

What motivates communities to participate in forest conservation? A study of REDD+ pilot sites in Cross River, Nigeria

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ABSTRACT

Market-based forest governance mechanisms such as reducing emissions from deforestation and degradation (REDD+) are implemented in many forests rich countries to conserve biodiversity and mitigate against global climate change. The assumption is that communities will be better motivated to participate in forest conservation if monetary payments are provided to compensate for past efforts or future improvements against pre-defined carbon reference levels. In this paper, I utilized Q methodology to identify discourses of forest values and motivations for forest conservation in selected REDD+ pilot communities in Cross River State, Nigeria. Data from interviews and focus group discussions are also used to support the analysis. The aim is to examine communities' motivations for practicing conservation initiatives and the extent to which such motivations are shaping their participation in the REDD+ program. The analysis uncovers five main discourses namely: forest for survival, forest is beautiful, no pay no care, conservation volunteers, and we care but pay us. I discussed these discourses around three themes: livelihoods dependence, financial incentives, and place attachment and social norms. Results indicate that the reasons why communities practice conservation are complex and subjective, and payment of monetary incentives or lack thereof will not necessarily motivate them to participate in the REDD+ program. I suggest that values such as place attachment, nature connectedness and social norms matter in the success of REDD+ particularly in communities that have long history of practicing voluntary conservation initiatives.

1. Introduction

Tropical deforestation and poor land use management are the second largest sources of pollution after fossil fuels consumption (Stern and Stern, 2007; Pan et al., 2011). It is projected that forests conservation would significantly offset large quantities of terrestrial carbon necessary to mitigate against global climate change (Ruddell et al., 2007). The idea of reducing emissions from deforestation and degradation plus enhancement of forest carbon stock (REDD+) was propagated as an efficient and cost-effective mitigation option that will incentivize forest rich countries to engage in globally funded carbon forestry initiatives (Stern, 2006; Eliasch, 2008; Angelsen, 2009). In addition to addressing climate change, REDD+ also aims to improve biodiversity conservation and socio-economic development of indigenous forest communities (Gupta, 2012; Phelps et al., 2012). Under this mechanism, financial compensation is given to participating countries in proportion to either measurable performance against pre-defined carbon reference levels, or

for sustaining past conservation efforts (Angelsen, 2008; Karsenty and Ongolo, 2012; Neeff et al., 2014). This led to a phenomenal growth in the number of incentive-based ecosystem management projects in many West African countries under various funding arrangements.

In Nigeria, preparatory stages for REDD+ began in 2006 after the completion of a scoping mission by the US Forestry Service to assess the viability of Cross River State forests for a carbon concession arrangement with the state of California. In 2010, such arrangement was dropped for a more lucrative partnership with the United Nations REDD+ Program (UNREDD). At that time, Cross River State had suffered a major economic setback following a drop in its oil revenues, and the government was looking for supplementary income from its vast forest estates. A two-track approach involving the Cross River State and Federal Government of Nigeria was designed to access a 4 million US dollars take off grant from the UNREDD program to implement the REDD+ readiness program (Asiyanbi, 2016). The project was popularly termed "carbon credit" among the locals, signifying expected compensation for

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decades long forest conservation efforts, with greater emphasis on rewarding for carbon sequestration (Isyaku, 2017). Hence, REDD+ in Cross River state was conceptualized and propagated as an emergent marketplace for a new carbon commodity that has greater market value than other forest ecosystem services to suit a neoliberal conservation agenda (Asiyanbi, 2018). To meet strict funding requirements, the Nigerian REDD+ readiness proposal include strategies for achieving favourable social outcomes such as balanced gender relations, capacity building, participatory governance, community livelihoods, fair benefits sharing, and respect for local norms and values (R-PP, 2013).

However, early assessment studies in Nigeria have raised several concerns regarding the negative impacts of REDD+ activities on the local communities. These include exclusion of some local stakeholder groups in decision making (Nuesiri, 2016; Asiyanbi et al., 2017; Nuesiri, 2017); tenure contestations between the state and forest communities (Isyaku et al., 2017); and militarized forest surveillance (Asiyanbi, 2016); which gave rise to local resistance against REDD+ implementation (Asiyanbi et al., 2019). Similar situations were also reported in other countries. For example, several studies have shown evidence that customary practices, livelihood rights and traditional norms of local communities were not recognized by REDD+ proponents in many countries in Africa, Asia-Pacific and Latin America (see Dokken et al., 2014; Hajjar, 2015; Paudel and Vedeld, 2015; Holmes et al., 2017; Trædal and Vedeld, 2017; Dawson et al., 2018).

