Original Research Article

ASSESSING THE INCLUSION OF CRITICAL HABITAT EVALUATION IN NIGERIA'S EIA REPORTS: A CRUCIAL STEP TOWARDS BIODIVERSITY CONSERVATION AND SUSTAINABLE DEVELOPMENT

ABSTRACT

EIA is among globally accepted means to reduce habitat destruction and fragmentation that result to loss of biodiversity. However, non-technical revision of EIA Procedural Guidelines to address emerging environmental concerns and news areas by Federal Ministry of Environment are preventing EIA from meeting above obligation in Nigeria. This study evaluated extent of critical habitat assessment/inclusion in Nigeria`s EIA reports. 100 EIA reports from Manufacturing, Infrastructure, Power, Agric/Roads and Petroleum sectors were assessed using critical habitat evaluation criteria consisting of 20 attributes; adapted from International Finance Corporation`s Guidance Note Six. Results show varying levels of critical habitat inclusion in the EIA reports. Though majority of the reports recognised the need for conservation of biodiversity and mitigation measures for reducing habitat fragmentation and restoration in course of project development. However, majority of the EIA reports evaluated did not deepen habitat screening of project area or adopted any quantification approach. There was no evidence to show that avoidance was deployed as part of mitigation hierarchies; likewise, partnership withconservation organizations to offset residual impacts.Also, none of the EIA reports suggested modification of project execution option(s) based on EIA outcome. Result of critical habitat inclusion evaluation amongst the sectors, shows mean inclusion scores of Power, (37.2%), Petroleum (36%), Manufacturing (33.7), Infrastructure (27.8%) and Agric/Road (22.8%) with overall mean inclusion of value of 31.7%. ANOVA statistic deployed, showed no significant inclusion difference among the sectors (*P*-value = .103>.05). Recommendations were made for the use of technology and capacity buildingto enhance critical habitat assessment as part of EIA report in Nigeria.

Keywords: (Biodiversity loss, EIA reports, Critical habitat inclusion,International Finance Corporation, Procedural guideline, Nigeria).

1. INTRODUCTION

Worried by the skyrocketing habitat destruction and fragmentation leading to loss of biodiversity and as a result of human activities and natural disasters, the United Nations General Assembly declared 2021–2030 as decade for ecosystem restoration with actions to address this concern. The goal is to protect and revitalise ecosystems across the globe to restore natural balance for the attainment of universal and common goals and stop loss of biodiversity[1]

Biodiversity simply put is the varieties and differences between and within plants and animal species in a habitat. Ecosystem is the interaction that exist between plants and animals and the environment whereashabitat simply is where species live, which can be land, fresh, brackish or saline water area or airways conducive for assemblage of organisms. Examples include forest, grassland, meadow, seashore, sea, and woodland [2]. Thus, critical habitat is an area within a species` span of interaction and endowed with biological, physical, and structural characteristics relevant for the conservation of the species [3]. However, the area may be outside the species' present reach upon a declaration that such places are crucial for the protection of the organism [4].

Critical habitat (CH) is an area rich in biodiversity, considered important to species survival or recovery, whether the species live in those areas presently, existed or stayed in those areas in the past, uses those

areas for movement, or for any other reason. It also includes a particular area within a species` span of interaction and endowed with biological, physical, structural characteristics relevant for the conservation of the species [3]. Critical habitat may still be areas outside the species' present reach upon a declaration that such places are crucial for the protection of the organism [4]. From the above explanationsone can well see the interrelationship that exist between biodiversity and habitat with respect to specie ability to provide or render ecosystem services function.

International Finance Corporation (IFC) explained that Critical Habitat are areas suspected to possess high biodiversity value, and considered important to species survival or recovery, whether the species live in those areas presently, previously, uses such areas for movement, or for any other purpose. Such area needs evaluation for Critical Habitat qualifying features. The following five (5) conditions or settings are listed by [5] as areas that qualify for Critical Habitats: internationally or nationally critically endangered or endangered species, Restricted-range or endemic species, Assemblage of migratory and congregatory species, Unique ecosystems and or highly threatened ecosystems. And Important or significant evolutionary processes.Apart from these five criteria, two other features that may qualify an area as critical habitat are, one, legally protected area especially by the International Union for the Conservation of Nature (IUCN) Categories I-IV) and two, high biodiversity value areas like places known for scientific relevance (UNESCO sites) or primary/virgin forests. Therefore, a place merits Critical Habitat designation by meeting any of the above listed (5+2) criteria. Further update can be obtained from [4].

IFC [5] introduced Eight (8) Performance Standards for Environmental and Social Sustainability as well as the corresponding Guidance Notes for their implementation. Performance Standard Six (PS6) and it`s Guidance Note (updated in 2019) stated that the aim of designating Critical Habitat is to detect and classify places highly rich in biodiversity value, where precaution would need be taken prior to developmental activities due to ecological sensitives prevalent in such locations. This concept has attracted a lot of interest from and amongst multilateral agencies, financial institutions and banks who have aligned their policies to the requisites of IFC Performance Standard Six (6)**.** The Biodiversity Consultancy [6]noted, that more than Seventy-Five Equator-Principle-Financial Institutions have aligned their processes and commitments to IFC [5] PS6 commitments. IFC is in the business offinancing private sector projects to achieve sustainable development especially in third world countries. Currently, Critical Habitat and PS6 is being adopted as a global standard for biodiversity integration in the private sector business

Critical Habitat conservation considers global and national significances and stands on the bedrock of conservation principles of irreplaceability (rarity or restricted distribution) and susceptibility (degree of threat). Critical Habitats are in levels of importance, thus not all are equal. The other explanation is that it is a subgroup of modified and natural habitats. Modified habitats are areas containing huge quantities of plants and or animals of non-indigenous source, or where anthropological activities have largely distorted the main biological roles and species structure. Natural habitats on the other hand are places containing diverse indigenous flora and/or fauna species, where anthropological activities have not altered the biological or environmental roles, species structure and morphology [5].

However, Critical Habitat is not a magic wand to address or resolve biodiversity loss, rather a method for knowing significant biodiversitylocations from national and global standpoint. It does not recognize state or local significances or values. For instance, threatened species at state or regional level are not considered as Critical Habitat. Equally, local biodiversity values such as sacred forests and iconic species, are not included as critical habitat as they cannot be identified using the standard method of critical habitat Assessment. However, a developer, should take note of local values and sensitivities through stakeholders' engagement. Critical Habitat cannot be or deployed as a stand-alone or general approach to biodiversity risk assessment [6].

Hanson et al, [7]Morgera, [8],Stefan et al [9] Hughes et al [10], Brauneder et al, [11]provided business case for Critical Habitat Assessment, specifically to forestall further biodiversity loss, environmental degradation/catastrophes through improved business decisions for the management of developments, and supply chain impacts on biodiversity. The authors noted that businesses are now compelled by stakeholders to address biodiversity concerns and impacts in their respective production or distribution lines. This demand is exacerbatedby the constanttechnological breakthroughs on how biodiversity integration and knowledge of ecosystem services can pose risks and opportunities to businesses and society. Nowadays organisations adopt wide-ranging efforts in polices and plans to identify, harness, and address impacts on biodiversity guided by their respective standards, government regulations, voluntary industry sustainable procedures and systems as well as requirements of international financial/funding institutions.

