JJEES

Jordan Journal of Earth and Environmental Sciences

JJEES (2023) 14 (2): 103-112
ISSN 1995-6681

Assessing The Extent of Public Participation in Planning and Management of Conservation Areas in Nigeria

Hassan Abdulaziz[1*], Shuaibu Abdul-Wahab[2], Ibrahim Jibrin Abubakar[3]

[1&3]Department of Urban and Regional Planning, Faculty of Earth and Environmental Science, Bayero University Kano, Kano State, Nigeria.
[2]Department of Urban and Regional Planning, School of Environmental Science, Federal Polytechnic Nasarawa, Nasarawa State, Nigeria.

Received 6th June 2022; Accepted 7th February 2023

Abstract

Planning and management are critical stages in environmental/nature conservation in the 21st century for better performance and sustainability of the areas. This is important as conservation areas are made up of distinct ecological units of diverse nature providing ecological services beneficial to the environment and mankind at large. As such involving and determining the extent of community participation in the conservation of such areas is of paramount importance. This study is aimed at determining the extent of community participation in the conservation of natural areas. The study employs the mixed research design where two-staged sampling techniques were used to collect data to obtain an in-depth understanding of the extent of public participation in conservation planning and management. A questionnaire was used to collect quantitative data, while an interview was used to collect qualitative data. The Quantitative data collected were analyzed descriptively using simple percentages, mean, and inferentially using Pearson Chi-Square ($\chi 2$) and Cramer's V test; while qualitative data were transcribed, reported, and discussed concurrently with the quantitative results. The findings reveal that there is a significant difference in communication level between conservation managers and the public; understanding of conservation area boundaries, conservation area rules, and regulations across the sampled communities. On the other hand, public involvement of the communities in decision-making processes indicated that they were excluded, therefore unable to influence management decisions. The results also reveal that the planning and management approach adopted by the game reserve reflects that of a Top-Down rather than a collaborative approach.

Keywords: *Conservation areas, Collaboration, Public Participation, Local communities, Decision-making.*

1. Introduction

Planning and management have been identified as robust strategies in the quest for the attainment of sustainable outcomes (Ramirez, 2014). The strategy has so far extended to cover many areas of human livelihood ranging from transportation to industrialization, as well as in the conservation of natural/protected areas with the outlook assuming many dimensions. This is the same with the planning and the management of conservation areas which ensue at different stages from a different perspective including public participation in the planning and management phases of conservation areas. According to (Ribot et al, 2006) participation of the public, the indigenous, and local communities in the planning and management of conservation areas in the developing world have been neglected. This leads to the observation by (Carey, Dudley, and Stolton, 2000); as is partly responsible for the illegal exploitation, unsustainable human use, and degradation of such conservation areas as they are situated in human-dominated environments (Carey, Dudley, and Stolton, 2000); thereby, resulting in conflict and crisis between host communities and the government agencies (Kurdoglu and Cokcaliskan, 2011) responsible for the management. Conservation areas are major determinants of sustainability for both the built and natural environment and may as well offer support in the realization of the sustainable development goals particularly (SDG 15) with unlimited services to humans and the built environment.

Historically, local communities and indigenous people have been the inhabitants and custodians of conservation areas. They adopted local strategies and institutional arrangements in protecting the conservation areas which in turn resulted in the success and sustainable uses (Berkes et al, 1989) of such areas. This scenario later sees the government taking over the planning, control, and management of the conservation areas and converting them into institutionalized organs for better planning and management. This eventually ushers in the era of the Top-Down decision-making approach in the management of conservation areas. In the approach stakeholders in both the planning and management phases are all relegated (Lockwood, 2010; Brockington and Igoe, 2006; Webster and Osmaston, 2003), as such, the expected conservation goals became difficult to achieve as most of the conservation challenges are human-related. Ultimately, this leads to the failure of the Top-Down decision-making approach in achieving the primary objectives of protection and conservation (Ite, 1998; Ite and Adams, 1998; Poffenberger, 1990). Furthermore, the Top-Down decision-making approach was, however, disadvantageous as it fail to carry the indigenous and local people along making privileged knowledge and information that is relevant to sustainable planning and management of the conservation

* Corresponding author e-mail: ahassan.urp@buk.edu.ng

areas scares.

In Nigeria, the historical development of conservation areas is traced back to the colonial era when the British colonial government designated the first conservation area in 1899 (Lowe, 1984) covering an area of 97,125 hectares (0.01%), which by 1950 had expanded to 7,332,031 hectares (8%) and by 1980, the area of coverage made up of (11%). By 1975 a total of 35 game reserves have been established with the first National park known as Lake Kainji Game Park coming to the limelight in 1979 as well as adding two more game reserves coming on board by 1999. At inception, the management of the conservation areas was bestowed on traditional institutions and local people. This system in 1900 was changed as the government took over control of the conservation areas. Regarding the agencies that oversee the activities of the game reserves, the Department of Forestry was in charge of running their affairs in 1897, whereas laws and policies which restrict activities on game reserves first came on board by 1932 with the restriction of hunting activities of the traditional and the local people. This trend continued with the establishment of laws that protect the northern region's game reserves in 1963. By 1979 Decree No.46 of 1979, 1989 National Policy on Environment, 1992 Environmental Impact Assessment Decree (EIA) Decree No.86, and Decree 36 of 1991 was later set up to ensure proper management of conservation areas. The National Policy on Environment was later revised in 1999.

