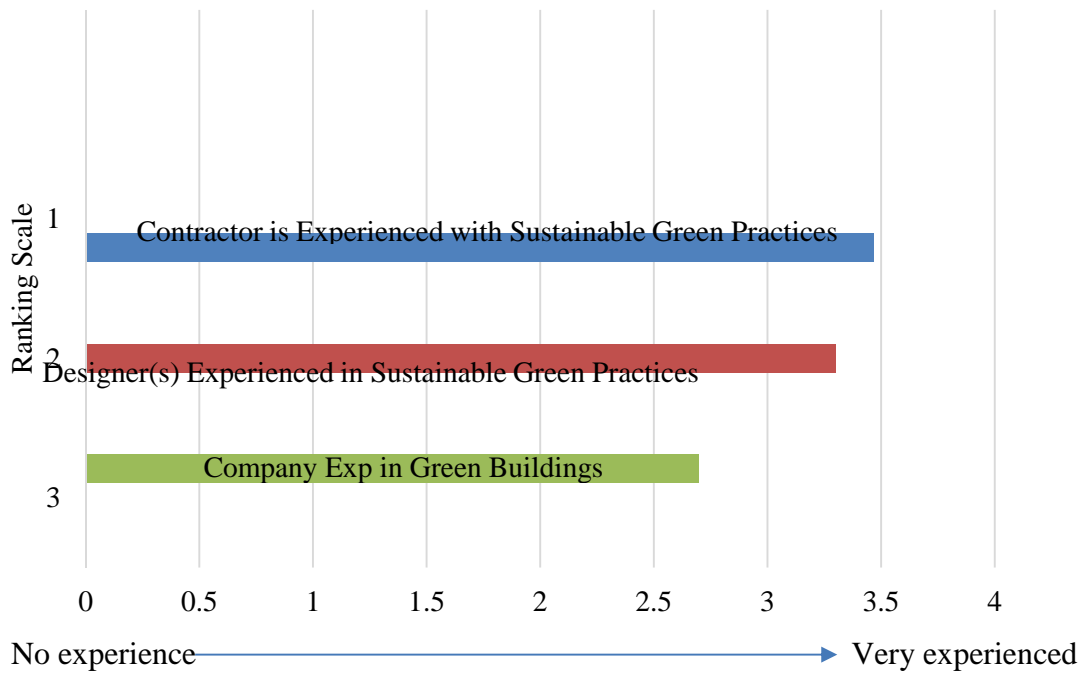


Figure 4.1.2: Ranking of Experience in Sustainable Practices for Contractors



Figure 4.2: Importance of Sustainable Practices between Developers & Contractors



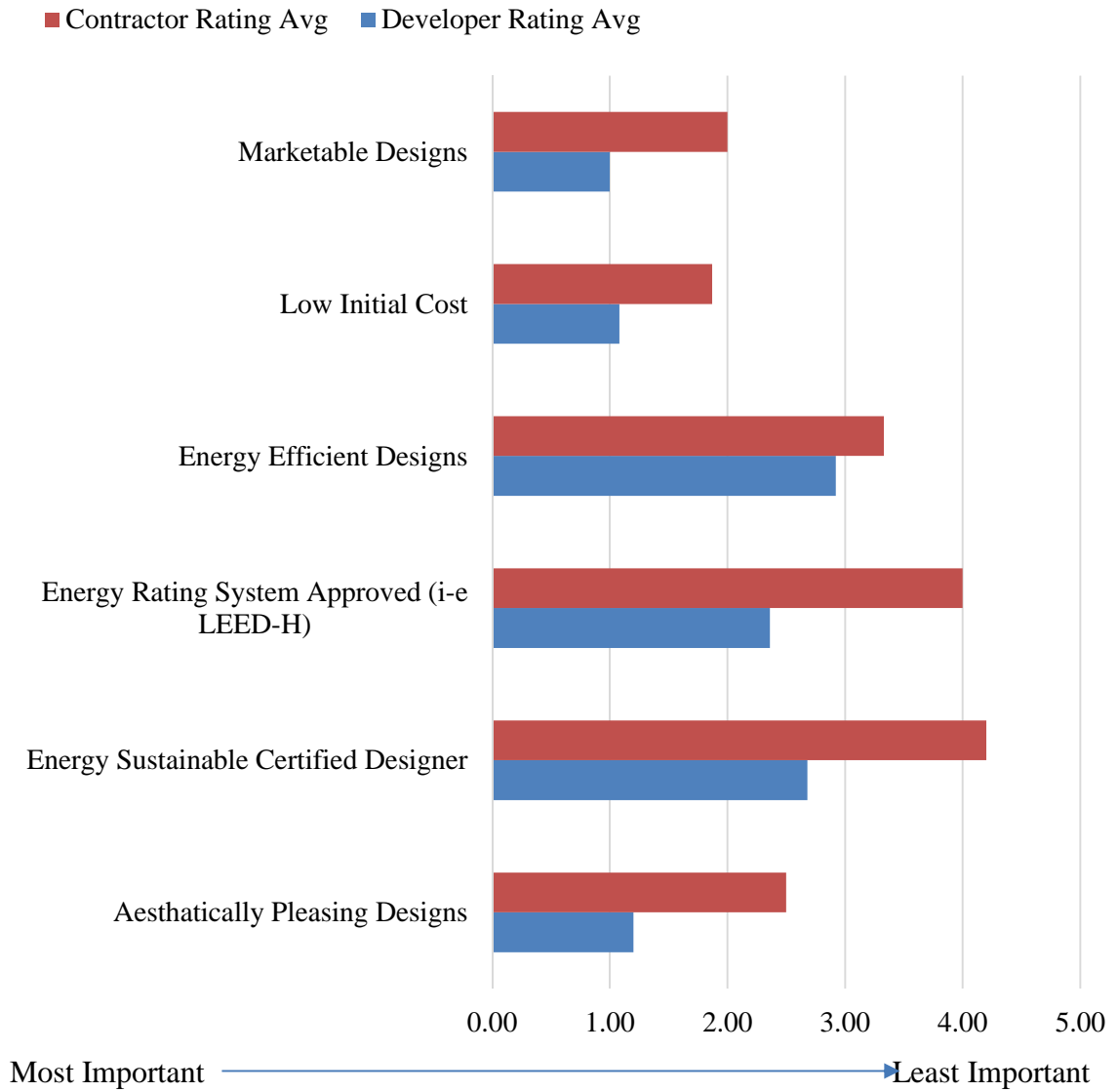


Figure 4.3: Importance of Sustainable Practices Against Other Factors During the Design Phase between Developers & Contractors

