

# Assessment of the Level of Awareness of Global ESS Policies as it Affects the Construction Industry in Adamawa State, Nigeria

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**Abstract** - The global concern for the environmental impact of the construction industry necessitates the implementation of safeguards and heightened environmental awareness. Initiatives, including government regulations, educational programs, and technology integration, aim to promote sustainable practices. Positive outcomes, such as green building practices, waste reduction, and biodiversity conservation, demonstrate progress. Community engagement and regulatory compliance are vital, while economic benefits underscore the importance of adherence to environmental safeguards. It is for this reason that this research seeks to bring to the fore the extent of awareness and compliance to global ESS practices in the construction industry in Adamawa State, especially as all efforts are geared towards resettling the displaced persons who had been dispersed by Boko Haram insurgents in the last decade. For a robust research outcome, accurate information on environmental and social safeguards implementation in Adamawa state, Nigeria, requires that reference is made to recent surveys and interviews with stakeholders. Recognizing the need for improvement and identifying specific strengths and weaknesses through strategic interventions can enhance the effectiveness of Environmental and Social Safeguard (ESS) monitoring. Follow-up actions and feedback mechanisms are crucial for continuous improvement. Identifying specific areas for improvement in ESS policy enforcement and conducting further investigations through surveys or focus groups can provide varying insights. Future research and interventions should address diverse opinions within the construction industry, ensuring a comprehensive and inclusive approach to environmental and social safeguards. The outcome of this research endeavor reveals a generally positive outlook, with 69% of respondents expressing favorable opinions. High environmental awareness, regulatory compliance, and community engagement showcase positive trends. However, diverse opinions, attributed to awareness challenges and resource constraints, highlight the need for

ongoing efforts. Continued collaboration among stakeholders is crucial for fostering a universally positive stance towards sustainable and socially responsible construction practices in the region.

**Keywords:** ESS, ESS policy, Construction Industry, Environmental.

## I. INTRODUCTION

Environment is the nature's gift to humanity, the well-being and survival of human beings and animals both on land and water depends largely on the safety of the natural habitat. It is therefore the responsibility of man to ensure that the environment is taken care of and preserved for present and future generations.

According to Horus Alas (21 April, 2021), New Zealand comes first among countries who cares most for the environment, this did not come easy for the country, as the New Zealand's parliament came up with a bill in April, 2021 that compels insurance companies to declare all potential environmental risks to their investors, they went ahead by formulating policies that will make them attain carbon neutrality by 2050.

On the other hand, in Nigeria, the Africa Centers of Excellence for Development Impact/ ACE Impact NIGERIA, 2018, reports that the National Environmental Standards and Regulations Enforcement Agency (NESREA) is charged to aid the Federal Ministry of Environment (FMEnv) and the National Assembly to enforce compliance with environmental regulations, standards and guidelines. Its functions are primarily to enforce compliance with: policies, laws, standards and guidelines on environmental matters.

The building industry is responsible for a lot of changes that is affecting our environment and its inhabitants; hence, environmental and social safeguard (ESS) policies are tools developed to avoid unwarranted injury to the environment and

people during developmental process. When conceiving and designing a project, safeguards tools should be engaged to assess potential social risks and the likely effects that can be associated with such developmental intervention.

According to Onyejeji (2011), in Nigeria, job-related health and safety plan was for the first time introduced under British rule. The programs led to recruitment and dispatch of occupational health and safety workers to various industrial plants and commercial centers for monitoring and implementation of the plan. This led to enacting legislations like; Labor Act of 1974, the Factories Act of 1987 and the workman's compensation Act of 1987. There are other related acts to occupational health and safety in Nigeria like labor Act 1990 and workman's compensation act 2004.

### 1.1 Problem statement

Despite the huge Policies to drive the implementation of ESS on a global front, the concern bothers on the extent of its awareness and implementation in the developing and under developed countries after years of its campaign. Hence, this research aims at discovering the extent of awareness and implementation of ESS in Adamawa State, Nigeria, especially as it affects the construction sector.