Growing number of scholarships is paying attention to the complexities of stakeholders' motivations for participation in REDD+ and other payment for ecosystem services (PES) schemes to explain why many of such projects have failed to meet expected outcomes. Such studies have examined pro-environmental behaviours of people in response to monetary incentives within empirical settings (Narloch et al., 2012; Kits et al., 2014; Chervier et al., 2019; Bose et al., 2019; Grillos et al., 2019; Moros et al., 2019; Van Van Hecken et al., 2019), and simulated field experiments (Handberg and Angelsen, 2019; Kaczan and Swallow, 2019) in many parts of the world. These bodies of work relate to the major concern raised by scientists about the possibility of economic incentives to crowd-out intrinsic motivations that could undermine long term conservation efforts and may result in loss of cultural basis for nature conservation (Martin et al., 2008; Neuteleers and Engelen, 2015). While scholars continue to pay attention to these debates, the literature on motivation in PES has not paid significant attention to the West African context particularly as it pertains to the REDD+ pilot communities. To this end, this paper utilized Q methodology to understand the perceptions of forest values and motivations for conservation among communities earmarked for REDD+ in Cross River State Nigeria. The aim is to examine the extent to which such perceptions are shaping community's engagement in the REDD+ process. I argue that the Nigerian case study is significant because of the long-term community-based conservation efforts in the REDD+ pilot sites, and the fact that most of the participants do not share the same history, experiences, forest values and motivations for nature conservation. I also argue that the Cross River State REDD+ was designed based on a discursive conceptualization of environmentalism that does not necessarily fits the way local communities within the pilot sites attach meanings to forest environments and the purpose for maintaining long-term community conservation initiatives.

2. The Cross River State REDD+ project

This paper draws on a case study of the REDD+ demonstration project in Cross River State, Nigeria. As mentioned earlier, Nigeria became a UNREDD country in 2010 and started preparations for a demonstration project in the rainforest of the Niger Delta region. In this region, Cross River State contains the largest portion of the remaining rainforest which justified its selection for the REDD+ project (Oyebo et al., 2010; Abua et al., 2013; R-PP, 2013). During the preliminary assessment and scoping missions, 3 main forest clusters for the project

were identified in the following communities namely: (a) Ekuri (b) Afi/Mbe, (c) the Mangrove. The Ekuri cluster comprises of several small communities with community-controlled forests and nature reserves that are managed by the Cross River State government. According to the Project Idea Notes (PIN), this cluster covers about 19,000 ha of forests, and are capable of sequestering approximately 22.3 million tonnes of carbon over a 20-years' period (Oyebo et al., 2010). The purpose of clustering these communities was to create a viable size of tropical rainforest that could attract global REDD+ financing (Asiyanbi, 2016). Iko-Esai, Old and New Ekuri, and the nearest Okokuri villages control the largest portion of forests in this cluster and have been involved in internationally funded community-based forest conservation programmes. Under the Ekuri Initiative, the Ekuri communities have been managing this large expanse of ancestral forest land for decades and had won the prestigious United Nations Development Program's (UNDP) Equator Initiative Award in 2004 (UNDP, 2012). For many years, the Ekuri communities have resisted several attempts by the state Forestry Commission to impose logging concession arrangement with private timber companies in exchange for infrastructural development projects (Asiyanbi et al., 2019).

The Afi/Mbe cluster is located closed to the wildlife sanctuary in Boki Local Government Area of Cross River State. This cluster comprises of several communities that occupy about 50,000 ha of forest land that can capture significant quantities of carbon over long periods (Oyebo et al., 2010). Kanyang II and Buanchor are the largest communities in this cluster, and due to their location near the Mbe Mountains sanctuary, they have been involved in wildlife conservation in partnership with an international non-governmental organization called Wildlife Conservation Society (WCS). The Mangrove communities are excluded in this study because they were not involved in the REDD+ process at the time of this study. Data for this study was collected during a pilot study in 2013, and two field visits in 2014 and 2015. At the time, the REDD+ readiness program was at the take-off stage and officials were working on legal and institutional frameworks for its implementation. Study participants were selected from 5 communities within the Ekuri and Afi/Mbe forest clusters. These communities were selected based on the relative size of their forest covers, ease of access, and their knowledge and engagement with the REDD+ process.

3. Methods

3.1. Q methodology: an overview

The Q methodology used in this study was initially developed by William Stephenson as a hybrid of quantitative and qualitative methods for understanding the complexity of human behaviour (Stephenson, 1953). It has now become popular as an approach for scientific study of human subjectivity because it is mostly concerned with the structure and forms of subjective opinions of people about any topic of interest (Brown, 1980). In social and environmental research, Q methodology has become increasingly useful in identifying and revealing shared perspectives among study participants. Webler et al. (2009) argue that Q methodology is a variant of discourse analytic techniques that can be effectively utilized in exploring and mapping patterns of subjectivities embedded within environmental discourses in ways that cannot be easily achieved using traditional qualitative methods. Since discourses are used in describing complex real-world phenomena, they could be wholly or partly shared, contested, or debated by people, and therefore, Q methodology is identified as an effective approach that can facilitate a better understanding (Barry and Proops, 1999; Langston et al., 2019). In forest management studies, Q methodology has been applied in many countries to examine participants' perspectives by policymakers to guide planned interventions. These studies include understanding peoples' values and beliefs about watershed management in the US (Steelman and Maguire, 1999); mapping diverse perceptions of multiple stakeholders about mangrove management in Malaysia (Hugé et al.,