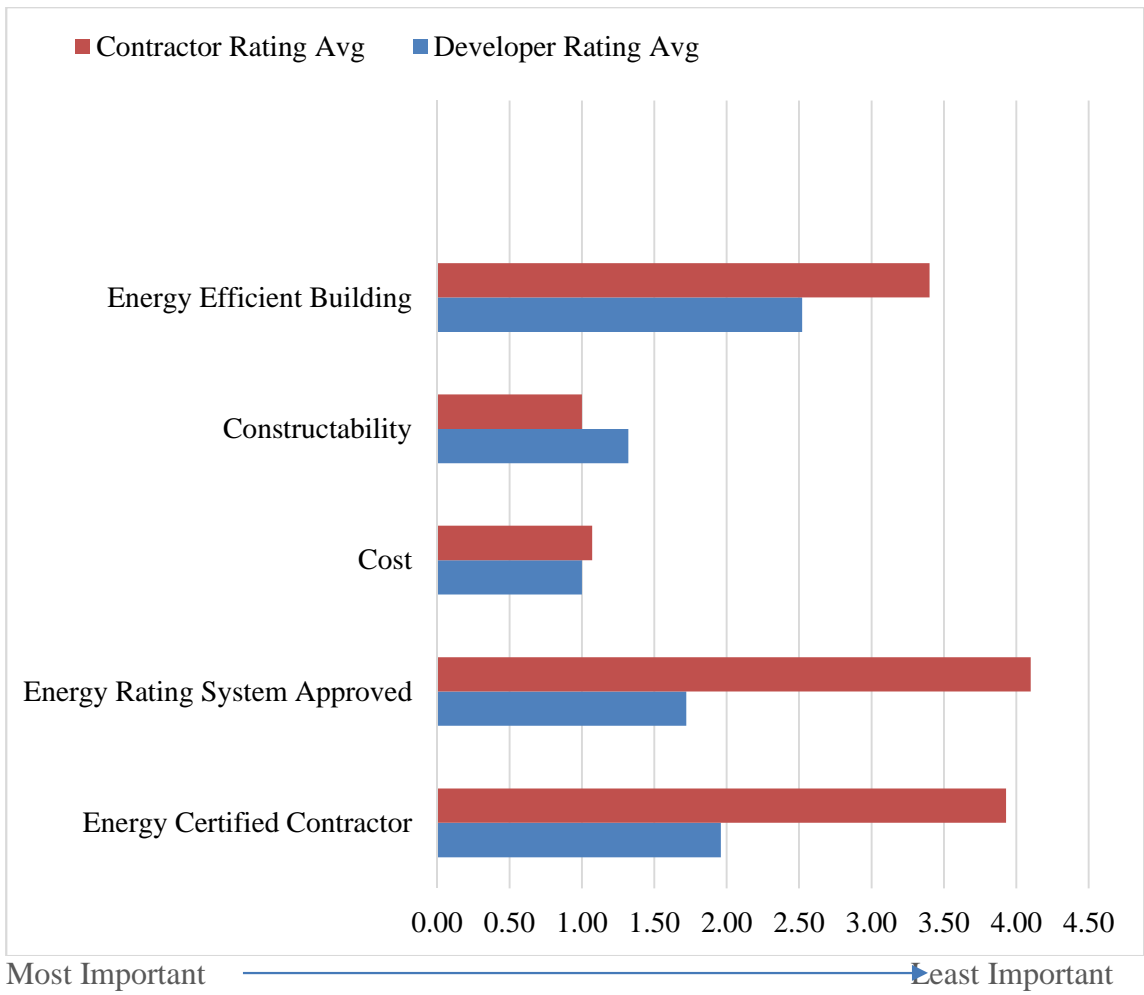


Figure 4.4: Importance of Sustainable Practices Against Other Factors During the Construction Phase between Developers & Contractors