However, because some of the conservation areas are located in human-dominated areas, collaborating with public, indigenous, and local communities in and around the conservation areas becomes necessary. Public participation is a significant component of the planning process whereby involvement of the public particularly the indigenous and local communities in conservation area planning and management increases their awareness of the importance of biodiversity conservation and the tendency of the areas to be successfully managed (Gbadegesin and Ayileka, 2000; Stolton, 2004; Hyakumura, 2010; Vodouhe et al, 2010). This is in line with and anchored closely based on the theory of public participation and collaboration. Kurdoglu and Cokcaliskan (2011) and Nielsen (2012) emphasize that the non-involvement of public/local communities in the planning and management process of conservation areas can lead to more conflict, thereby leading to more environmental harm than good. Meanwhile, collaboration allows joint decision-making and setting priority in the planning, implementation, and evaluation process to resolve conflict, develop and advance a shared vision (Koontz, 2006; Selin and Chavez, 1995); where organizations and stakeholders agree on a common way of finding a lasting solution to the identified problem via available means and resources (Bockstael et al, 2016; Pfahl et al, 2015; Nakakaawa et al, 2015; Woodland and Hutton, 2012; Ezebilo and Mattsson 2010; World Bank, 1999; Gray, 1989). As such this process allows local communities, nation-states, and the private sector to have equal opportunities in the decision-making process (World Bank, 1999). As noted by (O'Riordan 1989; Nursey-Bray and Rist 2009; Dixon and Dougherty, 2010; Ezebilo and Mattsson 2010; Hyakumura, 2010; Berkes, 2010; Lockwood, 2010; Vodouhe et al., 2010; Davies and White, 2012; Nielsen, 2012); collaboration with public/local communities and indigenous people in conservation area management yields better outcome, successful management, and sustainability of the areas, resolve conflicts between local communities surrounding the areas and the managers, as well as ensuring equitable partnership between the two parties (Berkes, 2009; Nursey-Bray and Rist, 2009; Berkes et al, 1991; Parr et al, 2008; Ezebilo and Mattsson, 2010; Gray, 1989). As such, the need for proper planning and management of these areas becomes necessary. This paper aims to address the gap between theory and practice by assessing the extent of public participation in conservation planning and management.

2. Study Area

The study was conducted in three conservation areas of Bauchi State, Nigeria namely: Yankari Game Reserve, Sumu Wildlife Park, and Lame Burra Game Reserve. Bauchi is a state in the North Eastern part of Nigeria located between Latitude 9^0 3^1N and 12^0 3^1N and Longitude 8^0 50^1E 11^0 0^1E as shown in Figure 1. It has a total land mass of 49,933.87km^2 equivalent to 5.3% of the country's total landmass. It is bounded by Jigawa and Yobe to the North, Gombe to the East, Plateau to the South, Kaduna to the West, and Kano to the North-West. The state is among the leading states inhabiting a high number of conservation areas with 53 out of the 1021 conservation areas in the country (Hassan, *et al*, 2015). The conservation areas are under the custody of the state government, however, under different state-owned agencies. Yankari Game Reserve is located in the Sudan Savannah vegetation zone, while Sumu Wildlife Park and Lame Burra Game Reserve are located in the Guinea Savannah vegetation zone.

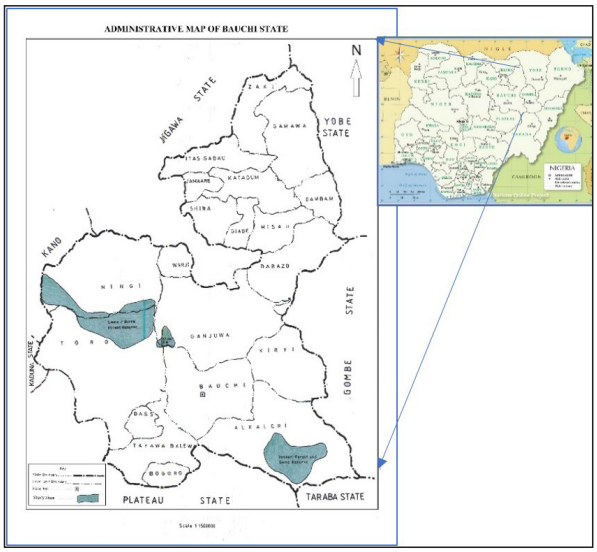

Figure 1. Map of Nigeria showing the location of the study area
Source: https://www.nationsonline.org/maps/nigeria-administrative-map.jpg

3. Methodology

This study adopted a mixed-method research design, where both quantitative and qualitative approaches were used in collecting relevant data for the study. The quantitative data were collected using a questionnaire, while the qualitative data were collected through the use

of interviews in line with the recommendation of the research design (Creswell, 2010; 2012). Indicators used in the questionnaire were sourced from the literature relating to public participation in environmental conservation and management.

3.1 Sampling technique and sample size

Two-staged sampling techniques were used to select samples. The first stage was stratified sampling, which was used to categorize the six communities under study as strata. The communities selected for the study are Minamaji and Duguri Communities neighboring Yankari Game Reserve, Kwange and Yuga Communities neighboring Lame Burra Game Reserve, and Sumu and Tafazuwa neighboring Sumu Wildlife Park. The second stage involves the use of a simple random sampling technique to draw samples from each of the strata.

Sample size always depends on population size. The population of the six sampled communities is presented in Table 1. However, literature revealed that studies involving statistical tests aimed at comparing groups may not necessarily take a sample concerning the population, but rather take a representative size across all the groups. According to Blaikie (2000), the minimum sample size required for a statistical test comparing between groups is 50 samples per group; while Denscombe (2007) recommended 30 samples per group. Therefore, this study adopts the recommendation of 50 samples per group, thereby totaling 300 samples for the six communities under study. The 300 sample size represents 10% of the population size. To overcome the issues of non-response rate and missing responses, 30% of the sample size was increased to the actual sample size in line with the recommendation of (Newing, 2011).

Table 1. Communities, Population, and Sample Size for the Communities.

Neighboring Conservation Area	Sampled Communities	Population	Sample Size
Yankari Game Reserve	Mainamaji	4,218	50
	Duguri	12,108	50
Lame-Burra Game Reserve	Yuga	4,983	50
	Kwange	4,081	50
Sumu Wildlife Park	Sumu	2,724	50
	Tafazuwa	2,317	50
Total		**30,431**	**300**

3.2 Questionnaire and interview administration

The questionnaire comprises two sections namely section I comprising of 8 questions relating to demographic profile, while section II comprises 5 questions measuring the extent of participation of the local communities in the planning and management of the conservation areas. Indicators in section II were sourced from previous research conducted in the field of public participation in environmental conservation and collaborative management of nature and conservation as presented in Table 2 below.

Table 2. Indicators Used in the Questionnaire.