2016); understanding motivations for adopting innovative resources conservation and farming techniques in Mexico (Zabala et al., 2017); and understanding the perceptions of local stakeholders about forest governance and compliance with international logging regulations in Ghana (Adams et al., 2021). It is also used in PES studies to explore the perspectives of local stakeholders in implementing baselines for carbon offset projects in Costa Rica (Lansing, 2013); and assessing the perceptions of local stakeholders about the governance of REDD+ pilot project in Cambodia (Nhem and Lee, 2019).

I chose Q methodology for this study because REDD+ in Cross River State has been a controversial subject matter that often stimulate different types of opinions among stakeholders as to how it should be implemented in forests that are under customary tenure. During the pilot study, I also observed the diversity of conservation narratives in the pilot communities that often reflect conflicting viewpoints regarding values of forests, community histories, incentive preferences, forest governance institutions, and social norms.

It is important to note that Q methodology has been a subject of ontological and epistemological debates among practitioners and critical scholars. Much of these are focused on its limitations regarding generalizability and theoretical validity of results, sampling strategy, procedure for generating discourse, analytic integration of interviews with Q sorts, as well as elimination of researcher bias (see Loevinger, 1965; Robbins and Krueger, 2000; Dziopa and Ahern, 2011; Kampen and Tamás, 2014; Brown et al., 2015). For this study, Q methodology was carefully and creatively applied taking full cognizance of its limitations, and so there is no attempt to generalize its findings as a representation of all possible perceptions among the community members.

3.2. Q-set design

This study was designed to cover a broad range of topics about REDD+ in the study area. These include values of forest ecosystem services, motivations for participation in REDD+ and local conservation programs, relationships between communities and the Forestry Commission, impact of conservation on community livelihoods, tenure issues, human-nature interactions, incentives and expected benefits sharing mechanisms. Semi-structured interviews and focus group discussions were conducted with different stakeholders which include state REDD+ officials, conservation task force officials, local NGOs, international donors, university lecturers, and community-based organisations that represent local communities in the REDD+ process. These interviews were transcribed, manually coded, and transformed into statements that form part of the discourse for the study. The discourse also includes statements from standardize scales commonly used in environmental psychology to study pro-environmental behaviour (see Williams and Roggenbuck, 1989; Dunlap et al., 2000; Mayer and Frantz, 2004; Dutcher et al., 2007; Perkins, 2010; Raymond et al., 2010; Ford et al., 2014). These items were selected to fit the study context, and some were slightly modified for ease of understanding. Throughout these processes more than 100 relevant statements were generated which are considered too large for the participants to sort (McKeown and Thomas, 1988). Following the suggestion of Van Exel and De Graaf (2005) for selecting adequate representative samples in the discourse, 54 statements were selected for the study. I selected these statements in a structured way and categorized them almost equally according to the 5

Table 1
Themes for Q statements.

Themes	Number of statements in the P-set
Environmental value orientation	10
Connectedness to nature	10
Place identity/attachment	10
Motivations for environmental behaviour	10
Environmental behaviour/attitude	14

themes that emerged from the interview transcripts as shown in Table 1. This is to avoid bias in the representation of some statements in the discourse (McKeown and Thomas, 1988). It is important to note however, that the statements used in this study did not necessarily capture the whole issues related to motivations in the study areas. Empirical studies have shown that using too many statements will make the Q sorting cumbersome for the participants which may affect the accuracy of the results.

3.3. Selection of P-set

Following the suggestions of Dryzek and Niemeyer (2008), participants were selected to meet the discursive representation of the communities about forest governance and participation in the REDD+ process. Recruitment of participants was strategic to represent diversity of relevant viewpoints on the subject under investigation (Watts and Stenner, 2012). The criteria for selecting the participants include knowledge of forest benefits and experience in conservation, engagement in the REDD+ process, gender representation, residence in REDD+ pilot communities, and membership of community social groups. Determining the number of participants for this study was not easily achieved because of the divergent opinions that exist among researchers (see Dziopa and Ahern, 2011). While some argued in favour of more participants than the Q -set (Danbury, 1985; Mauldin, 1990), others recommended equal number of Q-sets and P-sets for optimum results (Watts and Stenner, 2005). For this study, 30 participants were selected to sort the 54 statements. This is because some researchers have suggested that the number of participants should ideally be smaller than the Q-sets without necessarily recommending any fixed ratios (see Barry and Proops, 1999; Van Exel and De Graaf, 2005; Watts and Stenner, 2012). To maintain equal representation, a total number of 6 participants each were purposefully recruited from Buanchor, Kanyang II, New Ekuri, Old Ekuri, and Okokuri communities for the Q sorts. Table 2 shows a list of participants in each of the stakeholder groups. I acknowledge that selecting participants in this manner may limit the conclusions that can be drawn from this study since other important stakeholders such as community REDD+ representatives and forest guards working for the Forestry Commission are not included.