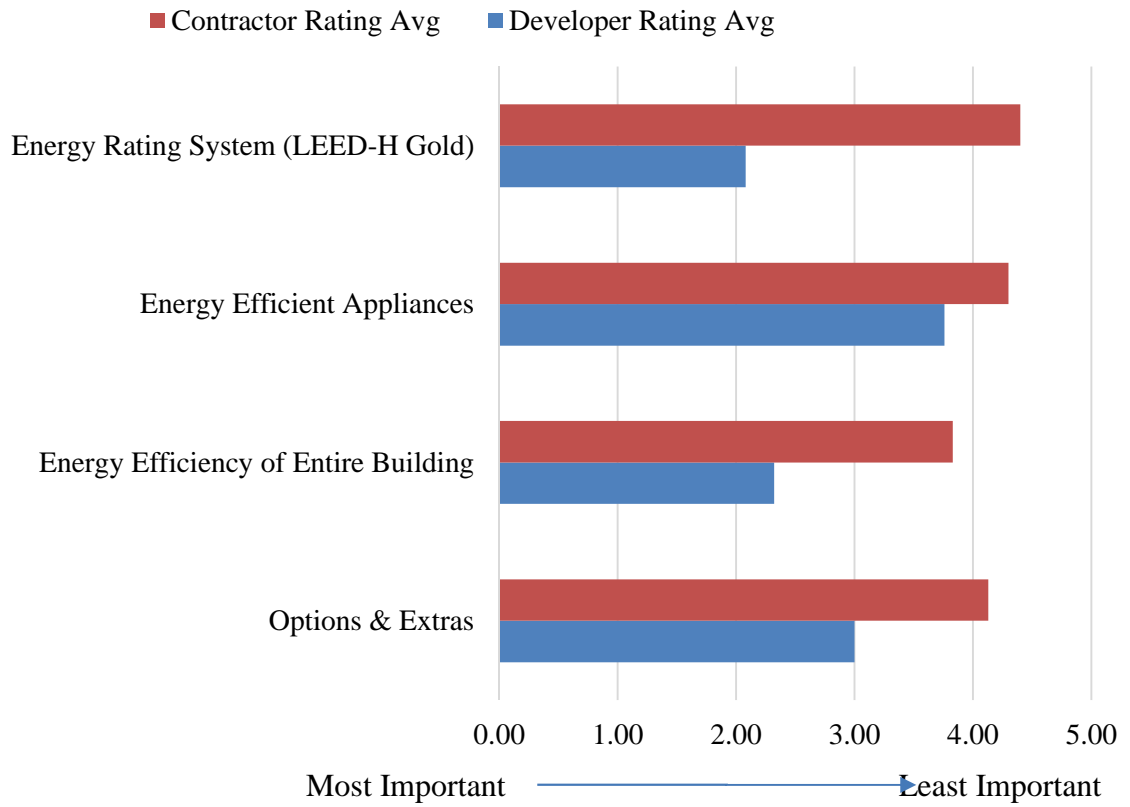


Figure 4.5: Importance of Sustainable Practices Against Other Factors During the Marketing Phase between Developers & Contractors

