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Research Article

Assessment of Forest Conservation Using Green Bonds as a Tool in Southwestern Nigeria

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Abstract

Green bond is a loan security issued to raise capital precisely for projects that contribute positively to climate, environment and conservation (land and forests). There was little or no information on availability of green bonds among forest stakeholders in Nigeria. This study investigated the level of awareness and accessibility of green bond as a financial tool for forest conservation in Southwestern Nigeria; one of the countries that do not have a well-developed green bond market. A total of 150 copies of structured questionnaire were distributed to the respondents. A multistage sampling technique was adopted for data collection from the study area. Data obtained were collated on Microsoft excel and subjected to descriptive and inferential statistics using Statistical Package for Social Sciences (SPSS). In identifying the level of awareness of respondents on green bond it was discovered that majority (68.3%) of respondents were indirect forest stakeholders and have knowledge on forest conservation. On the other hand, majority of the respondents (70.3%) have not heard about green bonds while 81.4% of the respondents did not understand the term green bond as a sustainable finance instrument for forest conservation. The study also revealed that majority 92.4% of the respondents did not have access to green bond and 91.7% of the respondents reported that it has never been issued to them. Conclusively, the level of awareness and access to green bond among the forest stakeholders for effective forest conservation was very low.

Keywords

Green Bond, Awareness, Access, Forest Conservation, Financial Tool

1. Introduction

Forests are referred to as earth lungs as they produce oxygen which is vital for existence of life, help in regulating hydrological cycle, planetary climate, purify water, provide wild life habitat, reduce global warming, reduce pollution, conserve soil, mitigate natural hazards and so on [10]. But now-a-days, forest cover is depleting rapidly due to many reasons such as an expansion of agriculture, timber plantation, other land uses like pulp and paper plantations, urbanization, construction of roads, industries, constitutes the biggest and severe threat to the forest causing serious environmental damage [10]. Conservation of this natural resource by forest stakeholders then becomes of great importance.

Forest stakeholders are individuals or groups who have an interest in the forest. The stakeholders can include people who

live near the forest, work in the forest, depend on the forest for their livelihood, use the forest for recreation, depend on the forest for their water supply, and depend on the forest for their air quality. The stakeholders of forest can be broadly classified into two categories- the direct and indirect stakeholders.

The direct stakeholders are those who depend on the forest for their livelihood. They include the forest dwellers, who depend on the forest for their food, shelter, and livelihood. The indirect stakeholders are those who do not depend on the forest for their livelihood, but their interests are affected by the forest. They include the government, industries, and environmentalists. The government is the most important stakeholder in the forest. It is responsible for the management and conservation of the forest. The government has the authority to make and implement policies regarding the forest [5]. Industries are another important stakeholder in the forest. They depend on the forest for their raw materials. They also depend on the forest for the disposal of their wastes. Industries have a responsibility to use the forest resources in a sustainable manner. Environmentalists are the third important stakeholder in the forest. They are concerned about the conservation of the forest and the welfare of the people living in and around the forest. They are also instrumental in the formulation of policies regarding the forest [5]. Green bonds can be used to finance a broad range of environmental projects, including but not limited to categories such as renewable energy, energy efficiency, sustainable waste management, sustainable land use (which could include projects such as forestry, agricultural operations, land acquisitions, and conservation easements), biodiversity conservation, clean transportation, and clean water and/or drinking water [4]. One way to mobilize private sector funds to encourage forest conservation is by using green bonds. A green bond, alternatively known as a climate bond is used to finance or refinance projects that contribute positively to the environment and/or climate [6]. Green bonds were first issued in the late 2000s by supranational organizations such as the European Investment Bank and the World Bank. Supra nationals (governments) still issue green bonds, but corporations now account for about two-thirds of global issuance [2]. Green bond is still in early stage or growth as a lot of investors are still reluctant to invest into green project and also it has not received the major awareness needed due to the factors that Forest conservation management are not attracting investors [3]. There has been resistance in the issuing of green bond in African countries because of the relatively small size of African financial markets compared to other regions [1, 12]. There was little or no information on availability of green bonds among forest stakeholders in Nigeria left alone Ogun state. Therefore, it becomes imperative to evaluate the level of awareness and access to green bond to meet the need for forest conservation in the study area.