### 1.2 Aim Statement

The aim of the research is to determine the present level of ESS awareness and compliance in Adamawa State as it affects the construction sector and proffer better implementation strategies.

### 1.3 Aim and Objectives of the Project

The aim of this project is to enshrine the practice and ethics of environmental and social safeguards policies among building/ infrastructure contractors, in Adamawa State, Nigeria, especially as efforts are geared towards rebuilding and restoration of the insurgency devastated regions.

To find out the level of awareness of global ESS campaigns/policies in Adamawa state, Nigeria as it affects the construction/building industry.

### 1.4 Research questions /hypothesis of your project work

1. Do Contractors that are aware of ESS policies stand the chance to promote its practice than contractors that are not aware of ESS policies?
2. Will the engagement of ESS experts by contractors enhance better and impactful ESS policy implementation than using non-experts for ESS policies implementation?

### 1.5 Scope of the Research (Significance of the Research)

Historically, since the late 1970's, international development partners, and multinational agencies have embraced policies and principles that will mitigate likely environmental and social hazards of their operations. By 1980's and early 1990's majority of development agencies implemented some form of strict environment policy and procedures, which usually are backed by technical instructions. The policies are systematic with quite comprehensive enhancing better harmonization amongst development partners. These are commonly now called "safeguards systems". The focus of the system is to ensure collaboration by agencies, and its implementing partners, embark on real time assessment of potential environmental and social risks any such developmental intention is like to cause, hence they provide early support, by trying to avoid or minimize/manage any substantial effects the operation may cause.

In the last two decades, adoption of International Finance Corporation (IFC) is a most crucial step in the advancement of safeguards systems (updated in 2012) with its Sustainability Framework, which yields Policy and Performance Standards on Environmental and Social Sustainability (IFC 2012). This made many multilateral development banks to since restructure their systems – in order to be abreast with the IFC's template.

On this research we are concerned with the following:

1. Extent of implementation of the ESS frame work as it applies to construction activities in North East, Nigeria, especially in Adamawa State.
2. Review of available ESS guidelines meant to provide guidance on how to implement construction projects referred to as Policy on Environmental and Social Safeguards ("Policy"), with relevant documentation.
3. Provide recommendations that will enhance faster awareness creation and ESS policy implementation strategies for Adamawa and North-East Nigeria by extension.

Findings indicate that total number of registered construction contractors are put at 173, which are active in building, renovations and construction of civil infrastructures. Research sample aims at collecting and collating data from a targeted 50% of the construction contractors within a period of 50 days, through ministries, agencies and parastatals and contacting those within reach.

### 1.6 Limitations of the Research

This research endeavor is concerned primarily with knowing the extent of ESS policy awareness and implementation only as it concerns construction contractors involved in road and building projects, especially where rehabilitation works are ongoing in order to resettle those displaced by the insurgency attacks in Adamawa State, Nigeria in the past few years.

## II. METHODOLOGY

### 2.1 Types and Sources of Data

This research involves quantitative and qualitative data generated from both primary and secondary sources. Primary data collection was generated through the use of questionnaire which provides information from those who are direct targets the research and key players in the Environmental safeguards policy implementation.

The data generated include information on the firm, ministry or agency of respondents', area of work, period of practice, size of work accomplished, experience on ESS policies, extent and compliance level in the past, method/strategies of ESS implementation, what collaboration on ESS implementation exists between community leaders, members of community and Construction Contractors in the past. What are likely areas of improvement for better ESS compliance, what form of publicity/campaign is given for ESS awareness.

The secondary data were generated from several sources including: accessing records, documents manuscripts from libraries, stores or the internet, find existing datasets that have already been collected, from sources such as government agencies or research organizations.

### 2.2 Sampling Procedure and Sample Size

This report will be prepared based on field investigation, review of secondary data and information acquired from the MDAs. A population size of 120 respondents is targeted for this survey in focus.

This report covers the description of existing environmental safeguards conditions for the region under assessment, social impact of the safeguards, recommendation for implementation strategies, social monitoring. The potential social impacts (both positive and negative) will be considered for activities to be carried out during pre-construction, construction and operation phases of project implementation.