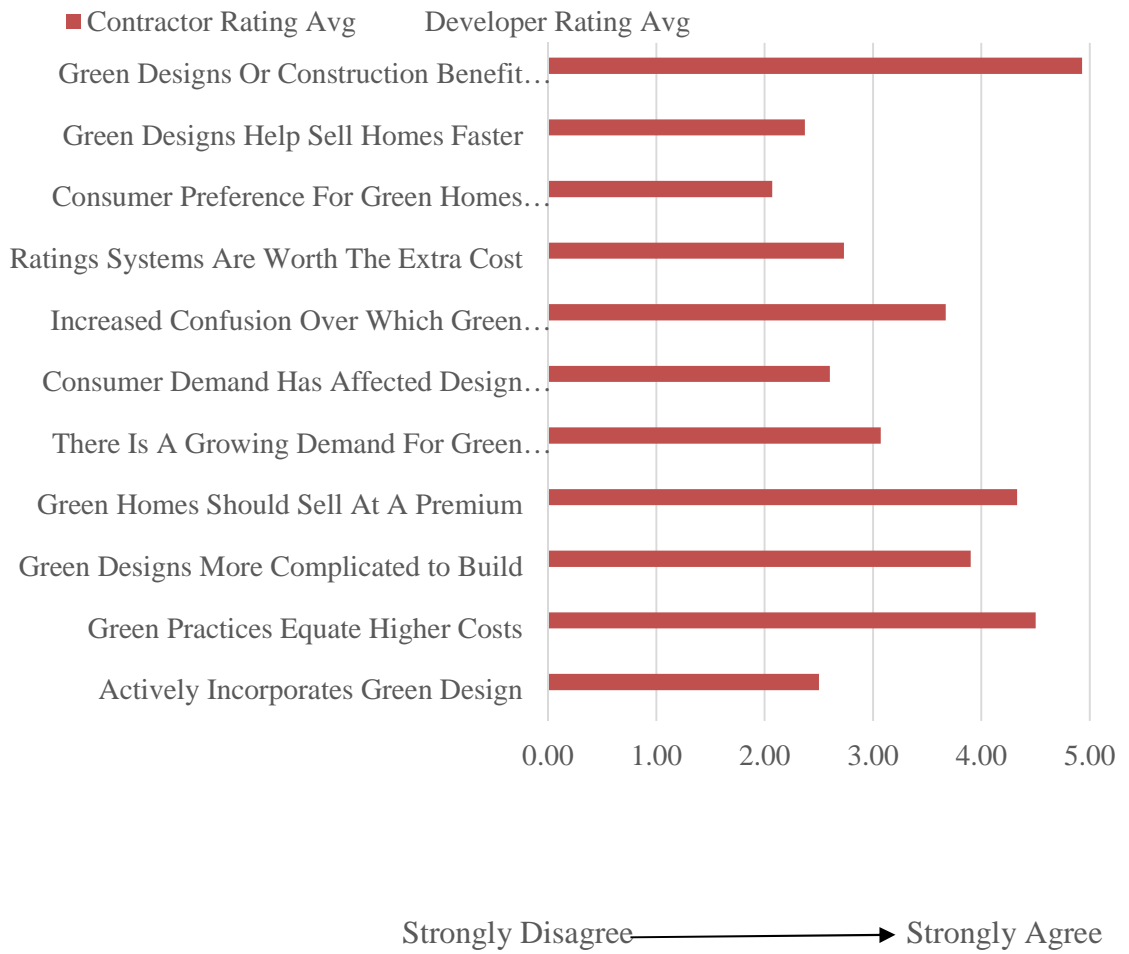


Figure 4.6: Opinion of Sustainable Practices for Developers & Contractors

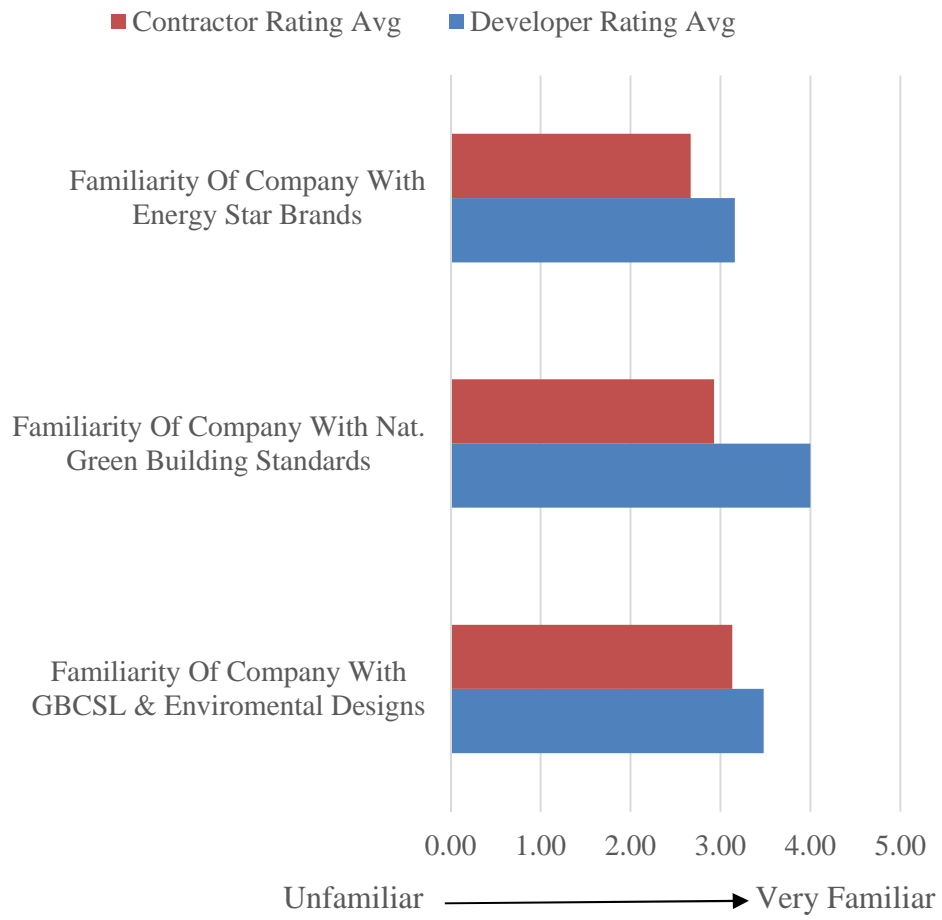


Figure 4.7: Familiarity with Sustainable Practices for Developers & Contractors



Figure 4.8: Frequency of Use of Sustainable Practices for Developers & Contractors

**APPENDIX G**  
**STATISTICAL CALCULATION**

Table 4.10      Data based on experience with sustainable practices using a chi-squared test between developers and contractors

Question	Developer (D)	Contractor (C)	C-D	(C-D) <sup>2</sup>	Chi-Squared	Degrees of Freedom
Q1. Does your Company Have Experience in Sustainable/Green Buildings?	3.48	2.70	-0.78	0.608	0.17	1
Q2. The Primary Designer(s) Experienced With Sustainable/Green Practices?	4.68	3.30	-1.38	1.904	0.41	1
Q3. The Primary Contractor Is Experienced With Sustainable/Green Practices?	3.68	3.47	-0.21	0.044	0.01	1
				Total	0.59	3
					7.81 > 0.59	
					7.81 at 95% with 3 D.F	

Table 4.11 Data based on importance of sustainable practices using a chi-squared test between developers and contractors

Question	Developer (D)	Contractor (C)	C-D	(C-D) <sup>2</sup>	Chi-Squared	Degrees of Freedom
<b>Q1.</b> How Important Is Green Design Or Building Sustainable Homes To Your Company?	3.76	2.90	-0.86	0.740	0.20	1
				Total	0.20	1
				3.84 at 95% with 1 D.F	3.84 > 0.20	