S/N	Indicators	Source
1	There is regular communication between reserve managers and the local community	Parr *et al*. (2008),
2	The community members understand the conservation area boundary	Carey, Dudley, and Stolton (2000)
3	The community members understand the conservation area rules and regulations	Carey, Dudley, and Stolton (2000)
4	The community members are invited to a decision making about the conservation area	Berkes (2010), Parr *et al*. (2008), Mulongoy and Chape (2004), Thomas and Middleton (2003). Gbadegesin and Ayileka (2000), Berkes *et al*. (1991), Gray (1989)
5	The community members can influence management decision	Mulongoy and Chape (2004), Parr *et al*. (2008), Thomas and Middleton (2003)

In administering the questionnaire, ethical issues raised by Saunders *et al* (2016) such as the objectivity of the researcher, respect for communities' values, the voluntariness of the communities' members to participate, a promise of confidentiality and compliance with data management were taken into consideration before gaining access into the communities. The first point of the visit was the communities' heads of all communities, consent of the heads was obtained before administration. Each of the communities' leaders gives us an appointment that can be suitable to invite their members to participate and cooperate in responding to the questionnaire, and the meeting point is the communities' leaders' residence which serves as the muster point.

Respondents were then selected using the simple random technique where numbers were assigned to each member at the muster point, and a table of random numbers was used to select 50 samples in-line with the recommendation of (Newing, 2011; Creswell, 2012) that gives each member equal opportunity to be selected as sample. For those sampled respondents that were not literate, the researcher conducted self-administered questionnaires approach, where the respondents were asked questions, and their responses were entered into the questionnaire by the researcher.

Similarly, interviews were conducted with a community leader and two other stakeholders as shown in Table 3 below. Three interviewees were selected because no sample size was required but just depends on the level of saturation (Newing, 2011). The questions on the questionnaire were later modified to take the format of questions and used as an interview guide.

Table 3. Interviewees Profile.

S/N	Interviewee	Location
1	Community Leader	Duguri community neighboring Yankari Game Reserve
2	Stakeholder	Sumu community neighboring Sumu Wildlife Park Game Reserve
3	Stakeholder	Yuga community neighboring Lame-Burra Game Reserve

3.3 Data analysis

Quantitative data collected for the study were analyzed using simple percentages, charts, Chi-Square (χ^2), and Cramer's V test; while qualitative data were transcribed and reported, and discussed concurrently with the findings of quantitative. The implications of the findings were further discussed and recommendations were made based on the findings of the study.

4. Results

Data collected were analyzed and discussed based on the respondents' profiles and six parameters identified for assessing the extent of public participation in conservation planning and management. The analysis is presented in sub-sections below.

4.1 Respondents' profile

The study sampled 50 respondents from each of the six studied communities. Due to the cultural and traditional setting of the communities which are Muslim-dominated, the communities' leaders informed the researcher that the members can participate accordingly, but there is a restriction concerning the interaction of the researcher with females, in-line with their cultural and religious background. Therefore, all the respondents included in the study are males. The findings of the study revealed that the youngest respondent is 20 years old while the oldest is 65 years, with a mean age of 37.6 years as presented in Table 4. From the Table, the majority of the respondents were married. This is a typical character of African settings particularly in Muslims dominated communities where youths are encouraged to marry at an early stage to avoid social ills in society. The respondents have dependents ranging from 1 to 29 persons, with a mean of 9 dependents per person. Respondents' level of education is a typical reflection of a developing nation, particularly in a rural setting. For the studied communities, the majority constituting 70% attended non-formal education, which is Islamic knowledge, followed by a significant number that attended primary education, while those that attended secondary and tertiary are insignificant. The respondents' occupation is a reflection of their level of education. Due to their low level of education, the majority of the respondents were engaged in crop production, livestock rearing, and other forms of informal activities; with a negligible percentage engaged in service. All the communities under study are within a radius of 3km. The minimum duration of stay of the respondents in their respective communities is 4 years and the maximum is 65 years, with a mean of 31.78 years.

Table 4. Respondents' Profile.

Variable	Option		Frequency	Percentage %
Age	Minimum =	20 years		
	Maximum =	65 years		
	Mean =	37.60 years		
Marital Status	Single		30	10%
	Married		252	84%
	Divorced		8	2.7%
	Widow		10	3.3%
Number of Dependents	Minimum =	1 person		
	Maximum =	29 persons		
	Mean =	9 persons		
Highest Qualification	Non-Formal		210	70%
	Primary		67	22.3%
	Secondary		19	6.3%
	Tertiary		4	1.3%
Occupation	Civil Servant		8	2.7%
	Crop Producer		196	65.3%
	Livestock Rearer		47	15.7%
	Others		49	16.3%
Distance from Conservation Area	Minimum =	0.2km		
	Maximum =	2.5km		
	Mean =	1.12km		
Duration of stay in their community	Minimum =	4 years		
	Maximum =	65 years		
	Mean =	31.78 years		

4.2 Communication between staff and local communities

Communication is a medium through which information is shared between affected parties or from decision-makers to affected target people. Communication is an important tool/technique for effective environmental planning. It is a medium through which objectives and policies of environmental plans, specifically conservation area management plans can be communicated to the public, particularly community members surrounding the conservation areas. Adequate communication can also build trust and understanding between affected parties.

Results of the study as presented in Figure 2 revealed that the level of communication between conservation area managers and local communities surrounding them varies across the sampled communities, where some communities tend to indicate adequate communication while some indicated a low level of communication.g

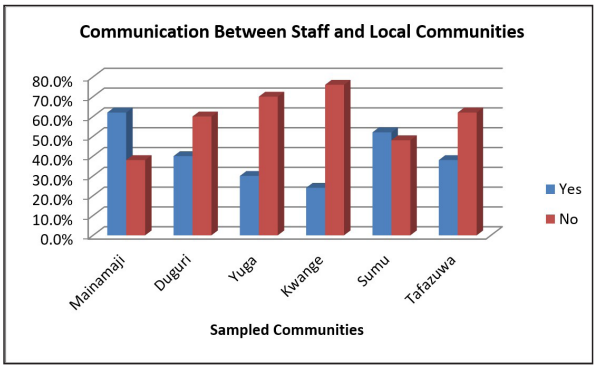

Figure 2. Level of communication between staff and local communities.