### 2.3 Method of Data Collection

The collection of data will be carried out by the administration of the research questionnaire to the targeted numbers of respondents. Four research assistants will be involved in interviewing and filling the responses elicited by the respondents on the questionnaire. This is a method considered by Osuala (2005) as most appropriate. Osuala, (2005) proposes that research assistants be oriented so that they understand exactly what the questions are meant to address. The questionnaire was divided into three sections with the first section containing background information of the respondents, and respondents' information the firm's participation in the ESS policies implementation, years of experience of respondent on ESS.

The second part of the questionnaire sources information on supervision thoroughness through involvement of experts as implementation enforcing agents.

The third part is monitoring of ESS policies compliance by the MDAs and ensure its full enforcement.

### 2.4 Sample/sampling Procedures

Infrastructure contractors and stakeholders in Adamawa state are those who are involved in the construction of Road and bridges, Public and Residential buildings, Water supply, and engineering Infrastructure consultants. The detail survey will consider responses from contractors and consultant managers, Environmental and safeguards specialists and allied professionals from MDAs and World Bank project implementation agencies within the geographical territory under consideration.

A sample size of 120 respondents is targeted for the purpose of this research using a marginal error of 5% adopted from Saunders (1997) to represent the number of infrastructure contractors, consultants, MDAs and others in Adamawa State (Table 3.2).

**Table 2.1: Sample sizes from different sizes of population at a 95% level of certainty (assuming data are collected from all cases in the sample)**

| Population | Margin of Error |     |     |     |
|------------|-----------------|-----|-----|-----|
|            | 5%              | 3%  | 2%  | 1%  |
| 50         | 44              | 48  | 49  | 50  |
| 100        | 79              | 91  | 96  | 99  |
| 150        | 108             | 132 | 141 | 148 |
| 200        | 132             | 168 | 185 | 196 |
| 250        | 151             | 203 | 226 | 244 |
| 300        | 168             | 234 | 267 | 291 |
| 400        | 196             | 291 | 434 | 384 |

|               |            |            |             |             |
|---------------|------------|------------|-------------|-------------|
| 500           | 217        | 340        | 414         | 475         |
| 750           | 254        | 440        | 571         | 691         |
| 1 000         | 278        | 516        | 706         | 906         |
| 2 000         | 322        | 696        | 1091        | 1655        |
| 5 000         | 357        | 879        | 1622        | 3288        |
| <b>10 000</b> | <b>370</b> | <b>964</b> | <b>1936</b> | <b>4899</b> |
| 100 000       | 383        | 1056       | 2345        | 8762        |
| 1 000 000     | 384        | 1066       | 2395        | 9513        |
| 10 000 000    | 384        | 1067       | 2400        | 9595        |

Source: Adopted from Saunders et al (1991)

A sample size of 120 was considered as targeted respondents sourced from infrastructure contractors, consultants, MDAs safeguards and others. The proportionality factor will be used to select the proportion of sample size from each area of specialization based on their population size. The proportionality factors to be adopted are:

$$Q_i = (F_i / P) \times N$$

Where:

- $Q_i$  = The Number of respondents selected from each construction specialization.
- $F$  = Number of companies from each construction specialization
- $P$  = The total number of infrastructure contractors in all areas of specialization selected for the study.
- $N$  = Required total sample size.

e.g

If there are 25 road infrastructure contractors, and total number of general infrastructure contractors are 150, and we are targeting 120 total respondents as our sample size

$$Q_r (\text{Road infrastructure contractors}) = (25 / 150) \times 120 = 20$$

Hence 20 numbers of road infrastructure respondents will be required.

Same applies to other infrastructure specializations.