Apart from the above, as prove of its global acceptance, Convention on Biological Diversity, (at her 11th Conference) enjoined nations and organisations to embrace IFC 2012 standards via integration into the EIA process. The Standard not only sets conditions for biodiversity integration by companies whose projects were funded by IFC, but also provides guidance for projects supported by other funding organisations otherwise called Equator Principle Financial Institutions (EPFIs). Today, IFC PS6 has global influence with its affiliates like African and Asian Development Banks, and EPFIs which cover more than eighty percent of international project financing mostly in developing countries [12]. Critical Habitat assessment and PS6 are now adopted in EIAs as a global best-practice to integrate biodiversity into private sector projects [13]

As described by Mmom [14], EIA is a systematic process carried out to assess negative impacts of a proposed project on the environment with the objectiveof profferingmeasures to reduce the negative impacts and enhance positive ones. Nwafor [15], pointed out that since the origin EIA in 1969 in the United States of America, it has matured significantly in impact identification, prediction, monitoring, and evaluation. The author noted that EIA has progressed from the implementation of multi-disciplinary and iterative approaches to the consolidation of procedures and processes to address any potential environmental concerns. Thus, by so doing, EIA has now been established as a decision-makingtool to manage project risks.

In Nigeria, there arelaws, regulations, and conventions, at states, national and international levels, governing and requiring the conduct of EIA. FEPA Regulations (derived from EIA Act No. 86, 1992), empowered the then Federal Environmental Agency (FEPA) now Federal Ministry of Environment (FMEnv) to regulate EIA activities in Nigeria. FEPA in turn, published procedural guidelines and methodologies for the conduct of EIA for certain public or private projects among other environmental protection duties. The conduct of EIA was made mandatory for projects (developments) in the list sectors [16]. Federal Ministry of Environment [17] also provided guidelines for the conduct of EIA for Projects in the manufacturing sector.

Stefan et al [8] reinforced the need for Critical Habitat (CH) inclusion in project development as most times, the anticipated conservation goal under IFC PS6 is no-net-loss of biodiversity. The authors emphasized that this can be achieved by adopting the like-for-like or better still, mitigation hierarchies (avoidance, mitigation, and biodiversity offsets). The authors noted that critical habitats should be determined on a case-by-case basis bearing in mind the irreplaceability and vulnerability paradigm, and be carried out as part of the EIA process.

Since 2012 stipulations by IFC coupled with Convention on Biological Diversitydirectives for member countries to embrace the IFC guidelines, other parts of the world have continued to incorporate critical habitat assessment as part and offshoot of their project EIAs especially for gigantic and linear projects that through diverse ecosystems and sensitive areas [18,10,19). However, it appears this renaissance is yet to fully spread in Nigeria to address biodiversity concerns.

Thus,based on the above, this research assessed the level of critical habitat inclusion inthe Nigeria EIA reports using the IFC [5] Performance Standard six (PS6) criteria. The objectives are to evaluate the

extent of critical habitat inclusion in the selected EIA reports carried out in Nigeria. Two, to determine whether there are differencesin critical habitat inclusion amongst the sample sectoral EIA reports. Null hypothesis which stated that there is no statistically significant difference in the sectoral inclusion of Critical Habitat Assessment in EIA reports will be tested.

2. MATERIALS AND METHODS

Materials and methods deployed for this study is to enable smooth empirical approach to the evaluation of the level of critical habitat assessment inclusion in Nigeria EIA reports. Thus, exploratory and survey methodologies were used including qualitative and qualitative techniques. It all, one hundred EIA reports from five (5) Nigeria sectors were assessed for this study.

2.1 Study Area

The EIA reports evaluated were carried out respectively across Nigeria six (6) geopolitical areas. In other words, deliberate effort was made to ensure that EIA reports used for this study had national spread (Figure 1 &AppendixA).

2.2 Selection of Sectoral EIA Reports

The selected EIA reports used for this assessment were those approved by the Federal Ministry of Environment (FMEnv). They were drawn from sectorial projects listed by Federal Environmental Protection Agency[16]requiring EIA to be carried out prior to their commencement. These projects include those from Infrastructure, Transportation, Quarries, Railways, Drainage and Irrigation, Power generation and transmission, Pipelines, Resort and Recreation, Roads, Land Reclamation, Agriculture, Industry, Housing, Forestry, Airport, Water supply Mining, Petroleum, Wastewater Treatment, Fisheries and Ports. Federal Environmental Protection Agency[16] also gavedetailed description of the capacities, varieties and size of these sort of projects that qualify forthe conduct of EIA.

2.3 Sample and Sampling Technique for the Sectoral EIA Report Evaluation

EIA reports carried out between years 2012 – 2022 were assessed for this study. They include 20 EIA reports each from Agriculture/Roads, Infrastructure, Power, Manufacturing and Power sectors respectively. Thus, the selected 100 EIA reports arerepresentatives EIA reports of Nigeria Projects requiring EIA to be carried out prior to their commencement.

Figure1**:** Nigeria Geopolitical Map. Source: Gayawan et al [17]

2.4 Methods of Data Collection/Instrumentation.

This involves examining relevant sections of the respective EIA reports and scoring them on the Critical Habitat Assessment Worksheet adapted from IFC [5]with insight fromThe Biodiversity Consultancy [6]. The worksheet or questionnaire is made up 20 questions (Appendix B). In terms of its validity, Equator-Principles Secretariat, [12]noted that IFC PS6 stipulations has attracted a lot of interest globally from amongst nations, institutions including multilateral financial institutions and banks who have aligned their policies to it.

2.5 Method of Data Analysis

Each question was scaled 0 to 1 to be selected as follows: 1 - Moderate to detailed inclusion,
0.5 - Slight to minor inclusion and 0 - No inclusion. The Researcher with support from nominated experts carried out the assessment of critical habitat inclusion in the selected EIA report as a group activity to avoid bias and improve objectivity. After the exercise and scoring the respective EIA reports, Critical Habitat Inclusion Index equationbelow was deployed to obtain the respective index scores.

2.6 Statistics

Critical Habitat Inclusion (CHI) formular below was adopted:

$$\mathrm{CHI} = \frac{\mathrm{A}+0.5\mathrm{B}}{\mathrm{N}} \qquad \text{Equation 2.1}$$

Where A represents number of attributes fully met, B represents number of attributes partially metand N, Number of attributes (20).

One-way Analysis of Variance (ANOVA)was further used for analysis to ascertain the level of differences in inclusion amongst the study sectors by calculating the F**-Statistic**. F representsmean sum of squares between the groupsdivided bymean sum of squares within groups. That is MSB/ MSW. Statistical Package for Social Sciences (SPSS) software was used for the Analyses.

3. RESULTS

The 100 sample EIA reportswere qualitatively examined using the 20 critical habitat (CH) assessment evaluation criteria (Appendix B). Outcome from the respective EIA report evaluated along with the total result for a given sectoral report on no inclusion, slight to minor inclusion, and moderate to detail inclusion are displayed in Appendix Cof this researchwork.

3.1Performance of the 100 EIA reports on the 20 evaluation criteria

1.Recognition of the need for and focus on the protection and conservation of sensitive biodiversity area in the EIA report. Out of the 100 EIA reports evaluated across the five (5) sectors of the economy, 24 had moderate to detail inclusion of environmental conservation, 41 slights to minor inclusion and 35 non-inclusion. This implies that the number of EIA reports that had slight to minor discussion on protection of sensitive areas are higher in number than those that did not include it in the EIA report. However lesser number of EIA reports particularly those from Power and Petroleum sectors had moderate to detailed emphasis on protection and conservation of the environment in course of project impact prediction.