Furthermore, the Pearson Chi-Square statistic test revealed that there is a statistically significant difference in the level of communication between conservation managers of the respective conservation areas and members of local communities surrounding them with a Chi-Square Value (χ^2) = 20.298, df = 5 at $p<0.05$. Similarly, Cramer's V test with a value of 0.260 at $p<0.05$ also verified the result of the Chi-Square statistics, further indicating a statistically significant difference in the level of communication between conservation managers and local communities. This implies that the level of communication differs significantly across the sampled communities.

Findings of the interview with a community leader from Duguri around Yankari Game Reserve revealed that the communication between the conservation managers and the local communities is mainly in the form of extending management information or their request to the communities. If they notice any activity such as encroachment into the conservation area or if their managers chased any hunter in the conservation area and were not able to arrest him, they approach the communities for either investigation, inquiry, or support to arrest the poachers. This is slightly similar to the response of an interviewee from the Sumu community neighboring Sumu Wildlife Park, where he indicated that conservation managers do frequent their community to update them with information about the conservation area. In contrast, an interviewee from the Yuga community around Lame Burra Game Reserve revealed that managers of the conservation area only come to their community if their community is selected for any of the non-governmental organizations' projects, but not for the conservation area. The respondent further explained that they even engage in protecting the conservation area by preventing outsiders from carrying out illegal activities because they are aware of some of the benefits of the area. Also taking into consideration the limited number of staff in charge of protection and conservation activities in Lame-Burra Game Reserve.

4.3 Understanding of conservation area boundary

Demarcation of conservation area boundaries is important in conservation area planning because it is the first step towards better environmental protection and management. This allows the communities around them to understand where their jurisdiction ends so that communities do not trespass into the conservation areas. The variation in the level of understanding of conservation area boundary may not be unconnected to the level at which the public/ local communities are accommodated. Accommodating the public/local communities can encourage the community members to have a good understanding of the affairs of the conservation areas and feel a sense of belonging while neglecting the communities can pave the way for unwanted or prohibited activities in the conservation areas.

Analysis of the data collected conservation area boundary is presented in Figure 3 below. The result revealed that the communities are aware of the boundary of conservation areas neighboring them, except for the Kwange community neighboring Lame-Burra Game Reserve. This implies that most of the communities can operate within the limit of their communities without encroaching on the conservation area surrounding them. This is a significant achievement from the side of the management of the conservation areas. However, the situation is discouraging from the side of the Lame-Burra Game Reserve. From the result, it can be deduced that some communities around Lame-Burra Game Reserve are not aware of the boundary of the conservation area. This can threaten the conservation area as community members can encroach on or carry out unsustainable activities inside the conservation area.

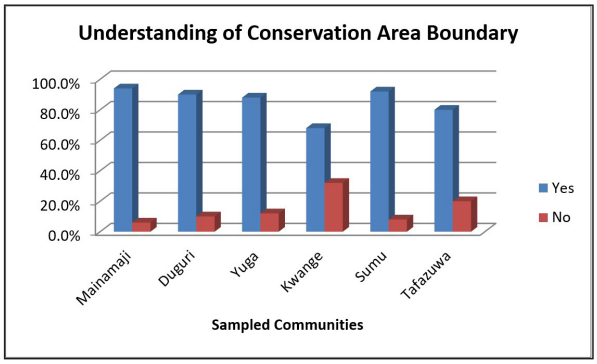

Figure 3. Extent of understanding of conservation area boundary.

Further statistical analysis using Pearson Chi-Square revealed that there is a statistically significant difference in the level of understanding of conservation area boundary across the sampled communities, with a Chi-Square value (χ^2) of 19.070, df = 5, at $p< 0.05$. Cramer's V test was also used

to validate the Chi-Square test, a value of 0.252 at $p<0.05$ was obtained, which indicates a similar pattern of statistically significant difference in understanding conservation area boundary across the studied communities. This implies that the level of understanding of conservation area boundaries differs across the sampled communities neighboring the three respective conservation areas under study.

Interview results revealed that community members neighboring Yankari Game Reserve are from time to time engaged in clearing and re-marking the boundary so that it can be clear to members and non-members of the communities. This has made community members around the conservation area to be aware of the boundary. The finding is similar in Sumu Wildlife Park where the conservation managers engage the community members in boundary demarcation, and as such, they are aware of the boundary. The finding is contrary in Lame Burra Game Reserve, where the interviewee indicated that managers do not engage them in boundary clearing or boundary demarcation. This according to him is difficult for the communities to understand exactly the location of the boundary. The communities can only show the boundary of the conservation area based on their perception.

4.4 Understanding of conservation areas rules and regulations

The result of the study relating to the understanding of conservation area rules and regulations is presented in Figure 4 below. The result revealed that communities neighboring Yankari Game Reserve indicated a high level of agreement to the understanding of the rules and regulations governing it, followed by Sumu Wildlife Park and Lame-Burra Game Reserve respectively. Nevertheless, the management of the conservation areas needs to speed up in creating awareness and educating the communities on the rules and regulations governing the conservation areas. This can go a long way in achieving conservation goals.

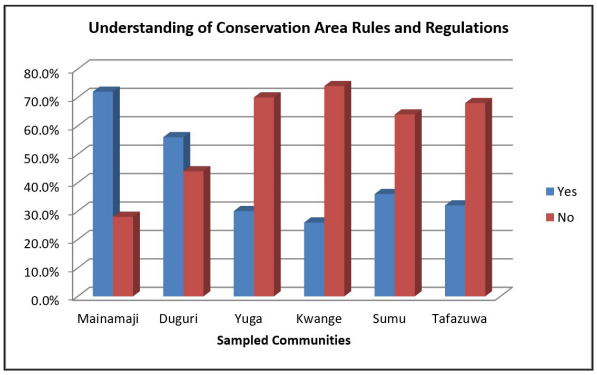

Figure 4. Extent of understanding of conservation area rules and regulations.