### 2.5 Determinant of awareness of global ESS campaigns/policies in Adamawa state, Nigeria

The study employed **regression analysis** to identify the factors influencing awareness levels among construction industry professionals concerning global Environmental, Social, and Safety (ESS) campaigns/policies. SPSS Statistic V23 was used to run the regression analysis. The variables considered included personnel training related to ESS, construction industry policies and guidelines for ESS,

measures implemented by the construction industry to mitigate the negative environmental impact of construction, qualifications of designated personnel responsible for ensuring ESS compliance, and dedicated staff responsible for overseeing ESS compliance.

The explicit form of the equation is specified as;  $Y = F(X)$

$$Y_1 = a_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + U_i$$

Where:

- $Y$  = Dependent variable
- $X_1$  and  $X_2$  = Independent Variables
- $a_0$  = constant/slope
- $b_1, b_2$  = coefficient of regression
- $Y_1$  = Awareness among construction industry professionals regarding ESS
- $X_1$  = Personnel training related to ESS,
- $X_2$  = Construction industry policies and guidelines for ESS,
- $X_3$  = Measure in place by construction industry to reduce the negative impact of construction on the environment,
- $X_4$  = Qualification of designated personnel responsible for ensuring ESS Compliance,
- $X_5$  = Dedicated staff responsible for overseeing ESS compliance,
- $U_i$  = Error term.

## III. DATA PRESENTATION AND ANALYSIS

### 3.1 Introduction

In this chapter, data presentation, analyses and interpretation for the study embarked upon is carried out. The data relating to each of the statistical hypotheses of the study are presented and analyzed. The section presents the descriptive statistics, correlation result of the dependent variable and explanatory variables.

**Table 3.1: Responses breakdown from infrastructure contractors and stakeholders in Adamawa State**

| S/N | Contractor/agency | Number of Responses |
|-----|-------------------|---------------------|
| 1   | Road              | 16                  |
| 2   | Water             | 8                   |
| 3   | Building          | 54                  |
| 4   | Ministries/MDAs   | 29                  |
| 5   | NGOs              | 7                   |
| 6   | Others            | 6                   |
|     |                   | 120                 |

N.B: Others are Community leaders and projects beneficiaries.