2.Evidence of stakeholder's consultation specifically to understand biodiversity value in the project area. Stakeholder`s engagement is crucial in the EIA process right from initiation, screening, site selection scoping, impact assessment, report compilation and reviews, environmental management plan implementation, monitoring, auditing and site closure; including other project interfaces. Thus, in other to have a good understanding of biodiversity and ecosystem values of an area to design appropriate mitigation hierarchies, there is need to have adequateconsultation and engagement with relevant resident/community stakeholders. In this research, 27 EIA reports recorded moderate to detailed stakeholder consultation in this regard. Fifty -two (52) EIA reports were assessed to have slight to minor stakeholders' engagement whereas 21 EIA reports did not document any form of biodiversity and ecosystem value related stakeholders' engagement. Results show that this key component of critical habitat assessment is not well captured in the sample EIA reports.

3.Further efforts made to deepen the assessment of sensitive project area by the engagement of local experts. Apart from the fact that stakeholder's engagement is a continuous process, it is specifically essential to obtain in-depth information from the locals and experts in the project`s area of influence. Thus, in the evaluation carried out on above, only 21 EIA reports engaged complete suite of local experts to scope and assess sensitive locations. Thirty-three(33) EIA reports engaged one or two experts for the purpose, whereas greater number of 46EIA reports failed to show evidence of engagement of local experts to deepen critical area assessment or information on sensitive area assessment is scanty. Large number of non-involvement of local experts to deepen habitat assessment showcase the value placed on critical habitat assessment.

4.Description of habitat with significant importance to critically endangered and/or endangered species in the EIA report. Out of 100 EIA reports evaluated, 25 documented critically endangered and endangered species in their respective project areas.Twenty-one (21) EIA reports partially described them (that is, they were either mentioned in few sentences or mixed with other details in one paragraph. A whole lot 54 EIA reports did not document this element. Majority of the EIA reports that recorded the above aspect in the assessmentwere those with stint of international exposuremainly in the Petroleum and Power sectors projects that mostly sourceexternalprojectfunding. Majority of the EIA reports from

Power and Petroleum sectors reviewed were prepared to meet international standards. However, the number of positive response (25 out of 40 samples in both sectors) is not encouraging, suggesting that even in power and petroleum sectors, assessment of critical and critically endangered species was not well documented.

5. **Description of habitat(s) with significant importance to endemic and/or restricted range of species in the EIA report.**Only 15 EIA did moderate to full evaluation of the project location. Thirty-seven (37) EIA reports included this to some extent in their respective EIA reports,particularly endemic species prevalent in the project area. Restricted range species was discussed only in one EIA report. However, 48 EIA reports did not capture these at all as part of baseline line environmental conditions. This buttressesthe status of Nigeria EIA reports against international requirements.

6. Description of habitat(s) supporting globally significant concentration of migratory species and/or congregatory species in the EIA report. Poor reporting of these criteria was recorded in the sample EIA reports evaluated as only 8 EIA reports documented full to moderate inclusion of this element. Fifteen (15) report passively mentioned it in one or few sentences and in others, information was not specific.to enable confirmation of inclusion. However, 77 EIA reports recorded non-inclusion of this parameter. These really fall short of requirements, which may mean that assessment of this criterion in Nigeria EIAs is suboptimal, or EIA reports evaluated have no need for this attribute.

7.Description of highly threatened and/or unique ecosystems. In the above instance, 14 EIA reports showed inclusion of this requirement. 25 EIA reports had partial inclusion whilst the greater number of 61 had did not document this aspect. Higher number of non-inclusion in EIA reports reflect the importance placed on this requirement by IFC Critical Habitat Assessment suit of criteria. Though there were a number of unique ecosystems especially in the Niger Delta areas, EIA report of projects in the area evaluated did not classify the environment with the above feature. This could probably be due to lack of information to substantiate evidence or lack of assessment on the part of EIA report writers due to some limitations (such as time, budget, resources).

8. **Description of areas associated with key evolutionary processes.**Only 1 EIA report elaborated this, whereas 3 partly mentioned it in the EIA report. A whole lot of 96 reports did not capture it at all. Apparently, it is either no such project area was identified in the sample EIA reports or the EIA report preparers did not factor the criteria in the assessment.

9.Description or highlight of any recognised high biodiversity values that might also support any critical habitat designation. Thirty-one **(**31) EIA reports had moderate to full inclusion of this requirement. Twentynine (29) EIA reports partially included the requirement, whereas 42 EIA reports did not include this. It is either this parameter was not considered or there was lack of knowledge of the requirements. Also,it may have been deemed irrelevant to be included in the EIA reports.Biodiversity values captured in the EIA reports were mainly flora listing and their economic, ethnobotanical, social and health importance/ uses, with few mentions of fauna species revered and some others used as totems in some climes.

10. Quantification of critical or endangered species in the Project area. Twenty-nine **(**29) EIA report had moderate to full inclusion of this, with 34 EIA report partially/slightly capturing it too. However, a greater number of 37 EIA report did not include this in the EIA report. The sketchy and missing information hinders impact prediction and mitigations thus exposes the need for thorough baseline assessment.

11.Spatial map(s) drawn to evaluate the effects on critical habitat to enable quantification above. Out of the 100 EIA reports assessed for this study, only 12 showed inclusion of this requirement. 18 had partially requirement on this, whereas a larger number of 70 of EIA reports did not capture this in the EIA

report. Maps seen in the EIA reports evaluated only showed project location without indicating any biodiversity sensitive information or nearness to existing projects.

12. Recommendation(s) aimed at cushioning impacts of biodiversity through identification of and protection of set asides. Setasides are similar to avoidance measures essentially deployed to enhance conservation initiatives [5].Out of the 100 EIA reports evaluated for this study, only 11 showed inclusions of this requirement. Twenty-seven (27) reports partially met the requirement whereas a larger number of 62 EIAs did not capture this in their reports. It is insightful to state that avoidance remains the first effort in the mitigation hierarchies and expected to be given foremost consideration, but this was not demonstrated in majority the EIA reports evaluated.

13. **Implementation measures aimed at minimising habitat fragmentation such as biological corridors**. IFC [6] emphasized the need for the design of mitigation measures (such as biological corridors) to reduce habitat fragmentation leading to loss of biodiversity and habitat degradation due to access to pristine areas. Eighteen (18) EIA report acknowledged and provided mitigations in this regard whilst 44 others partially/slightly included this in their reports. However, greater number of 38 failed to capture/incorporate, discuss and provide mitigations to address this attribute in the EIA reports, even as thisattribute is pervasive in all regions irrespective of ecosystems.

14. Quantification of residual impacts on critical habitats. Offsets are deployed to compensate residual impacts. This research witnessed limited quantification of residual biodiversity impacts as only 6 EIAsmoderately/full included this in their report compilation whereas 33 partially included it. However, greater number of 61 did not embrace this in their EIA reports. The importance of quantification of residual impacts cannot be overemphasized due to its usefulness in the development of viable offsets.

15. **Recommendation for reinstating loss or impacted biodiversity to reduce risks to changes in Biodiversity to as low as reasonably practicable.** As reasonable and important this may sound, in the area of impact management, only 28 of the EIA studies reports evaluated recorded its inclusion. 52 EIA report partially included it, leaving 30 reports that failed to carry this onboard. IFC [6] stipulated that irrespective of prospects, proponents should design and implement mitigation measures that will guarantee a-no-net-loss to biodiversity where possible through a combined application of onsite and offset mitigation measures.

16.**Biodiversity compensation recommendations following the approaches.** As noted elsewhere compensation can be offsets in form of *in-situ* or *ex-situ* conservation of priority plants or animal species adjudged as threatened or rare. In the above instance, only 12 moderate/full responses were recorded from the evaluated EIA reports. Thirty (30) EIA reports partially included this whilst 60 EIA reports did not capture this in the report.