Table 4.12 Data based on ranking of importance of sustainable practices during the design phase with chi-squared test between developers and contractors

Question	Developer (D)	Contractor (C)	C-D	(C-D) <sup>2</sup>	Chi-Squared	Degrees of Freedom
<b>Q1.</b> Aesthetically Pleasing Designs	1.20	2.50	1.30	1.690	1.41	1
<b>Q2.</b> Energy/Sustainable Certified Designer	2.68	4.20	1.52	2.310	0.86	1
<b>Q3.</b> Energy Rating System Approved (i.e LEED-H)	2.36	4.00	1.64	2.690	1.14	1
<b>Q4.</b> Energy Efficient Designs	2.92	3.33	0.41	0.168	0.06	1
<b>Q5.</b> Low Initial Cost	1.08	1.87	0.79	0.624	0.58	1
<b>Q6.</b> Marketable Designs	1.00	2.00	1.00	1.000	1.00	1
				Total	5.05	6
				12.59 at 95% with 6 D.F	12.59 > 5.05	



Table 4.13

Data based on ranking of importance of sustainable practices during the construction phase with chi-squared test between developers and contractors

Question	Developer (D)	Contractor (C)	C-D	(C-D) <sup>2</sup>	Chi-Squared	Degrees of Freedom
Q1. Energy /Sustainable Certified Contractor (i.e LEED-H, State Program)	1.96	3.93	1.97	3.881	1.98	1
Q2. Energy Rating System Approved (i.e LEED-H, State Program)	1.72	4.10	2.38	5.664	3.29	1
Q3. Cost	1.00	1.07	0.07	0.005	0.01	1
<b>Q4. Constructability</b>	1.32	1.00	-0.32	0.102	0.08	1
<b>Q5. Energy Efficient Building</b>	2.52	3.40	0.88	0.774	0.31	1
				Total	5.66	5
				11.07 at 95% with 5 D.F	11.07 > 5.66	

Table 4.14

Data based on ranking of importance of sustainable practices during the marketing phase with chi-squared test between developers and contactors

Question	Developer (D)	Contractor (C)	C-D	(C-D) <sup>2</sup>	Chi-Squared	Degrees of Freedom
Q1. Options & Extras	3.00	4.13	1.13	1.277	0.43	1
Q2. Energy Efficiency Of Entire Building	2.32	3.83	1.51	2.280	0.98	1
Q3. Energy Efficient Appliances	3.76	4.30	0.54	0.292	0.08	1
Q4. Energy Rating System Approved (i.e. LEED-H Gold, Local or State Program)	2.08	4.40	2.32	5.382	2.59	1
				Total	4.07	4
				9.48 at 95% with 4 D.F	9.48 > 4.07	

Table 4.15

Data based on ranking familiarity of sustainable practices with chi-squared test between developers and contactors

Question	Developer (D)	Contractor (C)	C-D	(C-D) <sup>2</sup>	Chi-Squared	Degrees of Freedom
<b>Q1.</b> How Familiar Is Your Company With The Green Building Council In Sri Lanka, Leadership In Energy & Environmental Designs For Homes (LEED-H)?	3.48	3.13	-0.35	0.122	0.04	1
<b>Q2.</b> How Familiar Is Your Company With National Green Building Standards?	4.00	2.93	-1.07	1.145	0.29	1
<b>Q3.</b> How Familiar Is Your Company With Energy Star Brands? (i.e. Appliances, HVAC Systems)?	3.16	2.67	-0.49	0.240	0.08	1
				Total	0.40	3
				7.81 at 95% with 3 D.F	7.81 > 0.40	

Table 4.16

Data based on ranking frequency of use of sustainable practices with chi-squared test between developers and contactors

Question	Developer (D)	Contractor (C)	C-D	(C-D) <sup>2</sup>	Chi-Squared	Degrees of Freedom
Q1. How Often Does Your Company Actively Use A Rating System For Assessing Green Or Sustainable Design?	2.44	1.97	-0.47	0.221	0.09	1
Q2. How Often Does Your Company Actively Train Its Employees In Green Techniques?	2.72	2.13	-0.59	0.348	0.13	1
				Total	0.22	2
				5.99 at 95% with 2 D.F	5.99 > 0.22	