3.4. Q sort process

The Q statements were written separately on small index cards and numbered randomly from 1 to 54. All the cards are of the same colour and sizes to avoid participants sorting the cards based on colour preferences. Each participant was asked to read the statements and sort them according to their degree of agreement or disagreement using an 11-point forced choice normal distribution grid ranging from -5 to +5 as shown in Fig. 1. In Q studies, researchers have inconsistently used different distribution grids and point scales depending on the number of Q statements, research questions, and the depth of opinions being explored (Dziopa and Ahern, 2011). However, it is argued that the choice of distribution grid or scale points in most studies did not interfere with how participants expressed their viewpoints because the choice was proved to be statistically insignificant to the factors that have emerged (Brown, 1980; Barry and Proops, 1999; Watts and Stenner,

Table 2
List of Q participants.

Category of participants	Number of Q participants
Local chiefs	6
Youth	8
Elders	7
Hunters	6
Women	3
Total	30

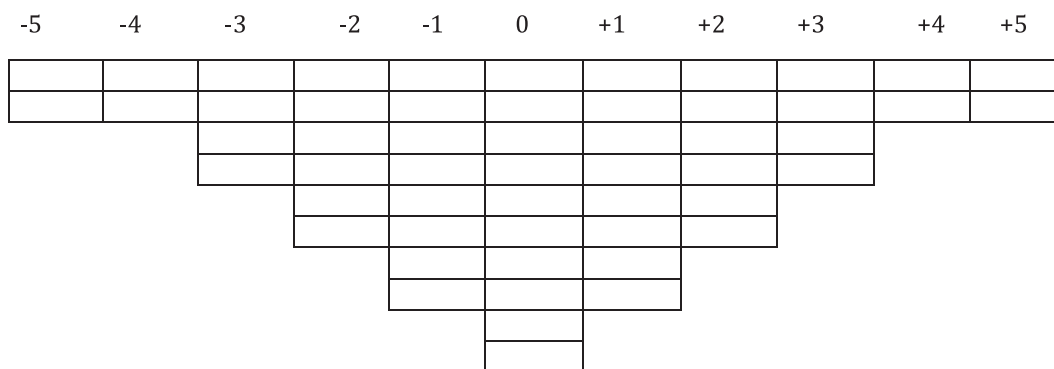


Fig. 1. Normal distribution grid.

2012). I follow the suggestion of Brown (1980) to use 11-point distribution grid in this study because the Q set contains between 40 and 60 items.

The Q sort process was iterative and in consonance with a left-centre-right order as suggested by Dasgupta and Vira (2005), such that participants were asked to rank the most strongly disagreed cards first, followed by neutral, before moving to the most strongly agreed cards. This was done on tables, mats, or bare ground depending on availability or convenience of the participants. In the end, each participant was given the chance to rearrange the Q sorts in case they changed their minds before they were written on recording sheets according to the card numbers. Throughout the processes, participants were asked to follow instructions strictly, and were isolated to avoid interacting with others or seeking for their opinions. After the Q sorting, interviews were immediately conducted with the participants. Post Q-sort interviews were necessary because they provide useful information that support data analysis and interpretation (Gallagher and Porock, 2010; Adams et al., 2021). Interview questions broadly covered topics related to values of forest ecosystem services, local conservation initiatives, participation in REDD+, financial incentives and expected benefits. Participants were finally asked to briefly comment on the justification for the Q sort to ensure that all the cards were carefully thought through before they were ranked. These interviews were recorded on a portable device and transcribed and coded manually. The manual coding involves systematic description, labelling, organization, and categorization of distinct or shared meanings for the purpose of generating themes from textual data (see Saldaña, 2014). In accordance with Lofland et al. (2006), the next step involves adding participants' attributes such as location, age, social status, and gender. Some of the quotes from these interviews are selected and used to support analysis and interpretation of the results.

3.5. Data analysis

The Q sorts are entered into the PQMethod analysis software and coded according to the name of their communities, gender, and age of participants as shown in Table 3. The software was specially designed for performing Q analysis procedures such as factor extraction, factor rotation, correlations, and interpretation. Principal Component Analysis (PCA) with varimax rotation was chosen to arrive at a mathematically best solution (Watts and Stenner, 2012; Zabala et al., 2018). Five factors were selected for rotation, and manual flagging was performed to select those Q-sorts with loading of 0.35 and above in each factor. The value 0.35 was used to extract the factors and was derived from using the two or more significant loadings and Humphrey's rule criteria by calculating the significance level using the equation suggested by Brown (1980).