17. **Recommendations for restoring lost habitats during operations and /or after operations.**This is among the very essence of carrying out EIA. Thus, a dedicated Biodiversity Action Plan or one integrated with Project Environmental Management Plan, action parties and monitoring protocols for its implementation are essential.Also important are evaluation plans, budget, process for implementation, and sets of monitoring indicators [6]. Twenty-one (21) EIA reports had moderate/full inclusion on this. Forty-three (43)had partial inclusion whilst 36 reports failed to incorporate this. It could be assumed that where recommendations were not made concerning this(Action Plan)is where EIA is seen as an end and not means to an end. This is where no further action was required after securing EIA Approval.

18. **Recommendations for partnering either by way of funding support or advocacy for nature conservation.**Usuallymost project proponents partner with conservation organisations for expert support and collaboration on biodiversity conservation. However, out of the EIA reports evaluated,only 2moderately/fullyrecognised the need for expert partnership, support and advocacy. Thirteen (13)reportspartiallydid that whilst 85 number were silent on this. Conservation is noted as a way of

offsetting residual impact, but the opportunity was not exploited by majority of the EIA reports evaluated in this study.

19.Recommendations to support alternative sources of income for stakeholders that depend on the habitat resources for subsistence and livelihood. This is usually a component of Biodiversity Action Plan and very crucial in the application of mitigation hierarchies. Out of the evaluated EIA reports, only one (1) captured the value and need for this attribute, whilst 24 reports partially did that. Seventy-five (75) failed to capture this irrespective of obvious understanding that people are at the centre of any sustainable biodiversity conservation.

20.Recommendations made for modifications of project design and footprint based on assessment outcome. This attribute attracted 3 moderate/full inclusion and 28 partial inclusions. Sixty-nine (69) EIA reports did not document this.. This could mean that information about this is lacking since many EIA Proponents or Project Owners contract out EIA studies without providing full project background information. EIA outcome is supposed to be among considerations for project siting, including design, and execution options. Results obtained does not speak to this as it appears that sites and designs were already decided before EIAs were carried out. In a way, this is confusing because EIA is usually prepared on a firmed /frozen scope and cannot be carried without a known Project scope and location. However, this negates the objectives of EIA which is to guide project development towards environmental protection and conservation. None of the reports evaluated documented modification of a project due to recommendations of the EIA report.

3.2 Assessment of the sectoral EIA Reports

To further assess performance of the 5 sectors on Critical Habitat inclusion, Critical Habitat Index formular (noted in section 2.6) was deployed to arrive at the index score for each of sectors with results shown in Table 1. The highest critical habitat index score of 0.88 was recorded in the Power sector whilst the least critical habitat Index score of 0.1 was recorded in Agric/Road sector. However, Figure 2below shows mean critical habitat inclusion scores of all the studied sectors. The results recorded in Figure 2 revealed that Power sector has the highest critical habitat inclusion followed by Petroleum, Manufacturing, Infrastructure sectors respectively while the Agriculture/Road sector recorded the least inclusion.

Table 1. Sectoral Critical Habitat Index Scores

S/N	Power	Petroleum	Agric/Roads	Infrastructure	Manufacturing
1	0.73	0.6	0.1	0.13	0.18
2	0.43	0.3	0.1	0.28	0.15
3	0.15	0.05	0.1	0.08	0.33
4	0.18	0.35	0.15	0.2	0.28
5	0.48	0.13	0.18	0.25	0.03
6	0.1	0.08	0.08	0.05	0.63
7	0.65	0.63	0.2	0.33	0.43
8	0.13	0.62	0.3	0.5	0.43
9	0.45	0.58	0.45	0.18	0.4
10	0.23	0.58	0.18	0.18	0.08
11	0.23	0.55	0.05	0.23	0.65
12	0.1	0.45	0.3	0.4	0.55
13	0.4	0.3	0.13	0.3	0.3

14	0.63	0.08	0.4	0.7	0.1
15	0.6	0.23	0.13	0.23	0.3
16	0.18	0.23	0.8	0.3	0.5
17	0.2	0.2	0.3	0.3	0.08
18	0.25	0.3	0.1	0.2	0.4
19	0.88	0.43	0.33	0.52	0.43
20	0.43	0.5	0.18	0.2	0.4

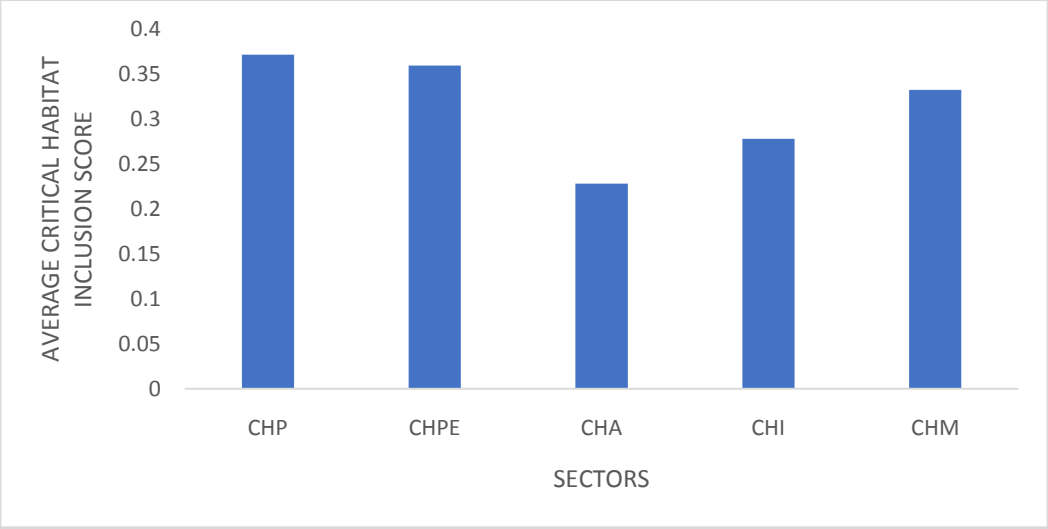

Figure 2. Mean scores of Sectoral Critical Habitat Inclusion on EIA

In a similar vein, Table.2 shows percentage Critical Habitat Inclusion in EIA Reports across the respective sectors. The overall Critical Habitat inclusion in EIA Reports in Nigeria found to be about **31.47%.**

Table 2: Percentage inclusion of Critical Habitat in Nigeria EIA Reports

S/N	Sector	Critical Habitat
1	Power	37.15
2	Petroleum	35.95
3	Manufacturing	33.65

4	Infrastructure	27.8
5	Agric/Road	22.8
Total		**31.47**

Following confirmation of normality of data set to be used (that is Table 1), Table 3 shows the results of the analysis of variance (ANOVA) statistics deployed to investigate whether there is a significant difference between the critical habitat inclusion index among the five sectors considered in this study. P-value from the Table is 0.103 which is greater than 0.05 significance level, which means there is no statistically significant difference in the critical habitat inclusion index among the five-sector considered.Therefore, there is no need to carry out post-hoc analysis since we have already ascertained that the critical habitat inclusion indices of these sectors are similar. However, further test via homogeneity of variance still confirmed no significant difference. Therefore, null hypothesis which stated that there are no statistically significant differences amongst the sectors in the inclusion of CH Assessment in EIA reportsis accepted. Thus, alternative hypothesis is rejected.