Inferential analysis using the Chi-Square test indicated that there is a statistically significant difference in the level of understanding of rules and regulations governing the conservation areas across the six sampled communities as indicated by a Chi-Square value of $(\chi^2) = 33.498$, df = 5, at $p< .05$. A follow-up test was conducted using Cramer's V statistics to substantiate the findings of the Chi-Square test, where a value of 0.334 at $p<0.05$ was obtained. This further validated the result of the Chi-Square thereby indicating a statistically significant difference in the level of understanding of conservation area rules and regulations across the sampled communities. This implies that the level of understanding of the conservation area rules and regulations across the sampled communities differs. The results of the interview across all the six respective communities under study revealed that the community members are aware of rules and regulations such as the prohibition of poaching, cutting down of trees, grazing, and farming activities inside the conservation areas. Interestingly, all the communities are aware of the basic rules of prohibited activities inside the conservation areas. Understanding these can contribute to the sustainability of the conservation areas.

4.5 Involvement of communities in decision-making

The key to successful planning and management is public participation in the planning and management processes. This is through the involvement of communities in the decision-making that affect them. The involvement of communities in the decision-making process can make the communities a sense of belonging and contribute actively to the protection activities. However, the findings are discouraging as the majority of the communities were not involved in decision-making. Therefore, the management of the conservation areas needs to re-strategize and give room for the participation of local communities in both the planning and management processes as required by the National Policy on Environment to achieve effective management. The findings of the United Nations Environment Programme (2007) have identified the participation of local communities in decision-making in natural resource management as an effective way of achieving successful protection of the ecosystem and improving communities' well-being.

Analysis of the level of involvement of members of local communities in decision-making about the conservation areas neighboring them is presented in Figure 5 below. The result revealed that communities neighboring all three respective conservation areas under study are not involved in decision-making about the conservation areas. This is not encouraging because the communities are neglected when it comes to decision-making. This is a clear indication of the Top-Down management approach where the public and members of communities are set aside in decision-making.

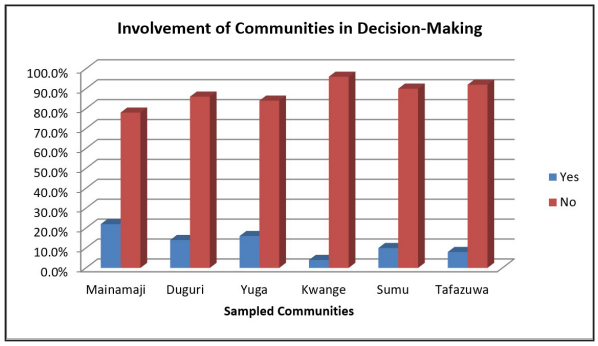

Figure 5. Level of involvement of communities in decision-making.

Further statistical analysis reveals that there is no significant difference in the level of involvement of communities in decision-making across the sampled communities, with a Chi-Square value of $(\chi^2) = 9.403$, df = 5, and $p< .05$. Similarly, Cramer's V test with a value

of 0.177 at p<0.05 validated the result of the Chi-Square indicating no statistically significant difference in the level of involvement of local communities in decision-making about the conservation areas. This indicates that the level at which members of the public, particularly local communities are involved in the decision-making process is the same across the respective communities. This is an indication that the local communities across all the sampled communities are neglected by the management when it comes to decision-making about the conservation areas.

Interview results have validated the findings of the questionnaire, where the respondents across the interviewed communities revealed that they were not involved in decision-making about the conservation areas. A respondent added that what some view as involvement in decision-making is just a mere notification and seeking the cooperation of members of the communities in complying with the instructions.

4.6 Ability of communities to influence management decision

The ability of local communities to influence management decisions of conservation areas neighboring them was determined in this study. The perceptions of the respondents across all the studied communities tend to be similar as they were unable to influence management decisions about the management of conservation areas neighboring them as in Figure 6 below.

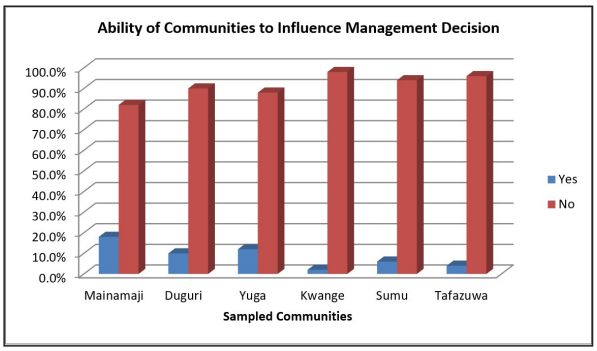

Figure 6. Ability of communities to influence management decision.

Analysis using Chi-Square statistics revealed that there is no statistically significant difference in the ability of the communities members in influencing management decisions across the sampled communities, with a Chi-Square value of (χ^2) = 10.949, df = 5, and p< .05. The result was further validated by a follow-up test using Cramer's V statistics, where a value of 0.191 at p<0.05, indicating that there is no statistically significant difference in communities' ability to influence management decisions about conservation areas neighboring them. Similarly, the findings of the interview also indicated that members of the communities around the three respective communities under study were not able to influence management decisions about the conservation areas.

5. Discussion

The findings of the study indicated differences in communication between conservation managers and local communities. This may be attributed to the location of the communities or the priority given to the communities by the respective conservation managers. It may also be since, managers cannot communicate directly with all members of the community, as the channel of communication may be through community leaders and stakeholders in each community, from there, the information can reach other members. The channel of communication is important because it has been identified by Bockstael *et al.* (2016) to be the main obstacle to successful collaboration itself. The disparities in the level of communication between members of local communities across communities may be also attributed to (i) staff strength/capacity, (ii) size of the conservation area, (iii) number of communities around the conservation areas, (iv) nature of the terrain where the conservation areas are located, (v) accessibility among others. This pattern of response is not surprising because, Yankari has 224,410 hectares of land, with 281 staff, Lame Burra has 205,767 hectares with 47 staff, and Sumu has 8,000 hectares with 53 staff. Based on the staff strength of the conservation areas, Yankari has more capacity to ensure a high level of protection and community outreach than Lame-Burra Game Reserve and Sumu Wildlife Park. Interestingly, the findings of the study relate to the findings of Watson *et al.* (2014) where the authors identified the need for adequate staffing to perform management activities.

Yankari Game Reserve has adopted the approach of engaging members of local communities surrounding them in boundary demarcation. This is more of a technique of showing them the boundary. Relating the size of Lame-Burra Game Reserve to its staff strength, one can easily understand that it is difficult for the managers to adopt the approach of Yankari. This implies that communities around Lame Burra can be left out in terms of outreach, which can further limit their understanding of conservation area boundaries.