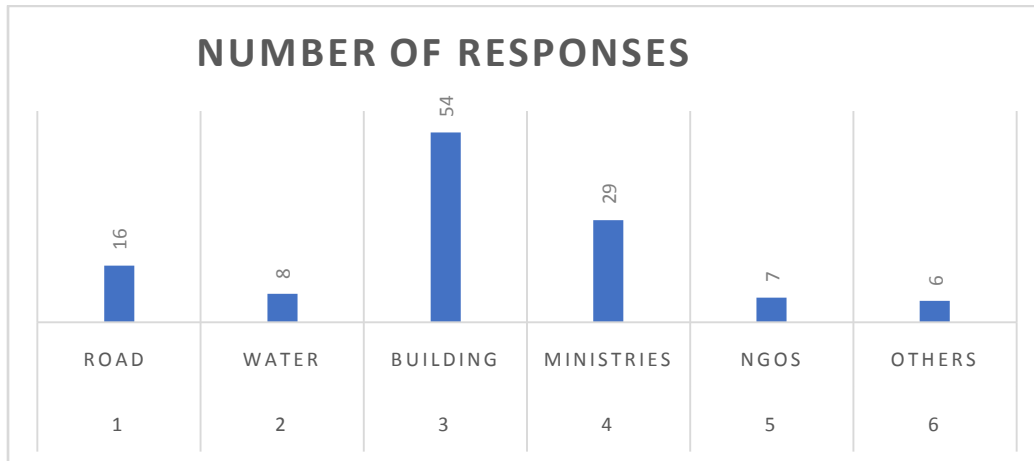


Figure 1: Analysis of responses by targeted stakeholders

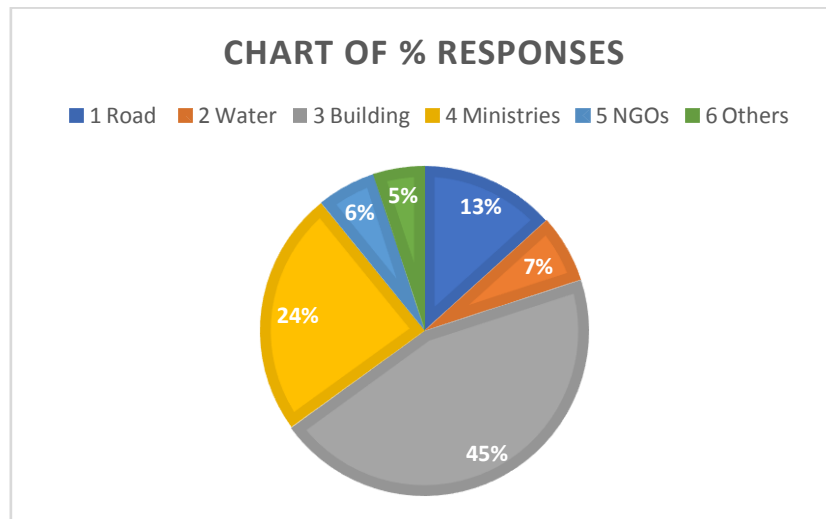


Figure 2: Percentage responses by targeted stakeholders

### 3.2 Data Analysis

The data collected via questionnaire was analysed in accordance with the research questions which will be generated based on objectives of the study.

#### Research Question 1:

1. Do Contractors and agencies that are aware of ESS policies stand the chance to promote its practice than contractors and agencies that are not aware of ESS policies?

The data that provided answer to this research question are presented on Tables 1 and 2.

Table 3.2: Mean Response and Standard Deviations of contractors and agencies that are aware of ESS policies and stand the chance to promote its practice

| S/N | ITEMS   | X (Mean) | STD Deviation | Decision |
|-----|---|----------|---------------|----------|
| 1   | Is agency/organization/company government owned or registered to operate?   | 4.88     | 0.505         | Accepted |
| 2   | What project do you undertake (roads/building construction/water supply)... | 4.63     | 0.962         | Accepted |

|   |  |             |              |          |
|---|--|-------------|--------------|----------|
| 3                                       | What does environmental and social safeguards mean in the construction industry?                                   | 3.66        | 0.912        | Accepted |
| 4                                       | What training related to environmental and social safeguards in construction have you received?                    | 2.82        | 1.444        | Accepted |
| 5                                       | What policies and guidelines are in place for environmental and social safeguards in your organization?            | 3.37        | 1.116        | Accepted |
| 6                                       | Are these policies and guidelines adequate and implemented effectively?  | 3.17        | 1.333        | Accepted |
| 7                                       | Are environmental and social issues given priority during the construction phase of your projects?                 | 3.47        | 1.115        | Accepted |
| 8                                       | What measures are in place to reduce the negative impact of construction on the environment and local communities? | 3.11        | 1.044        | Accepted |
| <b>Cluster mean/Standard Deviations</b> |  | <b>3.64</b> | <b>1.054</b> |          |

Source: Field survey by administering questionnaire, 2023.