Manual pre-flagging was used because some significant loadings were observed to be omitted if done automatically. As a standard practice in Q methodology, confounded sorts are not flagged because

Table 3
Factor matrix with (X) indicating a statistically significant Q sort

Q Sorts ^a	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1. K2F42	0.0226	0.0298	0.6972X	-0.1557	0.1525
2. K2M27	0.1484	0.3927	-0.1072	0.1799	0.3706
3. K2M36	0.4353	0.0113	0.2799	0.4160	0.0112
4. K2M52	0.3248	0.1795	0.2845	0.5170X	0.0407
5. K2M60	0.4961X	0.2937	0.3403	0.0117	0.1610
6. BCM32	0.0862	-0.0169	0.7268X	0.2088	0.1564
7. BCM40	0.6614X	0.0945	-0.0969	-0.0049	0.2228
8. BCM29	0.3689	-0.0430	0.3584	-0.2106	0.6559
9. BCM50	0.6387X	0.0559	0.1276	0.3068	0.0276
10. BCM35	0.6545X	0.1651	-0.0107	0.2046	0.1958
11. BCF23	0.5920X	0.3449	-0.2882	0.2332	0.0876
12. OKM50	0.3716	0.0774	0.1853	0.5210	0.1375
13. OKM40	0.0025	0.0810	0.1696	0.2905	0.4800X
14. OKM54	0.0859	0.1224	0.0943	-0.0122	0.8235X
15. OKM38	0.0422	0.0889	-0.3883	0.5360	0.1219
16. OKM57	0.2526	0.5602X	0.0648	0.2141	-0.1233
17. OKF30	0.1862	0.0247	0.2792	0.3063	0.5530X
18. OEM52	-0.0433	0.5637	0.3780	0.2914	0.0213
19. OEM53	0.1273	0.7228X	0.0268	-0.1202	0.0558
20. OEM69	0.2684	0.7254X	0.0882	-0.0331	0.1213
21. OEM39	-0.0995	0.7201X	-0.0965	0.1613	0.1680
22. OEM56	-0.0837	0.2470	0.6143X	0.3086	0.2233
23. OEF40	-0.1324	0.4935	0.3103	0.5776	-0.0471
24. NEM42	0.2232	0.0551	-0.0328	0.5885X	0.1668
25. NEM29	0.6422X	0.1403	-0.1511	0.1465	0.2212
26. NEM29	0.1784	0.1162	0.0679	0.6491X	0.0234
27. NEM45	0.5657	0.0281	0.2124	0.4687	0.3391
28. NEM57	0.4241	-0.1054	-0.1538	0.6183	0.3812
29. NEM27	0.2821	0.1216	0.0219	0.4516	0.5767X
29. NEM27	0.2821	0.1216	0.0219	0.4516	0.5767X
30. NEM	0.7674	-0.0939	0.1460	0.1614	-0.1086
% of variance	15	10	9	12	9

^a The participants' Q sorts are ranked serially and coded according to the name of their communities, gender and age in the analysis software. For example, participant number one is coded as K2F42, meaning Kanyang II community, female, and she was 42 years old. The remaining codes are: BC = Buanchor, OK = Okokuri, OE = Old Ekuri, NE = New Ekuri communities.

their viewpoints are not distinctively related to any single factor and therefore excluded from interpretation (Watts and Stenner, 2005). All the 5 factors satisfied the Keiser-Guttman's criterion described in Watts and Stenner (2012) which suggested that eigenvalues of factors must be greater than or equal to 1. Table 3 shows the factor matrix with 5 factors and their significant loadings. These accounted for 55% of the total variation in the Q sorts which is greater than or equals to 35–40%, and therefore represents a sufficient variability within the sample to arrive at a sound solution (Watts and Stenner, 2012). Values that are marked with (x) are showing significant loadings of 0.35 or above on a factor that has no confounding Q-sorts. These factors represented as discourses are interpreted in the results section. Table 4 shows the statements and their corresponding Q sort values. Crib sheet method developed by Watts and

Table 4
Factor Q-sort values for each statement.