The differences in understanding conservation area rules and regulations among the communities as revealed by the quantitative results may be due to the level of communication between conservation area managers and members of the local communities surrounding them. Interestingly, communities that indicated adequate communication between them and the managers of their respective conservation areas tend to understand the conservation area rules and regulations well, while those that indicated less communication between them and the management of their respective conservation areas indicated less understanding of the conservation area rules and regulations. Therefore, frequent communication between conservation area managers and local communities is highly needed for a better understanding of conservation area rules and regulations. It is also significant in achieving conservation policies.

The communities have not been involved in decision-making about the conservation areas. This further proved that management of the conservation areas are top-down approach, where managers and respective institutions/ authorities decide on the conservation areas. In this situation, local communities are completely neglected, thereby neglecting local knowledge that may have regional and global impacts. The level at which community members were neglected when it comes to deciding on the conservation area is almost the same across all the communities studied. This may serve as a stumbling block to achieving effective

management of the conservation areas because, when the management of any conservation area takes a decision that may affect the local communities, they may in one way or another other reacts and their reaction may directly or indirectly threaten the well-being of the conservation areas. Based on the findings of the study, communities that are in good relationships with the management of conservation areas near them tend to strengthen their relationship and have more interest in the well-being of the conservation areas.

The findings of this study corroborate with the findings of Ribot *et al.* (2006) and Lockwood (2010) who revealed that public, indigenous, and local communities in the developing world are neglected in both the planning and management process of conservation areas; thereby resulting to encroachment and unsustainable practices in the conservation areas (Carey, Dudley and Stolton, 2000). The contribution of this study is that it revealed that the Top-Down approach used by the colonial masters is still in practice. This is despite previous studies reporting its failure to achieve the primary objective of protection and conservation (Ite, 1998; Ite and Adams, 1998; Poffenberger, 1990). This is a threat to the conservation areas and can have negative implication on their performance because local knowledge that can promote conservation and enhance their performance are not allowed to be contributed. The contribution of local knowledge and strategies have been identified to have protected conservation areas and sustainable use in the past (Berkes, *et al.* 1989). This implies that local knowledge and strategies are vital in improving the performance of the conservation areas. Theoretically, the participation of the public in conservation planning and management is institutionalized and recognized to build healthy environmental systems (Olalekan, 2019; Etemire, 2015; Odemene, 2015; Eneji, 2009; Aribigbola, 2008). Yet, it is neglected in practice.

Therefore, the contribution of this study is to develop a framework as in Figure 7 for integrating local communities and the public in the management and decision-making about conservation areas surrounding them for better relationships, health, and well-being of the conservation areas. This is vital particularly because previous researchers revealed that, community members neighboring conservation areas have an interest in the management of conservation areas, and that most of them are willing to accept management responsibilities if assigned (Hassan, 2019). This is also an opportunity for the management to extend the hands of collaboration to the local communities around their conservation areas for a better and sustainable planning and management output. Despite the communities' interest and their willingness to accept management responsibilities, there is a need for continuous awareness of the importance of the conservation areas. This can go a long way in mitigating the negative impacts of human activities on the conservation areas, particularly since, most of the negative impacts are human-related (Hassan, 2019).

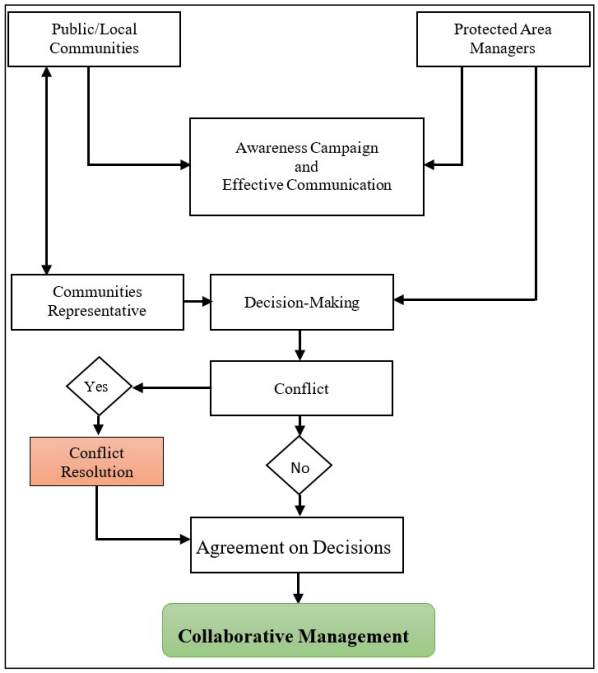

Figure 7. Framework for integrating local communities in conservation area management.

6. Conclusion

Effective environmental conservation needs to involve environmental managers as well as the public, stakeholders, and local communities surrounding conservation areas. Involvement of the public, specifically, local communities in the planning and management processes of conservation areas plays a significant role in achieving conservation goals. The study has demonstrated the role of communication in understanding conservation area boundaries as well as rules and regulations governing the conservation areas, particularly in Yankari Game Reserve. However, Yankari needs to double its efforts and increase awareness of boundaries, rules, and regulations among the communities surrounding it. Especially as the conservation area has more opportunities when it comes to staff strength, achievement of conservation goals and objectives, and implementation of the management plan. Communication between managers and local communities leads to understanding between the two parties and can build trust and confidence. This alone can facilitate protection. However, the non-involvement of local communities in the decision-making process and their inability to influence management decisions indicate a lack of collaboration between conservation managers and their host communities. This also indicates a Top-Down approach to managing the conservation areas. Therefore, the conservation managers and agencies involved in planning and managing the conservation areas should accommodate the public, particularly the local communities surrounding the conservation areas in the decision-making process and allow them to influence decisions where necessary. This is because local knowledge can have a global impact on environmental protection and management.

Recommendations

The study made the following recommendations:

i. Policy and decision-makers should re-strategize and ensure full inclusion of public/local communities/ indigenous people in the planning and management processes of conservation areas

ii. Traditional and local knowledge/practices should be integrated with modern conservation techniques for the sustainability of the conservation areas.

iii. The management of the conservation areas needs to collaborate with the local communities around them

iv. The management of the conservation areas needs to encourage the formation of Community-Based organizations and ensure the representation of each of the CBOs in the decision-making process. This is to allow the wider representation of community members in the decision-making process

v. Future research should focus on assessing the planning and management processes of the conservation areas and determining other factors that may contribute to effective planning and management of the conservation areas.