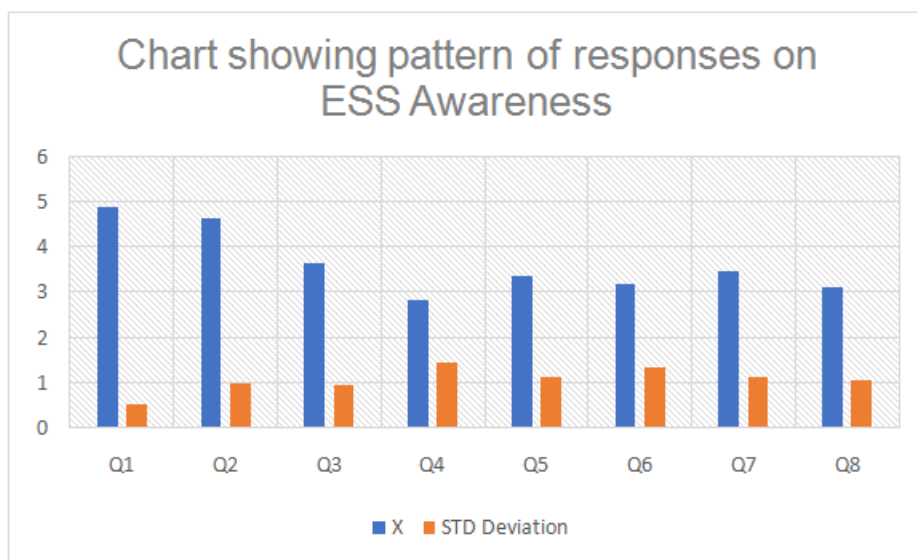


Figure 3: Pattern of responses on ESS Awareness

For contractors and agencies in Adamawa state, Nigeria, who are aware of Environmental and Social Safeguard (ESS) policies and have the potential to promote their practice, a mean of 3.64 indicates a moderate level of response on the survey scale. In a typical survey scale, such as one ranging from 1 to 5, a mean above the midpoint suggests a somewhat positive perception or stance regarding Environmental and Social Safeguard policies. Respondents, on average, may have a moderate level of awareness or positive attitudes toward these policies.

The standard deviation of 1.054 provides information about the spread or dispersion of responses. A higher standard deviation indicates greater variability in responses. In this context, a standard deviation of 1.054 suggests a notable degree of diversity in the responses. This variability imply differing levels of awareness, understanding, or support for Environmental and Social Safeguard policies among contractors and agencies.

The combination of a moderate mean and a relatively high standard deviation indicates that while, on average, there is a moderate level of awareness or positivity toward ESS policies, there is significant diversity in individual responses. Some contractors and agencies strongly support these policies, while others have more neutral or negative opinions.

Providing insight to ESS awareness in their research, Crescenza C. *et al.* 2021 discovered that recently, awareness of environmental concerns has improved generally. As the young people are becoming more aware so also are the adults sharing similar sentiment on saving our planet, which is suffering from increasing climate change and disasters. This gives most terrifying concerns for persons in developing nations (Guo *et al.*, 2021). Considering the increase of ESS issues globally, people's awareness of ESS is widely investigated, mostly using the outcomes of research survey opinion as indicator of their disposition to ESS (Beiser-McGrath and Huber, 2018; Abbas and Singh, 2014; Kaiser *et al.*, 2007).

Given the moderate mean, there is obvious need for further promotion awareness and understanding of Environmental and Social Safeguard policies in Adamawa state. Targeted communication strategies, training initiatives, or addressing specific concerns raised by those who responded less positively could be considered.

According to Charles A.O *et al*, 2012, their study on Environmental Awareness and Attitudes in Ibadan, Nigeria suggests considering the socioeconomic condition in Nigeria, and limited familiarity of people on environmental issues, the best strategy for encouraging environmentally responsible disposition and positive attitudes as relates to issues such as biodiversity loss should be to intensify exposure to focused campaign that emphasizes their significance.

Understanding the local context in Adamawa state, Nigeria, is crucial. Factors such as regional regulations, cultural considerations, or specific environmental and social challenges have influence on how contractors and agencies perceive and respond to ESS policies.

Summarily, the provided mean and standard deviation suggest a nuanced landscape.

### 3.3 Regression Analysis (Quantitative analysis) on extent of ESS awareness among construction industry professionals

Table 3.3: Regression Model Summary (using SPSS Version 23)

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .615 <sup>a</sup> | .378     | .351              | .791                       | .378              | 13.873   | 5   | 114 | .000          |

a. Predictors: (Constant), Q11, Q8, Q9, Q5, Q4

From objective one (1), regression model adopted for quantitative analysis. This table provides the *R* and *R*<sup>2</sup> values. The *R* value represents the simple correlation and is 0.615 (61.5%), which indicates a high degree of correlation. The *R*<sup>2</sup> value 0.378 (37.8%) indicates how much of the total variation of the dependent variable, (Awareness among construction industry professionals regarding global ESS Campaigns/policies), can be explained by the independent variable, (Personnel training related to ESS, Construction industry policies and guidelines for ESS, Measure in place by construction industry to reduce the negative impact of construction on the environment, Qualification of designated personnel responsible for ensuring ESS Compliance and dedicated staff responsible for overseeing ESS compliance).