2. Materials and Methods

2.1. Description of the Study Area

The study was conducted in three local government areas within Ogun state. Ogun State lies within latitude 7 ˚N and 6 ˚N and longitude 2.5 ˚ E and 5 ˚ E. It is a state in Southwestern Nigeria. Bordered by Lagos State to the South, Oyo and Osun states to the North, Ondo State to the east and the republic of Benin to the west. The state has a total land area of 16,762 km^2 [9]. Out of which a total of 2,731.62km^2 constitutes its forest reserves. Ogun state is divided into three zones according to their senatorial districts; Ogun Central, Ogun East and Ogun West (figure 1).

A multistage sampling technique was adopted for data collection from the study area. The first stage was the purposive selection of one zone out of the three zones in the state based on the location of the major forest stakeholder. Consequently, Zone two (Ogun central) was selected. The second stage was purposive selection of three local government areas (LGAs) namely; Obafemi Owode, Odeda and Abeokuta North based on the presence of Administrative headquarters of forestry department, forest reserves and free areas respectively.

2.2. Data Collection

A total of 150 copies of structured questionnaire were distributed, with 50 respondents from each of the three local government areas namely; Obafemi Owode, Odeda and Abeokuta North for data collection on the awareness level and access to green bond as a tool for financing forest conservation. However, only 145 copies were retrieved and utilized for further analysis. Data on their socio-economic characteristics such as age, sex, educational status, marital status, household size, major and minor occupation and other relevant information were collected.

2.3. Statistical Analysis

Data obtained were collated on Microsoft excel and subjected to descriptive and inferential statistics using Statistical Package for Social Sciences (SPSS). Descriptive statistics was used to describe the socioeconomic characteristics of respondents and their perspective, accessibility and awareness to green bond as a tool for financing forest conservation.

Figure 1. Map of Ogun State showing the Study Locations.

3. Results

It was revealed that 68.3% and 31.7% of the respondents were indirect and direct stakeholders respectively (Figure 2). The results of the socioeconomic characteristics of the respondents is presented in Table 1. It was revealed that 66.2% of respondents were male while 33.8% are female, 86.2% are married, about 35.2% had secondary school education, 28% had primary school education and 22.1% had tertiary education, majority of the respondents were between the age of 40-49, 50-59 and 30-39 with 37.2%, 31%, and 17.9% respectively. Also, majority of the respondents (34.5%) were within Obafemi Owode local government followed by Abeokuta North local government (33.1%) and Odeda had the lowest respondents (32.4%). Result of respondent's household size showed that majority (63.46%) of respondents had household size of 1-5 individuals, 48.3% had the household

size of 6-10. The mean number of the household size is Five, Also, the staff size of respondents revealed that about 64.8% of respondents had the staff size between 1-10 in number, 4.83% of respondents had the staff size of 11-20 while 29.9% had no staff size. Majority (53.1%) of respondents are native resident of the study area which were 77 in number while, 46.2% were non-native amounting to 67 in number. Table 1 likewise revealed that the major occupation of the majority (33.1%) of respondents was timber contract and only 24.1% were Foresters. The minor occupation of respondents as shown in Table 1 revealed that majority 44.8 of the respondents had their minor occupation as farmers while 29.6% were into other occupations. It was also shown that majority (37.2%) of the respondents earn between $5 − 35$ while 33.79% earned above $67 from their major occupation. About 32.41% of the respondents as forest stakeholders had their length of year in service between 1-10 years while the lowest value was obtained between $21 − 30$ years.
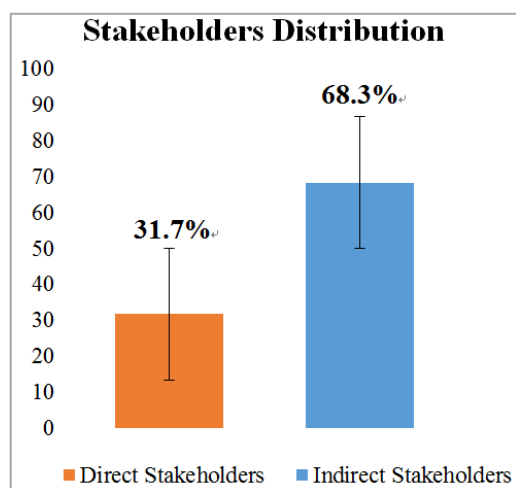
Figure 2. Forest stakeholder's distribution in the Study Locations.