No.	Statement	F1	F2	F3	F4	F5
1	Because of our previous experiences, I think the incentives must be given to us first before we agree with any conservation initiative in our forest (Motivation for environmental behaviour)	-2	0	0	-5	4
2	Belonging to a volunteer group for conservation in this forest community is very special to me (Place identity/ attachment)	1	-1	0	5	-1
3	Doing my activities in this community is more important to me than doing them in any other place (Place identity/ attachment)	-3	1	0	-1	4
4	Even if I am tired of living here I don't have any place to go (Place identity/ attachment)	-3	5	1	-2	-4
5	Forests are valuable to keep for future generations of humans even if it means I am reducing my standard of living today (Future value orientation)	2	2	1	5	5
6	Humans are above all other living things, so they are created to serve us (Connectedness to nature)	0	2	2	0	-1
7	I am sometimes doubtful about the wilderness preservation and conservation programs (Environmental behaviour/ apathy)	-2	-1	-3	-2	-1
8	I am willing to accept REDD+ to conserve the forest for climate change and biodiversity (Motivation for environmental behaviour)	3	0	3	-1	2
9	I cannot substitute this community with any other place on earth (Place identity/ attachment)	-2	-1	0	3	-1
10	I think the problem of deforestation is a bad as many people make it to be (Motivation for environmental behaviour)	-1	-3	-2	-1	-2
11	I feel deep love for the forest its surroundings (Connectedness to nature)	1	4	1	3	0
12	I feel spiritually bonded to the forest, its species and surrounding landscape (Connectedness to nature)	-3	-2	-5	-2	-4
13	I feel like the forest and its biodiversity have become a part of me (Place identity/ attachment)	2	-3	-1	1	2
14	I have attended a public hearing or meeting about forest management (Behaviour/attitude)	0	0	3	2	3
15	I have contacted a government agency to get information or complain about forest degradation (Behaviour/attitude)	1	3	-1	1	-2
16	I have contributed money or time to an environmental or wildlife conservation group (Behaviour/attitude)	0	-5	1	0	-2
17	I have deep understanding of how my activities affect the forests and other living things living here (Connectedness to nature)	2	1	-1	0	-1
18	I have regulated or changed my behaviour and agricultural practices in some ways because of my concern for the environment (Behaviour/attitude)	3	1	3	1	-1
19	I have stopped buying wood from loggers or animals killed illegally from the forest (Behaviour/attitude)	0	3	-2	1	-1
20	I live in this community because my family is here (Place identity/attachment)	-3	-1	2	-2	1
21	I need to have as much forest around me as possible (Connectedness to nature)	-1	0	-2	4	2
22	I often encourage others that environmental conservation is important (Environmental behaviour/activism)	2	3	2	2	1
23	I often feel close to the forest and its species (Connectedness to nature)	0	3	-3	0	0

Table 4 (continued)

No.	Statement	F1	F2	F3	F4	F5
24	I often feel joy looking at the forest (Connectedness to nature)	1	4	0	0	1
25	I practice conservation because forests and its biodiversity are beneficial to the survival of other people around the world (Motivation for environmental behaviour)	5	-2	0	2	3
26	I think too much emphasis have been placed on conservation by the government and NGOs (Environmental behaviour/ apathy)	-5	-2	-1	1	0
27	I value forests and other natural areas for its sounds, smell and beautiful landscape I experience in them (Aesthetic value orientation)	2	2	-1	0	0
28	I value forests because they provide special places of worship and other religious activities (Spiritual value orientation)	-5	-4	-3	-2	-5
29	I value forests because they serve as habitat for variety of plant and animal species (Ecological value orientation)	4	0	0	0	2
30	I value forests because they serve as places of natural and human history (Historical value orientation)	3	1	-1	3	5
31	I value forests because it is a place for tourism and recreational activities (Recreation value orientation)	3	5	1	2	0
32	I value forests for themselves but the welfare of people has to come first (Instrumental value orientation)	-2	2	1	1	-1
33	I value forests mainly for their own sake and not for any benefits they provide for humans (Non-use value orientation/ intrinsic)	-1	1	-2	-5	-2
34	I value the forest and its resources because it provides food, water and timber for the use of humans (Use-value orientation)	5	0	1	0	1
35	I value the forest because it reminds me of my childhood days, and that makes me happy (psychological value orientation)	4	1	-2	0	1
36	I was engaged in tree planting exercise to improve the quality of the forest (Environmental behaviour/attitude)	1	-4	0	-1	-5
37	I will conserve the forest even if I don't receive any incentives from government or conservation agencies (Motivation for environmental behaviour)	1	-1	0	2	-3
38	I will support a long-term REDD+ contract in this forest (Motivation/participation)	1	0	-2	-3	0
39	I would like to join and actively participate in an environmentalist group (Environmental behaviour/activism)	1	-2	2	1	3
40	If I get extra income I would donate some to an environmental conservation agency (Environmental behaviour/activism)	-1	-2	-4	4	-2
41	If incentives stop coming I will support logging and hunting of animals to for people to survive (Motivation for environmental behaviour)	-4	-3	2	-4	0
42	It bothers me that people are running out of wood resources for construction just because of conservation (Environmental behaviour/attitude)	-2	-3	0	-1	-3
43	Living around the forest says a lot about who I am (Place identity/attachment)	0	2	-1	-1	1
44	My own welfare is linked to the survival of the forests and its species (Connectedness to nature)	0	0	4	2	2
45	My relationship with the extended family in this community is very special to me (Place identity/attachment)	-1	-1	4	0	0
46	My right to exist on earth is not more important than that of trees and animals in the forest (Connectedness to nature)	0	-5	-4	-3	-3
47	No matter how valuable the forest is to me, I will only conserve it for a longer time if	-4	-1	5	-2	3