Table 3: ANOVA results of the difference in Critical Habitat Inclusion Index score amongst the five sectors

	Sum of Squares	df	Mean Square	F	p-value.
Between Groups	0.288	4	0.072	1.985	**0.103**
Within Groups	3.448	95	0.036		
Total	3.736	99			

4. DISCUSSION

This study evaluatedthe extent of Critical Habitat assessment inclusion in EIA Reports executed in Nigeria, using International Finance Corporation (IFC) [5] Performance Standard (PS6) criteria. Result shows the following moderate to detail and slight to minor responses on the Critical habitat inclusion index:

1. Recognition and focus on the protection and conservation of sensitive biodiversity Project areas.
2. Stakeholder's consultation specifically to understand biodiversity value of the project area.
3. Quantification of critical or endangered species in the Project area.
4. Implementation measures to minimize habitat fragmentation such as biological corridors.
5. Recommendations for restoring habitats during operations and /or after operations.

In the same vein, the following areas were not well described in the EIA reports reviewed:

1. Further efforts made to deepen the assessment of sensitive project area by the engagement of local experts after the conduct of initial EIA study.

2. Where applicable, explication of Habitat of significant importance to critically endangered and/or endangered species.
3. Highlight of recognised high biodiversity values that might also support any critical habitat designation
4. Description of habitat of significant importance to endemic and/or restricted range of species.
5. Description or mention of habitat supporting globally significant concentration of migratory species and/or congregatory species.
6. Description of highly threatened and/or unique ecosystems.
7. Description of areas associated with key evolutionary processes.
8. Spatial map(s) drawn to evaluate the effects on critical habitat to enable quantification above.
9. Recommendation aimed at avoiding impacts on biodiversity through identification of and protection of set asides.
10. Quantification of residual impacts on critical habitats.
11. Biodiversity compensation recommendations following the approaches.
12. Recommendations made on modifications of project design and footprint based on assessment outcome.

Statistical analysis of theresearch findings shows varying mean inclusion of Critical Habitat in Nigeria`s sectoral EIA Reports sampled for this Study. Power sector (37.15%) has the highest critical habitat inclusion followed by Petroleum (35.95%), Manufacturing (33.65%), Infrastructure sectors (27.8%) and Agriculture/Road sector (22.8%).The national critical habitat inclusion in Nigeria`s EIA Report is found to be 31.47% of global requirement.From the percentage result of 5 sectors above, higher performance of Power and Petroleum sectors can be attributed to their stint with Equator-Principle-Banks/Institutions who often require organisations approaching them for project financing to tailor such Project EIA reports to include critical habitat assessment and other IFC [5] Performance standards in other to mitigate associated Project risks. Project risks stall and/or delays project execution thereby impacting schedule and smooth return of borrowed funds. To forestall this, funding institutions carry out occupational health, environmental management and social performance due diligence to assuage the risks and by so doing, contribute to sustainable development. On the other hand, agriculture and roads sectors are usually nationally or state funded (either from borrowed or generated revenue) and at best seen as beneficial projects. Beneficial projects by regulatory standard undergoless rigorous scrutiny in the EIA process. This could account for lack or limited integration of critical habit assessment in their EIA Reports.

However,ANOVA statistic deployed affirmed statistically that there is no significant difference in critical habitat inclusion amongst the sectors.Implication oftheresults is that all the sectors and by extension Nigeria EIA reports do not properly integrate critical habitat assessment in line with the evaluation criteria used for this study.The poor integration of critical habitat assessment in the EIA reports can be adduced to lack of awareness and knowledgeon the part of EIA Practitioners and Proponents. Nigeria EIA guidelines are yet to provide detailed requirements for critical habitat assessment. There are also cost implications to the endeavour and proponents often insist on doing what is in the regulation in place of what is even in the guidelinestalkless of doing what is not in the law or guideline.

Therefore,much is required to bring Nigeria EIA reports to global standards in the area of habitat assessments, via enabling laws and enforcements in course of project development. Critical on this are projects envisaged to have huge impact, high magnitude and widespread,crisscrossing different ecosystems and habitats.

This study supported Hughes et al [10] works on importance and relationship of biodiversity and ecosystem functions in the design of habitat restoration though the authors noted that the way biodiversity has been integrated into restoration practice remained vague but can be improved upon.

It also supportedStefan et al [9] work. Here, the authors stated that proponent or client are required to evaluate environmental and social risks on the basis of the stipulations of IFC Performance Standards one to eight. Performance Standard Six (PS6); and its Guidance Note 6 [4], concentrated on the conservation of biodiversity. The anticipated conservation goal under PS6 is to achieve no-net-loss of

biodiversity value. Where a project is located in a critical habitat, a net gain in biodiversity value is essential. A thorough critical habitat assessment is required to achieve a-net-gain on biodiversity, via the adoption of mitigation hierarchies order of Avoidance >Minimization > Restoration > Offsetting [5]

5. CONCLUSION

This study, explained the critical habitats, assessments and business case for its inclusion in EIAs which provided background for the evaluationof critical habitat inclusion in the sectoral EIA reports in Nigeria. Using the Critical Habitat Inclusion Criteria adapted from the IFC [6], and further evaluation with Critical Habitat Assessment Index, this study found that the mean critical habitat inclusion on EIA reports in Power sector is 0.3717, Petroleum 0.3595, Manufacturing 0.3325, Infrastructure 0.278 and Agric/Road 0.228. Overall mean critical habitat inclusion is 31.47% in Nigeria. ANOVA statistic deployed after confirmation of normality distribution of data set shows no statistically significant difference existing amongst the evaluated sectors in critical habitat integration. Table P-value (0.103) which was greater than 0.05 significance level confirmed this. The findings suggested that more efforts are required in Nigeria to improve and integrate Critical Habitats in EIA studies. This effort will help to reveal sensitive habitats in proposed project areas and devise mitigation strategies to protect, preserve enhance species wellbeing and their ecosystem services. It will also enable projects demonstrate no net loss of critical habitats and promote net positive impact to biodiversity.

This study recommends that Critical Habitat assessment be enshrined in the EIA process in Nigeria particularly for category 1(One)EIAs. Training and capacity building including the use of technologies (computer tools) on Critical Habitat Assessments be organised by the FMEnvwith support from expert institutions where necessary. Above will improve biodiversity conservation to achieve sustainable project development.