Table 1. Socioeconomic Characteristics of Respondents.

GENDER	Frequency	Percentage (%)
Male	96	66.2
Female	49	33.8
MARITAL STATUS		
Married	125	86.2
Single	9	6.2
Divorced	5	3.4
Widow	6	4.1
EDUCATIONAL LEVEL		
No Formal Education	20	13.8
Primary	42	28.9
Secondary	51	35.2
Tertiary	32	22.1
AGE GROUP		
20-29	2	1.4
30-39	26	17.9
40-49	54	37.2
50-59	45	31.0
60-69	16	11.0
70 and Above	2	1.4
LOCATION		
Obafemi Owode	50	34.5
Odeda	47	32.4
Abeokuta North	48	33.1
HOUSEHOLD SIZE		
1-5	92	63.46

GENDER	Frequency	Percentage (%)
6-10	48	48.33
None	5	3.4
STAFF SIZE		
1-10	94	64.83
11-20	7	4.83
21-30	2	1.38
31-40	3	2.07
None	39	29.90
RESIDENCY STATUS		
Native	77	53.1
Non-native	67	46.2
Not specified	1	0.7
MAJOR OCCUPATION		
Timber contractor	48	33.10
Timber transporter	22	15.17
Foresters	35	24.14
Others	40	22.59
MINOR OCCUPATION		
Farmer	65	44.83
Wood seller	20	13.79
Firewood seller	17	11.72
Others	43	29.68
Average Monthly Income		
$5 - 35	54	37.24
$36 -66	42	28.97
$67 - Above	49	33.79
LENGTH OF YEARS AS STAKEHOLDER		
1-10	47	32.41
11-20	39	29.90
21-30	29	20.00
31-Above	30	20-69

Source: Field survey 2023

3.1. Level of Awareness on Green Bond and Forest Conservation Among the Stakeholders

Majority (68.3%) of respondents were indirect forest stakeholders. It also revealed that majority (65.5%) of the

respondents knew about forest conservation while 34.5% did not know about forest conservation (Table 2). Moreover, 70.3% of respondents have not heard about green bond in the study area while the 29.7% have done so. Out of this 29.7% the majority of them heard about green bond from conferences (14.5%) and about 1.4% heard about green bond through various means such television, internet, journals, and newspapers. About 81.4% of the respondents did not understand term green bond as sustainable finance instrument while 18.6% had the understanding of green bond. Furthermore, majority of the respondents strongly disagreed to having high level of awareness about green bond within forest stakeholders, 12% disagree while 8.3% agrees. The majority of respondents 70.3% agree that the awareness on green bond should be increased (Table 2).

Table 2. Awareness level on Forest Conservation and Green Bond among Forest Stakeholders.