(continued on next page)

Table 4 (continued)

No.	Statement	F1	F2	F3	F4	F5
48	adequate incentives are given to me (Motivation for environmental behaviour) People are afraid of arrests that is why they stop logging and hunting of animals (Motivation for environmental behaviour/punishment)	-1	1	2	-3	-3
49	Spending time in the forest takes my worries away and that makes me feel happy (Connectedness to nature)	-1	0	-5	-3	0
50	The better the incentives given to me the more effort I will put towards conservation (Motivation for environmental behaviour)	-1	1	1	-1	2
51	The community forest, the reserves and their surroundings are very special to me (Place identity/attachment)	2	2	3	3	1
52	The friendships I developed by doing various community activities strongly connect me to this place (Place identity/attachment)	0	0	-1	-1	-2
53	We have waited endlessly for the conservation benefits promised by government and NGOs and this is affecting our conservation morale (Motivation for environmental behaviour)	0	-2	5	1	1
54	Without my close relationship with other families in this community I would probably move to another place (Place identity/attachment)	-2	-1	-3	-4	0

Stenner (2012) was used to describe and interpret factors by considering the entire factor arrays instead of focusing on the distinguishing statements exclusively. These factors are interpreted as discourses about forest values and motivations for forest conservation among the study participants. Factors are distinct from one another by their distinguishing statements (see appendix). Consensus statements were also used to indicate shared subjectivities or perspectives since they are found not to be statistically distinguishable between any pair of factors. Q-set numbers and rank values are shown in parenthesis to indicate distinguishing or consensus statements.

4. Results and interpretation

This section presents the results and interpretation of the five factors extracted from the analysis, namely: forests for survival (F1), forest is beautiful (F2), no pay, no care (F3), conservation volunteers (F4), and we care, but pay us (F5).

4.1. Factor 1 'forest for survival'

Factor one explains 15% of the study participants and have an eigenvalue of 8.04. It consists of seven significant Q sort loadings; these represents the largest among the factors indicating that it the most widely shared discourse among the participants. Four of the participants are from Buanchor, two from New Ekuri and one from Kanyang II communities. Motivation for conservation among these participants was driven by the variety of ecosystem benefits they derive from the forests. There is a strong emphasis on economic value of the forest and its resources for their use and other people around the world (34*, +5; 25, +5). Some of the participants said:

I value the forests because water, food, and timber are very crucial to the existence of humans, and for us in Ekuri these 3 things are quite critical. That is why we are keeping the forest so that we can continue to provide these goods and services for our survival.

(Participant 30, Conservationist, New Ekuri)

The forest is essential to the survival of other people around the world in terms of oxygen and carbon, even water because the streams that have their source from Ekuri are beneficial to the downstream communities. So, it is crucial that the forest should be conserved to continue provide these benefits. It is also related to the climate change thing because the forests help to absorb the carbon that was emitted either in Europe, America, China, or Canada. So, the forests here store the carbon thereby supporting climate change mitigation.

(Participant 30, Conservationist New Ekuri)

The purpose for conserving this forest is not only for the incentives alone. Before we had this knowledge of conservation there was still no incentives, and we developed the interest. We have the knowledge; know the importance of the forest that is why we are not after the incentives before going into conservation.

(Participant 25, Farmer, New Ekuri)

Participants have shown pro-environmental behaviour by regulating or sometimes changing their economic activities because of the concern for the environment (18, +3). This is reflected in their positive ecological value orientation by acknowledging the value of forests as habitats for biodiversity (29, +4). Participants in this discourse are indifferent about the possibility of sharing equal rights to exist with that of plants and animals (46*,0). However, they do not attach any form of spiritual value to the forest as a special place for religious activities (28, -5). Some of them are willing to support REDD+ activities (8, +3; 38, +1), since the government and NGOs are not doing enough to conserve the forests (26*, -5). Their interest to participate in REDD+ is not related to monetary payments or being afraid of arrests for violation (47*, -4; 48, -1). There is also an indication that participants have a deep understanding of how their activities affect the forests (17*, +2), as a result they participate in tree planting campaigns to improve the quality of the forests (36*, +1). In their view, the welfare of people is not a priority over the existence value of the forests (32, -2). There is also evidence of place attachment in this discourse, but it is not related to their identities, family relations or social activities with other community members (3*, -3). Place attachment here is mostly attributed to childhood memories (35, +4).