References

Afridi, M.A., Kehelwalatenna, S., Naseem, I., Tahir, M., (2019). Per capita Income, Trade Openness, Urbanization, Energy Consumption, and CO2 Emissions: An Empirical Study on the SAARC Region. Environ. Sci. Pollut. Control Ser. 26 (29), 29978–29990.

Aribigbola, A. (2008). Public participation in planning in developing countries: the example of Akure, Ondo State, Nigeria. In GBEN 2006 International Conference on Global Built Environment: Towards an Integrated Approach for Sustainability (p. 70). Lulu. Com.

Berkes, F. (2009). Evolution of Co-Management: Role of Knowledge Generation, Bridging Organizations and Social Learning. Journal of Environmental Management, 90: 1692-1702.

Berkes, F. (2010). Devolution of Environment and Resources Governance: Trends and Future. Environmental Conservation, 37(4); 489-500.

Berkes, F., Feeny, D., McCay, B. J. and Acheson, J. M. (1989). The Benefits of the Commons: Commentary. Nature, 340; 91-93.

Berkes, F., George, P. J. and Preston, R. J. (1991). The Evolution of Theory and Practice of the Joint Administration of Living Resources. Alternatives, 18: 12-18.

Bernard, H.R. (2006). Research Methods in Anthropology: Qualitative and Quantitative Approaches. Fourth Edition. Lanham: AltaMira Press.

Blaikie (2000). Designing Social Research. Cambridge: Polity Press.

Bockstael, E., Bahia, N. C., Seixas, C. S., and Berkes, F. (2016). Participation in Protected Area Management Planning in Coastal Brazil. Environmental Science and Policy, 60, 1-10.

Briassoulis, H. (1989). Theoretical Orientations in Environmental Planning: An Inquiry into Alternative Approaches. Environmental Management, 13(4), 381-392.

Brockington, D., and Igoe, J. (2006). Eviction for conservation: A Global Overview. Conservation and Society, 4(3), 424.

Brooks, Brooks, J., Waylen, K. A., and Mulder, M. B. (2013). Assessing Community-Based Conservation Projects: A Systematic Review and Multilevel Analysis of Attitudinal, Behavioral, Ecological, and Economic Outcomes. Environmental Evidence, 2(1), 2.

Burki, M. A. K., Burki, U., & Najam, U. (2021). Environmental Degradation and Poverty: A Bibliometric Review. Regional Sustainability, 2(4), 324-336.

Carey, C., Dudley, N. and Stolton, S. (2000). Squandering Paradise? The Importance and Vulnerability of the World's Protected Areas. Gland, Switzerland: WWF.

Chakravarty, D., Mandal, S.K., (2020). Is Economic Growth a Cause or Cure for Environmental Degradation? Empirical Evidences from Selected Developing Economies. Environ. Sustain. Indic. 7, 100045.

del Pilar Moreno-Sánchez, R., and Maldonado, J. H. (2010). Evaluating the Role of co-Management in Improving Governance of Marine Protected Areas: An Experimental Approach in the Colombian Caribbean. Ecological Economics, 69(12), 2557-2567.

Dixon, M., and Dougherty, D. (2010). Managing the Multiple Meanings of Organizational Culture in Interdisciplinary Collaboration and Consulting. Journal of Business Communication, 47, 3–19.

Eneji, V. C. O., Gubo, Q., Okpiliya, F. I., Aniah, E. J., Eni, D. D., & Afangide, D. (2009). Problems of public participation in biodiversity conservation: the Nigerian scenario. Impact Assessment and Project Appraisal, 27(4), 301-307.

Etemire, U. (2015). Law and practice on public participation in environmental matters: the Nigerian example in transnational comparative perspective. Routledge.

Ezebilo, E.E. and Mattsson, L. (2010). Socio-Economic Benefits of Protected Areas as Perceived by Local People Around Cross River National Park: Nigeria. Forest Policy and Economics. 12(3), 189-193.

FAO (2010). Global Forest Resources Assessment: Main Report. Food and Agriculture Organization of the United Nations of the United Nations: Rome.

Federal Government of Nigeria (2012). Nigeria's Path to Sustainable Development Through Green Economy. Country Report to the Rio + 20 Summit. June 2012.

Fourth National Biodiversity Report (2010). Abuja, Federal Republic of Nigeria.

Gbadegesin, A. and Ayileka, O. (2000). Avoiding the Mistakes of the Past: Towards a Community Oriented Management Strategy for the Proposed National Park in Abuja-Nigeria. Land Use Policy: 17(2), 89-100.

Gray, B. (1989). Collaborating: Finding Common Ground for Multiparty Problems. San Francisco: Jossey-Bass.

Hassan, A. (2019). Human-Nature Relationship: A Case of Selected Conservation Areas in Nigeria. Adamawa State University Journal of Scientific Research, 7(1), 77-86.

Hassan, A., Johar, F., Rafee, M. and Idris, N. M. (2015). Protected Area Management in Nigeria: A Review. Jurnal Teknologi, 77:15; 31-40.

https://doi.org/10.1007/s11356-019-06154-2.

https://www.nationsonline.orgmapsnigeria-administrative-map.jpg

Hyakumura, K. (2010). 'Slippage' in the Implementation of Forest Policy by Local Officials: A Case Study of a Protected Area Management in Lao PDR. Small-Scale Forestry. 9(3), 349-367.

Ite, U. E. (1996). Community Perceptions of the Cross River National Park, Nigeria. Environmental Conservation, 23(4), 351-357.

Ite, U. E. (1998). New Wine in an Old Skin: The Reality of Tropical Moist Forest Conservation in Nigeria. Land Use Policy, 15(2), 135-147.

Ite, U.E. and Adams, W.M. (1998). Forest Conservation, Conservation and Forestry in Cross River State, Nigeria. Applied Geography: 18(4), 301-314.