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LIST OF APPENDICES

Appendix A: Sample EIA Reports selected and evaluated for this study

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
1	150 Mega Watts Gas Powered Plant with Expansion option to 500 Mega Watts.	Ogorode, Delta State.	Power	2016	Proton Energy Limited
2	500 Mega Watt Gas Power Plant	Gaube Community, Kuje Area Council, Abuja	Power	2021	Jebata Nigeria Limited
3	Transmission Lines with Associated Substations Project (Lot 2).	Lagos and Ogun States	Power	2018	Transmission Company of Nigeria Limited
4	200km x 330kv DC Transmission Lines, Substations and Facilities Project.	Jos to Kaduna	Power	2017	Transmission company of Nigeria Limited
5	Transmission Lines with Associated Substations Project (Lot 3).	Lagos and Ogun States	Power	2019	Transmission Company of Nigeria Limited
6	Liquefied Natural Gas (Mini) and Compressed Natural Gas Plant.	Ajaokuta, Kogi State.	Power	2019	Axxela Limited and Nigerian Gas Marketing
7	80 Megawatts Solar Photovoltaic Plant.	Duste LGA, Jigawa State.	Power	2016	Nova Scotia Power Development Limited
8	Field Development Project.	Enwhe, Bayelsa State	Petroleum	2018	Shell Petroleum Development Company Ltd
9	EA and EJA Fields Further Oil Development.	OML 79, Shallow Offshore, off the Coast of Bayelsa State	Petroleum	2016	Shell Petroleum Development Company Ltd
10	Modular Refinery Project.	Gbaramatu Kingdom, Delta State	Petroleum	2017	Gbaramatu Oil and Gas Producing Trust Fund
11	Iseni Wells Early Hookup to Domestic Gas Project.	Sagbama and Ekeremor LGA of Bayelsa State as well as Patani LGA of Delta State.	Petroleum	2017	Shell Petroleum Development Company Limited
12	Umuseti and Igbuku Further Field Development.	Umuseti and Igbuku (OML 56), Ndokwa West LGA, of Delta State.	Petroleum	2020	Pillar Oil Nigeria Limited
13	Preowei Field Development Drilling and Production Operations	Oil Mining Lease (OML) 130, Deep Offshore	Petroleum	2020	Total "E" and "P" Nigeria Limited
14	3D Reshoot Seismic Data Acquisition Project	Adibawa - Gbaran in Bayelsa and Rivers States.	Petroleum	2015	Shell Petroleum Development Company Limited
15	Associated Gas Solution (AGS) Project	Otumara, Warri South LGA, Delta State.	Petroleum	2015	Shell Petroleum Development Company Limited
16	Field Development Project	Uzu, Yenagoa LGA, Bayelsa State	Petroleum	2018	Shell Petroleum Development Company Limited
17	NLGN Train 7 Project	Bonny, Rivers State	Petroleum	2019	NLNG, Limited.
18	Exploration and Appraisal Wells,	Bonny, Rivers State	Petroleum	2019	Shell Petroleum Development Company Limited
19	Fertilizer Blending Plant	Funtua, Katsina State	Agric/Road	2019	Greentide Agro Services Limited.
20	Okomo Palm Oil Mill Expansion Project	Ovia South-West Local Government Area, Edo State.	Agric/Road	2020	Okomo Oil Palm Company Limited
21	Rurum Farms,	Kano, Kano State	Agric/Road	2018	Kano State Government
22	Bifsam Farms	Kano, Kano State	Agric/Road	2019	Bifsam Limited Kano
23	Fertilizer Blending Plant Project	Kalambaina, Wamakko LGA, Sokoto State	Manufacturing	2021	OCP Africa Nigerian Limited

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
24	Assa North, Ohaji South Gas Development Project (Pipelines).	Ohaji/Egbema LGA of Imo State and Ogba/Egbema/Ndoni LGAs of Rivers State.	Petroleum	2016	Shell Petroleum Development Company Limited
25	Soku Gas Plant to San Barth Manifold Pipeline Project.	Akuku Toru LGA, Rivers State	Petroleum	2013	Shell Petroleum Development Company Limited
26	NOPL to Indorama Gas Supply Tie-In Point Project.	Ukwa West LGA of Abia State, Oyigbo and Eleme LGAs of Rivers State,	Power	2020	Total E & P Nigeria Limited
27	Power Plant and Gas Pipeline Project.	Ukanafun – Oma, Akwa-Ibom State.	Power	2016	Accugas Limited
28	Calabar- Adanga Pipeline.	Cross Rivers State	Power	2013	Niger Delta Power Holdings Company/NIPP Calabar
29	Sagamu LDZ Natural Gas Pipeline Network Construction Project.	Ibefun LGA of Ogun State	Power	2020	Transit Gas Nigeria Limited
30	Ebonyi State Ring Road.	Ebonyi State	Agric/Road	2018	Ebonyi State Govt
31	Jakara Rivers Road.	Kano, Kano State	Agric/Road	2013	Kano State Ministry of Works, Transport and Housing
32	Calabar – Ikom – Katsina Ala Superhighway Project,	Cross Rivers and Benue States	Agric/Road	2016	Cross River State Government
33	Abuja Technology Village.	Federal Capital Territory, Abuja.	Infrastructure	2015	Federal Ministry of Industry, Trade & Investment Abuja
34	Solar Power Plant.	Kankiya LGA, Katsina State.	Power	2015	Nova Solar 5 Farms Limited
35	Steel Manufacturing Plant and Construction of 1.3km x 132kv Power Transmission Line.	Ukwa West L.G.A., of Abia State.	Manufacturing	2016	Inner Galaxy Steel Company Limited.

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
36	Tyre Recycling Plant.	Km 10, Ibadan-Abeokuta Express Road, Apata, Ibadan, Oyo State.	Manufacturing	2020	Freetown Waste Management & Recycle Limited.
37	Port Facility.	Kirikiri, Amuwo-Odofin LGA, Lagos State	Infrastructure	2020	BESTAF Marine Service Limited.
38	Automotive Biomass Ethanol Project	Okeluse, Ondo State	Manufacturing	2020	NNPC
39	National Information and Communication Technology Infrastructure Backbone (NICTIB) Project.	FCT-South-West States	Infrastructure	2015	Huawei Technologies Co., Nigeria Limited
40	Proposed Steel Pipe Threading and Valve Assembly Facilities and Related Activities.	Lekki Free Zone in Ibeju Lekki LGA of Lagos State.	Manufacturing	2020	Bell and Gas FZE
41	Pipeline Construction	OMLs 56 and 26	Petroleum	2012	Midwestern / Umugini Asset (Nigeria) Company Limited
42	Utapete Field Development by NPDC	Eastern Obollo LGA, Akwa Ibom State	Petroleum	2020	Nigeria Petroleum Development Company
43	HI Field Development	OML 144, Shallow Offshore	Petroleum	2021	Sunlink Nigeria Limited
44	Gas Processing Facility with Liquefied Natural Gas (LNG) Plant	Gilli--Gilli Field, Ovia Northeast LGA, Edo State	Petroleum	2021	VTT LNG West Africa Limited
45	Pipeline, GPU, LPG, IPP, Petrochemical and Lube Plants	OML 143, Delta State	Petroleum	2019	Sterling Oil Exploration and Production Company Limited (SEEPCO)

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
46	Etopo Refineries	OML 56, Delta State	Petroleum	2019	Etopo Energy Plc
47	Edo Modular Refinery.	Edo State	Petroleum	2015	Edo Refining and Petrochemical Nigeria Limited
48	Construction & Establishment of 18" X 60km Natural Gas Pipeline Project.	Ogere - Ibadan Tollgate, Oyo State	Power	2022	NIPCO Gas Limited
49	108km Benin to Delta Transmission Line and 330kv Double Circuit Quad Conductors Project	Delta and Edo States	Power	2020	Transmission Company of Nigeria Limited & African Development Bank
50	138 km X 330kv Single Circuit Transmission Line to 330kv Double Circuit Quad Conductors	Alaoji to Onitsha, traversing Abia, Imo and Anambra States	Power	2020	Transmission Company of Nigeria Limited & African Development Bank
51	100mw Solar Independent Power Plant and 18 KM Transmission Line Project.	Ganjuwa LGA Bauchi State	Power	2017	Nigeria Solar Capital Partners/Globeleq/ARM Harith Consortium
52	Ukanafun - Calabar Gas Pipeline	Akwa Ibom & Cross Rivers States	Power	2016	Nigeria National Petroleum Corporation (NNPC).
53	505 Gas Combined Cycle Power Plant and related infrastructure.	Ikwek Abak LGA, Akwa Ibom State	Power	2016	Thompson and Grace Investment Limited
54	Joint Venture Power Plant	Eket LGA, Akwa Ibom State	Power	2012	Exxon Mobil
55	275 MW Power Generating Plant	Oluyole LGA Along Lagos Ibadan Express Way Oyo State	Power	2012	Entec Power and Utilities Limited Ibadan,
56	Akure - Ilesha Road Rehabilitation Project,	Ondo State	Agric/Road	2012	Federal Ministry of Works