Variables	Frequency	Percentage (%)
Type of Forest stakeholders		
Direct	46	31.7
Indirect	99	68.3
Knowledge on Forest Conservation		
No	50	34.5
Yes	95	65.5
Heard About Green bond		
No	102	70.3
Yes	43	29.7
How did You Learn About Green bond		
Conferences	21	14.5
Internet	1	.7
Journals	2	1.4
Newspaper	2	1.4
Nil	117	80.7
Television	2	1.4
Understanding of Green bond		
No	118	81.4
Yes	27	18.6
Awareness on green bond		
Agree	12	8.3
Disagree	18	12.4
Nil	39	26.9

Variables	Frequency	Percentage (%)
Strongly Agree	3	2.1
Strongly Disagree	62	42.8
Undecided	11	7.6
Awareness should be Increased		
Agree	4	2.8
Nil	39	26.9
Strongly Agree	102	70.3

Source: Field survey, 2023

3.2. Accessibility Level of Green Bond Among Forest Stakeholders

The response of the respondents regarding their accessibility to green bond is presented in Table 3. Majority (92.4) of the respondents have not had access to green bond while only 7.6% have been able to. About 8.3% of the respondents ascertained that green bond had been issued to them while majority (91.7%) of them responded that it had not been issued to them. Only 6.9% of the respondents received green bond at the early stage of their plantation while 1.4% received green bond few years after plantation establishment (Table 3). Table 3 also shows that 4.1% of the respondents agrees that green bond is easily accessible while 26.9% disagree that green bond is not easily accessible as sustainable financial instrument.

Table 3. Table showing result on accessibility level of green bond among forest stakeholder.

Variables	Frequency	Percentage %
Access to Green bond		
No	134	92.4
Yes	11	7.8
Green bond issued		
No	133	91.7
Yes	12	8.3
When Was Green Bond Issued		
Many years after plantation	2	1.4
Early stage of plantation	10	6.9
Nil	133	91.7

Source: Field survey, 2023

4. Discussions

Based on the findings of this study, majority of the respondents were male between the age of 40-49 years and married with the mean household size of four. Most of them were natives of the study areas and their major occupation was observed to be timber contractor. The study also showed that most of the respondents have attained secondary school education. In identifying level of awareness of respondents on green bond it was discovered that majority of the respondents were indirect forest stakeholders. Majority of the indirect forest stakeholders were Timber contractors. Also, majority of the respondents have knowledge on forest conservation but have not heard about green bond as a sustainable finance instrument. This is supported by findings of [9] which recounted that majority of forest stakeholders does not have knowledge about green bond. In addition to this, majority of the forest stakeholders are from Obafemi-Owode local government where the Ministry of Forestry in Ogun State is cited claimed not to have access to green bond which can provide financial aids and support as it has not been issued to them previously. This suggests that awareness and access of direct forest stakeholders to green bond as sustainable finance instrument for conservation is still low. This is in line with the reports of [7, 8, 11] that Africa's green bond is still at the early stages compared to other regions of the world. This provide insights into why a significant percentage of respondents have not accessed or been issued green bonds. This advocates that is a need for awareness between the stakeholders and the investors.

5. Conclusions

Green bond an important tool for conserving and protecting the forest which helps in reducing global warming among many other natural hazards has not been fully accessed by both direct and indirect stakeholders. Most respondents did not have full knowledge of green bonds and consequently had no access to the issuers otherwise known as the investors. This study concludes that awareness about green bond is yet to gain full ground in Nigeria as developing country. Additionally, Stakeholders in Obafemi Owode Local Government Area appeared to have more knowledge about green bond when compared to other Local Government Areas assessed. Furthermore, the little percentage of people who had access to green bond only had this privilege during early stage of forest plantation establishment when cost of silvicultural activities were still low.

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Author Contributions

Opeyemi Oluseyi Ojekunle: Conceptualization, Data curation, Methodology, Supervision, Writing – original draft

Oyetayo Job Oyelowo: Resources, Validation, Writing – review & editing

Aisha Adeola Olaniyi: Investigation, Methodology, Resources

Michael Olusola Majolagbe: Data curation, Project administration, Resources

Olaoluwa Coker: Formal Analysis, Resources, Software, Writing – original draft

Conflicts of Interest

The authors declare no conflicts of interest.

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