Koontz, T. M. (2006). Collaboration for Sustainability? A Framework for Analyzing Government Impacts in Collaborative Environmental Management. Sustainability: Science, Practice and Policy. 2(1); 15-24.

Kurdoglu, O. and Cokcaliskan, BB.A. (2011). Assessing the Effectiveness of Protected Area Management in the Turkish Caucasus. African Journal of Biotechnology. 10(75), 17208-17222.

Lockwood, M. (2010). Good Governance for Terrestrial Protected Areas: A Framework, Principles and Performance Outcomes. Journal of Environmental Management, 91(3), 754-766.

Mohammed, I., Shehu, A.I., Adamu, M.B. and Saleh, U.F. (2010). Comparative Analysis of Fauna Numerical Characteristics of Yankari Game Reserve from 1980-2008. Environmental Research Journal. 4(2), 177-181.

Mulongoy, J.K. and Chape, S.P. [Eds] (2004). Protected Areas and Biodiversity: An Overview of Key Issues. CBD Secretariat, Montreal, Canada and UNEP-WCMC, Cambridge, UK.

Nakakaawa, C., Moll, R., Vedeld, P., Sjaastad, E., and Cavanagh, J. (2015). Collaborative Resource Management and Rural Livelihoods Around Protected Areas: A Case Study of Mount Elgon National Park, Uganda. Forest Policy and Economics, 57, 1-11.

Neuman, L. W. (2007). Basics of Social Research: Qualitative and Quantitative Approaches. Prentice Hall:

Newing, H. (2011). Conducting Research in Conservation: Social Science Methods and Practice. Routledge, Taylor and Francis Group: London and New York

Nielsen, G. (2012). Capacity Development in Protected Area Management. International Journal of Sustainable Development and World Ecology. 19(4), 297-310.

Nursey-Bray, M. and Rist, P. (2009). Co-Management and Protected Area Management: Achieving Effective Management of a Contested Site, Lessons from the Great Barrier Reef World Heritage Area (GBRWHA). Marine Policy. 33: 118-127.

O'Riordan, T. (1989). The Challenge of Environmentalism. In R. Peet & N. Thrift (Eds.), New Models in Geography (pp. 77–102). London, England: Unwin Hyman.

Odemene, S. (2015). Optimizing Public Participation in Environmental Decision Making in Nigeria. Available at SSRN 2698484.

Ogunjinmi, A.A., Ojo, L.O., Onadeko, S.A. and Oguntoke, O. (2009). An Appraisal of Environmental Interpretive Policies and Strategies of Nigeria National Parks. Tropical Agricultural Research and Extension: 12(1), 7-12.

Olalekan, R. M., Omidiji, A. O., Williams, E. A., Christianah, M. B., & Modupe, O. (2019). The roles of all tiers of government and development partners in environmental conservation of natural resource: a case study in Nigeria. MOJ Ecology & Environmental Sciences, 4(3), 114-121.

Osemeobo, G.J. (1990). Land Use Policies and Biotic Conservation: Problems and Prospects for Forestry

Osemeobo, G.J. (2001). Is Traditional Ecological Knowledge Relevant in Environmental Conservation in Nigeria? International Journal of Sustainable Development and World Ecology. 8(3), 203-210

Parks and Wildlife Commission (2002). Public Participation in Protected Area Management Best Practice. Prepared for: The Committee on National Parks and Protected Area Management Benchmarking and Best Practice Program August 2002, by Parks and Wildlife Commission of the Northern Territory.

Parr J. W. K., Jitvijak, S., Saranet, S. and Buathong, S. (2008). Exploratory Co-Management Interventions in Kuiburi National Park, Central Thailand, Including Human-Elephant Conflict Mitigation. International Journal of Environment and Sustainable Development. 17(3); 293-310.

Participatory Management Plan of Lame-Burra Game Reserve (2007). Environ-Consult.

Participatory Management Plan of Yankari Game Reserve (2007). Environ-Consult.

Pfahl, M., Casper, J., Trendafilova, S., McCullough, B. P., and Nguyen, S. N. (2015). Crossing Boundaries: An Examination of Sustainability Department and Athletics Department Collaboration Regarding Environmental Issues. Communication & Sport, 3(1), 27-56.

Poffenberger, M. (1990). Keepers of the Forest: Land Management Alternatives in Southeast Asia.

Ramirez, B. (2014). Improving Sustainable Development Outcomes Through Best Management Practices. 12, 25–45.

Ribot, J. C., Agrawal, A., and Larson, A. M. (2006). Recentralizing while Decentralizing: How National Governments Reappropriate Forest Resources. World Development, 34(11), 1864-1886.

Selin S. and Chavez, D. 1995. Developing a Collaborative Model for Environmental Planning and Management. Environmental Management, 19(2): 189-195.

Stolton, S. (2004). Issues that Arise for the Categories in a Changing World. Parks: 14(3), 63-71.

The World Bank (1999). Report from the International CBNRM Workshop, Washington D.C., 10-14 May 1998. URL: http://www.worldbank.org/wbi/conatrem/

Thomas, L. and Middleton, J. (2003). Guidelines for Management Planning of Protected Areas. IUCN Gland, Switzerland and Cambridge, UK. Ix + 79pp.

United Nations Environment Programme (2007). Global Environmental Outlook: Environment for Development. UNEP, Nairobi, Kenya

United States Agency for International Development (USAID). 2008. Nigeria Biodiversity and Tropical Forestry Assessment: Maximizing Agricultural Revenue in Key Enterprises for Targeted Sites (Markets). Chemonics International Inc.

Vodouhe, F.G., Coulibaly, O., Adegbidi, A. and Sinsin, B. (2010). Community Perception of Biodiversity Conservation within Protected Areas in Benin. Forest Policy and Economics. Volume 12; 505-512

Watson, J. E., Dudley, N., Segan, D. B., and Hockings, M. (2014). The Performance and Potential of Protected Areas. Nature, 515(7525), 67-73.

Wildlife Conservation Society (2012-2016). Nigeria Program Conservation Strategy.

Woodland, R. H., and Hutton, M. S. (2012). Evaluating organizational Collaborations Suggested Entry Points and Development in Nigeria. Land Use Policy: 7(14), 314-322.

Strategies. American Journal of Evaluation, 33(3), 366-383.