The ANOVA table, which reports how well the regression equation fits and predicts the awareness among construction industry professionals regarding global ESS Campaigns/policies.

Table 3.4: ANOVA Table

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 43.427         | 5   | 8.685       | 13.873 | .000 <sup>b</sup> |
|       | Residual   | 71.373         | 114 | .626        |        |                   |
|       | Total      | 114.800        | 119 |             |        |                   |

a. Dependent Variable: Q18

b. Predictors: (Constant), Q11, Q8, Q9, Q5, Q4

The ANOVA table demonstrates the regression model's substantial predictive capability for awareness among construction industry professionals regarding global Environmental, Social, and Safety (ESS) Campaigns/policies. This signifies the statistical significance of the regression model. The data reveals a p-value of less than 0.0005 ( $p < 0.0005$ ), which is below the conventional threshold of 0.05. From this result it can be deduced that, overall awareness among construction industry professionals about global ESS Campaigns/policies significantly depends on factors such as personnel training, construction industry policies and guidelines, measures put in place by the construction industry to mitigate the negative impact of construction on the environment,

qualifications of assigned personnel responsible for ensuring ESS compliance, and devoted staff responsible for supervision ESS compliance.

Table 3.5: Regression Coefficients Table

| Model        | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|--------------|-----------------------------|------------|---------------------------|-------|------|
|              | B                           | Std. Error | Beta                      |       |      |
| 1 (Constant) | 1.884                       | .294       |                           | 6.397 | .000 |
| Q4           | -.007                       | .074       | -.010                     | -.089 | .929 |
| Q5           | .250                        | .090       | .284                      | 2.774 | .006 |
| Q8           | -.062                       | .091       | -.066                     | -.680 | .498 |
| Q9           | .226                        | .078       | .285                      | 2.892 | .005 |
| Q11          | .258                        | .087       | .266                      | 2.960 | .004 |

a. Dependent Variable: Q18

The analysis results indicates that the key determinants that aids awareness among construction industry professionals regarding global ESS Campaigns/policies in the study area are Construction industry policies and guidelines for ESS (coefficient of 0.250), Qualification of designated personnel responsible for ensuring ESS Compliance (coefficient of 0.226), and dedicated staff responsible for overseeing ESS compliance (coefficient of 0.258). This establishes the fact that adherence to policies and guidelines, the qualifications of assigned personnel, and having dedicated staff monitoring ESS compliance contribute significantly to increasing awareness levels within the construction industry concerning global ESS campaigns/policies in Adamawa State.

### 3.4 Research Findings

From Research Questions 1 the following can be deduced:

1. There is perceived moderate level of awareness or positivity toward ESS policies adherence among Contractors in the construction industry in Adamawa State, also there is significant variance in individual responses. Some contractors and agencies strongly support these policies, while others have more neutral or negative opinions.
2. There is obvious need for further promotion awareness and understanding of Environmental and Social Safeguard policies among Contractors in the construction industry in Adamawa state. Targeted communication strategies, training initiatives, or addressing specific concerns raised by those who responded less positively could be considered.

3. Respondents have a neutral to moderately positive perception of the quality of ESS personnel and their awareness activities in the region under review.
4. The findings suggest an opportunity for strategic intervention, with the mean considered as suboptimal, efforts should be directed towards improving the quality of personnel or enhancing awareness activities.
5. The result of the qualitative research therefore, suggests a divergent landscape regarding awareness and perception of ESS policies among contractors in the construction industry in Adamawa State. The diverse responses highlight the need for tailored strategies to enhance awareness and address specific concerns. Additionally, the neutral to moderately positive perception of ESS personnel provides an opportunity for strategic intervention aimed at improving the overall quality of personnel and awareness activities in the region.

### 3.5 Discussion

The need to improve environmental awareness and implementing safeguards in the construction sector has become a global concern due to the significant impact of the industry on the environment. Innovations that promote sustainable practices and environmental safety have gained traction in various regions, though situations may vary, and local factors may influence the outcomes.