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
57	CICO- POLO-, Farms, Estate/Life Camp Infrastructure	Ebocha Ogba/Ndoni LGA of Rivers State	Agric/Road	2021	Polo-Cico Farming and Estate Ltd
58	Iyin/Ado/Ekiti Dual Carriageway Project.	Ado Local Government Area, Ekiti State	Agric/Road	2020	Ekiti State Government
59	Agro Processing Productivity Enhancement and Livelihood Improvement Support Project	Enugu State.	Agric/Road	2021	Agro Processing Productivity Enhancement and Livelihood Improvement Support (APPEALS) Project, Enugu State Co-ordination Office.
60	Eganyi - Jakura - Baro Rail Link Project.	Kogi, Niger States and FCT.	Agric/Road	2013	Federal Ministry of Transport
61	Construction of Agro-Cargo Terminal and Warehouse.	Bodinga, Sokoto State	Agric/Road	2022	Sokoto State Government
62	Bodo - Bonny Road Project, Rivers State	Gokana and Bonny LGAs, Rivers State	Agric/Road	2018	Federal Ministry of Works
63	Mafa Rice Mill Limited, Km 11, Hadeja Road, Kano.	Kano State	Agric/Road	2020	Mafa Rice Mill Limited
64	25km Kilometer Sisimbaki to kwara Road/	Nasarawa State	Agric/Road	2021	Nasarawa State Govt
65	Gadon Kaya UnderPass Bridge and Roads.	Kano State	Agric/Road	2013	Kano State Government

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
66	Second River Niger Bridge across, Asaba and Onitsha.	Across Delta & Anambra States	Agric/Road	2014	NSIA Motorways Investment Company and Julius Berger Nigeria Limited, Abuja.
67	Improved Breeding, Beef, Milk Production, and Pasture Development for Enhanced Productivity of Indigenous Cattle.	Sokoto State	Agric/Road	2021	Sokoto State Government
68	Priority Value Chains of Rice, Wheat and Tomato.	Kano State	Agric /Road	2021	Agro Processing Productivity Enhancement and Livelihood Improvement Support (APPEALS) Project, Kano State Co-ordination Office.
69	Saipem Fabrication Yard, Workshop and Accommodation.	Rumuolumeni, Obio/Akpor LGA, Rivers State	Infrastructure	2014	Saipem Contracting Nigeria Limited.
70	Obudu Cargo and Passenger Airport.	Obudu Local Govt Area	Infrastructure	2020	Cross River State Governmen.t
71	Afrexim Bank Africa Trade Centre (AATC).	FCT, Abuja	Infrastructure	2020	Afrexim Bank
72	Amfani Industrial Park and Smart City, 1000Ha.	Magama LGA, Niger State	Infrastructure	2021	Hydropolis Investment Limited (HIL) /Mainstream Energy Solutions Limited (MESL).
73	Ondo Deep Sea Port	Ondo State	Infrastructure	2020	Ondo State Development & Investment Promotion Agency.
74	Bonny Deep Sea Port Project.	Bonny Island, Bonny LGA of Rivers State	Infrastructure	2020	Federal Ministry of Transportation.
75	Eko Atlantic Phase 1, Shoreline Protection and Reclamation Project.	Lagos State	Infrastructure	2012	South Energyx Nigeria Ltd (SENL).

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
76	The Proposed Construction and Establishment of Multipurpose Crusade Ground.	Aseese Community, Ogun State	Infrastructure	2022	BLW Nigeria Limited
77	Lafia Cargo Airport	Gwandere, Lafia LGA, Nasarawa State	Infrastructure	2020	Nasarawa State Govt
78	Ebonyi State International Olympic Stadium	Abakiliki LGA, Ebonyi State	Infrastructure	2020	Ebonyi State Government
79	Lekki Tolaram Port and Power Plant	Lekki, Lagos State	Infrastructure	2012	Lekki Port and the Lagos Free Trade Zone (LFTZ)
80	Naho Dockyard Infrastructure Project,	Takwa Bay, Lagos	Infrastructure	2015	Naho Nigeria Limited/Dee Jones
81	Ebonyi International Airport	Ezza North and South	Infrastructure	2012	Ebonyi State Government
82	ITE Airstrip	Tunga District, Awe, Nasarawa State	Infrastructure	2022	Tunsly Nigeria Limited
83	Nestoil Operations Base	Abuloma, Port Harcourt City LGA	Infrastructure	2015	Nestoil PLC
84	Port Harcourt Industrial Park	Ubima, Ikwerre LGA	Infrastructure	2020	Federal Ministry of Transportation
85	Brass Island Shipyard at Brass	Brass LGA, Bayelsa State	Infrastructure	2021	Nigeria Content Development and Monitoring Board
86	Textile and Garments Industrial Park	Lekki, Lagos	Manufacturing	2020	Nigeria Export Processing Zone Authority
87	Lad Group Sheanut Factory Expansion.	Ikenne LGA, Ogun State	Manufacturing	2020	LadGroup Limited

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
88	400,000 Unites Per Annum Type 3 Composite LPG Cylinder Manufacturing Plant.	Polaku, of Bayelsa State	Manufacturing	2020	RunGas Prime Industries
89	50,000 Liters of Oil Blending Plant	Yenagoa, Bayelsa State	Manufacturing	2021	Eraskon Nigeria Limited
90	Franemm Industries Limited	Plot 9-13 Riverview, Lagos -Ibadan Expressway Isheri in Ifo LGA of Ogun State.	Manufacturing	2020	Franemm Industries Limited.
91	Wood Processing Factory.	Sapele LGA of Delta State.	Manufacturing	2020	Woodland Nigeria Limited.
92	Bua Cement Plant Lines 4 and 5 Expansion.	Sokoto State	Manufacturing	2021	Bua Cement Plc
93	Sugar Mill	Gain Chiroma, Gagarawa, Jigawa State.	Manufacturing	2020	Great Northern Agribusiness (GNA).
94	Nakudu Tinnery Limited,	Kano, Kano State	Manufacturing	2018	Nakudu Tannery
95	Salasar Enterprises Limited, Kano	Kano, Kano State	Manufacturing	2016	Salasar Limited
96	Dangote Cement and Air Strip	Okpella, Etsako East LGA of Edo	Manufacturing	2019	Dangote Cement PLC
97	Vee Oil Resources Limited Oil Blending Plant, Kano	Kano State	Manufacturing	2018	Vee Oil Resources Limited

S/N	TITLE	LOCATION	SECTOR	YEAR	PROPONENT
98	6000 Clinker Cement Plant with Power Plant	Nkalagu, Ebony State	Manufacturing	2016	Ibeto Cememt Company Nigeria Limited
99	Industrial Complex comprising Sugarcane, Sugar, Vegetable Oil, Cassava Tuber Processing	Jamata along Lokoja - Abuja Road, Lokoja in Kogi State	Manufacturing	2016	Unicane Industries Limited
100	Proposed Agrochemical Packaging and formulation Plant.	Ibafo Ogun State	Manufacturing	2016	Harvest field Industries Limited

Appendix B: Data Collection Instrument

Questionnaire for Evaluating Critical Habitat inclusion in Sample EIA Reports using International Finance Corporation (IFC) Performance Standard (PS6) Criteria