#### Awareness Initiatives and Outcomes:

Major factors such as government regulations, international standards, and industry certifications often play a crucial role in raising awareness among construction contractors.



Educative programs, seminars/workshops, and training sessions can be used to sensitize contractors about the environmental impact of construction activities and the importance of imbibing sustainable practices.

#### **Sustainable Innovative Construction Practice:**

Contractors may increasingly incorporate green building techniques, such as energy-efficient designs, use of sustainable materials, and implementation of eco-friendly construction methods.

Contractors should develop waste-cutting strategies in construction that will enhance better living environment. Measure to protect local ecosystems and biodiversity, such that will preserve the natural habitats and using eco-friendly landscaping approaches.

Technological innovations, such as Building Information Modeling (BIM), can contribute to more beneficial construction by optimizing resources utilization, enhancing energy efficiency, and minimizing waste. Innovative construction methodology that is environmentally friendly can be adopted.

#### **Implementation Strategies:**

Construction contractors may systematically collaborate with local communities to ensure that their projects are culturally and environmentally sensitive. Developing mutual relationships with local communities allow for a sustainable and socially responsible construction process.

Contractors will adhere with environmental regulations and standards to avoid legal issues and financial penalties.

The engagement of third party monitors will greatly enhance adherence to environmental safeguards.

#### **Economic Benefits:**

Contractors may soon realize that implementation of safeguards policies is blessing in disguise, as it will give economic benefits through cost savings from improved resource management, energy efficiency measures and waste reduction.

#### **3.6 Recommendations**

To obtain very accurate and detailed information on the mean response and standard deviation for ESS in the construction industry in Adamawa state, Nigeria, it's recommended that the latest research reports, academic publications, or official documents from relevant authorities. Conducting interviews or surveys with stakeholders in the

construction industry in the region could also provide valuable insights. Therefore, based on the results and discussion, the following recommendations are proffered:

1. While the average response is positive, the moderate standard deviation indicates that there is need to give more attention to ESS awareness and policy implementation.
2. Identify ESS monitoring and supervision process that are perceived more negatively or less favorable for improvement.
3. Monitor subsequent surveys or feedback mechanisms to track changes in perceptions over time.
4. Address the concerns of the diverse opinions for a more comprehensive and inclusive approach to ESS in the construction industry.

#### **3.7 Further Works**

Further areas of works are to identify specific areas or aspects of ESS policy enforcement that are perceived more negatively within the cluster. This will assist in noting areas for potential improvement or targeted interventions.

Follow-up surveys, interviews, or focusing on sector to delve deeper into the reasons behind the diversity of opinions. This can provide qualitative insights and a more objective view of the factors influencing perceptions. Future work should focus on addressing the concerns of the diverse opinions to ensure a more comprehensive and involving approach to ESS in the construction industry.

### **IV. RESEARCH CONCLUSION**

The outcomes of the research conducted on ESS compliance in the construction industry in Adamawa State gives a generally positive outlook, with a majority of 69% of the 120 respondents expressing favorable opinions. These respondents demonstrated a strong awareness of environmental and social issues related to construction activities and showed a commitment to compliance with safeguards.

The positive aspects highlighted by the respondents are ESS awareness, regulatory compliance and community engagement.

Diverse opinions highlight the need for ongoing efforts to address awareness gaps and practical challenges. Continued collaboration among government agencies, industry stakeholders, and local communities is crucial in fostering a more universally positive stance towards sustainable and socially responsible construction practices in Adamawa state, Nigeria.

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### Citation of this Article:

Engr. Enoch James Bello, Babajo Umar, Dr. Eli Joel, & Sadiq Bariki. (2024). Assessment of the Level of Awareness of Global ESS Policies as it Affects the Construction Industry in Adamawa State, Nigeria. *International Research Journal of Innovations in Engineering and Technology - IRJIET*, 8(6), 166-175. Article DOI <https://doi.org/10.47001/IRJIET/2024.806020>

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