S/N	Description of Biodiversity Value
1	Were there recognition of the need and focus on the protection and conservation of a sensitive biodiversity Project area in the EIA report?
2	Were there evidence of stakeholder's consultation specifically to understand biodiversity value of the project area?
3	Were there further efforts made to deepen the assessment of sensitive project area by engagement of local experts?
4	Were there description of habitat with significant importance to critically endangered and/or endangered species in the EIA report?
5	Was there any sort of description of habitat(s) of significant importance to endemic and/or restricted range of species in the EIA report?
6	Confirm whether there was a description or mention of habitat(s) supporting globally significant concentration of migratory species and/or congregatory species in the EIA report?
7	Confirm whether there was a description of highly threatened and/or unique ecosystems?
8	Confirm the description of areas associated with key evolutionary processes?
9	Was there a description or highlight of any recognised high biodiversity values that might also support any critical habitat designation?
10	Confirm any attempt to quantify critical or endangered species in the Project area?
11	Confirm any spatial map(s) drawn to evaluate the effects on critical habitat to enable quantification above?
12	Was there any form of recommendation(s) aimed at dodging impacts on biodiversity through identification of and protection of set asides?
13	Were there recommended implementation measures aimed at minimising habitat fragmentation such as biological corridors?
14	Were there quantification of residual impacts on critical habitats?
15	Any recommendation for reinstating loss or impacted biodiversity to reduce risks to changes in Biodiversity to as low as reasonably practicable?
16	Were there biodiversity compensation recommendations following the approaches?
17	Were there recommendations for restoring lost habitats during operations and /or after operations?
18	Was there recommendation for partnering either by way of funding support or advocacy for nature conservation?
19	Was there recommendation to support alternative sources of income for stakeholders that depend on the habitat resources for subsistence and livelihood?
20	Were there any form of recommendations made on modifications of project design and footprint based on assessment outcome?

KEY: 0 = No Inclusion, 0.5 = Slight to minor inclusion; 1 = Moderate to detail inclusion

Appendix C

Summary of Sectoral Critical Habitat Inclusion responses

S/N	Power	Petroleum	Agric/Roads	Infrastructure	Manufacturing	Total
	(√) 7	(√) 7	(√) 3	(√) 2	(√) 5	(√) 24
	(X) 4	(X) 9	(X) 7	(X)10	(X) 5	(X) 35
1	(P) 9	(P) 4	(P) 10	(P) 8	(P) 10	(P) 41
	(√) 9	(√) 8	(√) 1	(√) 6	(√) 3	(√) 27
	(X) 5	(X) 5	(X) 4	(X) 3	(X) 4	(X) 21
2	(P) 6	(P) 7	(P) 15	(P) 11	(P) 13	(P) 52
	(√) 7	(√) 4	(√) 2	(√) 5	(√) 3	(√) 21
	(X) 8	(X) 6	(X) 12	(X) 10	(X) 10	(X) 46
3	(P) 5	(P) 10	(P) 6	(P) 5	(P) 7	(P) 33
	(√) 9	(√) 8	(√) 2	(√) 1	(√) 5	(√) 25
	(X) 6	(X) 9	(X)14	(X) 12	(X) 13	(X) 54
4	(P) 5	(P) 3	(P) 4	(P) 7	(P) 2	(P) 21
	(√) 6	(√) 3	(√) 1	(√) 2	(√) 3	(√) 15
	(X) 8	(X) 10	(X) 10	(X) 9	(X) 11	(X) 48
5	(P) 6	(P) 7	(P) 9	(P) 9	(P) 6	(P) 37
	(√) 3	(√) 4	(√) 0	(√) 1	(√) 0	(√) 8
	(X) 14	(X)15	(X) 14	(X) 17	(X) 17	(X) 77
6	(P) 3	(P) 1	(P) 6	(P) 2	(P) 3	(P) 15
	(√) 5	(√) 6	(√) 0	(√) 2	(√) 1	(√) 14
	(X) 8	(X)10	(X) 13	(X) 13	(X) 17	(X) 61
7	(P) 7	(P) 4	(P) 7	(P) 5	(P) 2	(P) 25
	(√) 0	(√) 0	(√) 0	(√) 0	(√) 1	(√) 1
	(X)19	(X) 19	(X) 19	(X) 20	(X) 19	(X) 96
8	(P) 1	(P) 1	(P) 1	(P) 0	(P) 0	(P) 3
	(√) 8	(√) 8	(√) 3	(√) 5	(√) 5	(√) 31
	(X) 8	(X) 8	(X) 13	(X) 6	(X) 7	(X) 42
9	(P) 4	(P) 4	(P) 4	(P) 9	(P) 8	(P) 29
	(√) 6	(√) 10	(√) 3	(√) 5	(√) 5	(√) 29
	(X) 8	(X) 4	(X) 12	(X) 3	(X) 7	(X) 34
10	(P) 6	(P) 6	(P) 5	(P) 12	(P) 8	(P) 37
	(√) 4	(√) 2	(√) 0	(√) 3	(√) 3	(√) 12
	(X) 13	(X) 16	(X) 18	(X) 11	(X) 12	(X) 70
11	(P) 3	(P) 2	(P) 2	(P) 6	(P) 5	(P) 18
	(√) 3	(√) 4	(√) 0	(√) 0	(√) 4	(√) 11
	(X) 13	(X) 8	(X) 17	(X) 13	(X) 11	(X) 62
12	(P) 4	(P) 8	(P) 3	(P) 7	(P) 5	(P) 27
	(√) 2	(√) 1	(√) 0	(√) 2	(√) 1	(√) 6
	(X)11	(X) 13	(X) 14	(X) 15	(X) 8	(X) 61
14	(P) 7	(P) 6	(P) 6	(P) 3	(P) 11	(P) 33

Key: No inclusion(X), Sightly to minor inclusion(P) and Moderate to detailed inclusion (√)

Appendix C Continues

Summary of Sectoral Critical Habitat Inclusion responses

S/N	Power	Petroleum	Agric/Roads	Infrastructure	Manufacturing	Total
	(√) 7	(√) 3	(√) 1	(√) 2	(√) 5	(√) 28
	(X) 3	(X) 4	(X) 9	(X) 9	(X) 5	(X) 30
15	(P) 10	(P) 13	(P) 10	(P) 9	(P) 10	(P) 52
	(√) 6	(√) 3	(√) 0	(√) 1	(√) 2	(√) 12
	(X) 11	(X) 11	(X) 18	(X) 14	(X) 6	(X) 60
16	(P) 5	(P) 6	(P) 2	(P) 5	(P) 12	(P) 30
	(√) 6	(√) 4	(√) 0	(√) 4	(√) 7	(√) 21
	(X) 5	(X) 3	(X) 12	(X) 12	(X) 4	(X) 36
17	(P) 9	(P) 13	(P) 8	(P) 4	(P) 9	(P) 43
	(√) 0	(√) 1	(√) 0	(√) 1	(√) 0	(√) 2
	(X) 15	(X) 18	(X) 18	(X)16	(X) 18	(X) 85
18	(P) 5	(P) 1	(P) 2	(P) 3	(P) 2	(P) 13
	(√) 0	(√) 0	(√) 0	(√) 1	(√) 0	(√) 1
	(X) 17	(X) 13	(X)13	(X) 14	(X) 18	(X) 75
19	(P) 3	(P) 7	(P) 7	(P) 5	(P) 2	(P) 24
	(√) 2	(√) 1	(√) 0	(√) 0	(√) 0	(√) 3
	(X) 9	(X) 12	(X) 16	(X) 18	(X) 14	(X) 69
20	(P) 9	(P) 7	(P) 4	(P) 2	(P) 6	(P) 28

Key: No inclusion(X), Sightly to minor inclusion(P) and Moderate to detailed inclusion (√)