4.2. Factor 2: 'forest is beautiful'

Factor two has an eigenvalue of 2.67 and explains 10% of the study variance. Four participants are associated with this factor, three are from Old Ekuri and one from Okokuri communities. This factor shows the significance of emotional attachment towards their forest communities. It emphasizes that participants are not only attached to the places where they live but also ascribe meanings in relation to their identities as forest peoples (43, +2). In contrast to the F1 discourse, this discourse indicates a strong connectedness to nature because participants show deep love for the forest and its surroundings (11, +4). They also feel happy while looking at the forest (24*, +5), such happiness could be derived from the appreciation of the aesthetic beauty, sounds, and smells they experience in the surrounding landscapes (27, +2; 23, +3). This discourse underscores the value of forests for tourism and recreational purposes which serve as important economic activities in Cross River State (31*, +5). They are also motivated to petition any acts of forest degradation to relevant government agencies (15, +3), because they are conforming with logging restrictions and hunting of game (19*, +3). Their motivation is perhaps not related to maintaining species biodiversity or continuous provision of food, water, and timber for the use of humans (29, 0; 34,0). Instead, motivations here reflect strong sense of place attachment. This is highlighted in their perception that they would not go anywhere even if they were tired of living in their forest communities (4*, +5). Despite appreciating the beauty of the forest environment, participants identified with this discourse are not

spiritually bonded to the forests, its species or surrounding landscapes (12, -2). These discourse holders do not see reason to contribute money to conservation groups or feel the need to participate actively in these groups (16*, -5; 39* - 2). They also show disagreement with narratives that prioritized the survival of forests over that of humans (46, -5), or recognizing forests as part of their self-identities (13*, -3). These participants are also not motivated to conserve their forests for the benefits or survival of global populations (25*, -2). Finally, this discourse reveals that monetary benefits do not determine their motivations, that is why they are not worried about unfulfilled compensation promises by government or conservation NGOs (53, -2). The following interview quotes support these arguments:

...we normally enter the forest to see different types of animals, different species of plants, and the atmosphere, the air touching your skin inside the forest is very different. That is why I love going inside there. The forests also breathe in carbon and give out oxygen that is why we love to go inside the forest.

(Participant 16, Farmer, Okokuri)

Whenever I see the topography of the environment here, I feel happy throughout the day. That is why everyone that comes around is happy to see our forest too, so we the owners must be happier.

(Participant 20, Farmer, Old Ekuri)

This is my place even if I don't have anybody, even if my parents are dead this is my place, and I cannot leave it to another place. If I naturalize in another place, I will not have full rights like my own place. Even if I do not have extended family here, I have friends that we know each other for long, so they make me to feel comfortable to live here than in any other place.

(Participant 18, Farmer, Old Ekuri)

4.3. Factor 3: 'no pay, no care'

This factor explains 9% of the study variance and has an eigenvalue of 2.33. Three participants significantly loaded on this factor, and they are from Kanyang II, Buanchor and Old Ekuri communities. The discourse represented here is about the role of external incentives in motivating conservation behaviour. Participants strongly agree that stopping incentives will make them return to timber logging and hunting of game in the forests (41*, +2). Unlike those in F2, these participants are tired of waiting for the incentives promised to them by government and conservation NGOs, and it was affecting their motivations (53*, +5). They are hopeful that REDD+ will compensate for their long-term conservation efforts as well as to help address global climate change and biodiversity loss. However, they are indifferent about extending such benefits for the survival of others (25*, 0). Their participation in REDD+ is driven almost exclusively by utilitarian motivations (8, +3; 47, +5). In expectation of payments, participants expressed their willingness to regulate or change their practices (18, +3), attend public hearing or meeting about forest management and wildlife conservation (14, +3; 16, +1). Their only concern is for the forests to survive to continue supporting their economic activities and social welfare (44, +4). Nevertheless, they find it difficult to stop buying wood from loggers or animals killed illegally from the forests (19, -2). They are unwilling to donate money to conservation agencies despite having confidence in the effectiveness of their activities (40, -4; 7, -3). Unsurprisingly, these participants do not care about the aesthetic (27, -1), cultural (35, -2), and historic (30*, -1) values of the forest ecosystems. In addition, they do not show sign of connectedness to nature (49*, -5; 23*, -3; 13, -1) or any spiritual bond with the forest landscape and its species (12, -5). Despite these perceptions, participants are concerned about the welfare of their future generations and their dependence on the forests for

livelihood (5, +1). Some of the participants said:

I will support logging and hunting if they don't give the community any money. We will go back to the forest, because it's our forest - no payment no work.

(Participant 1, Farmer, Kanyang II)

If the incentives don't come, we will clear the forest because I don't see anything beneficial.

(Participant 6, Farmer, Buanchor)

I am seeking for people to help me therefore I can't donate. Where would the extra income come from? Even if you give me extra money, I will use it to maintain my family, I cannot give it out, I rather use it to train my children.

(Participant 22, Farmer, Old Ekuri)

Place attachments expressed in this discourse are linked to social relationships with immediate and extended families who are living in these communities (45*, +4; 20, +2; 4, +1).

4.4. Factor 4: 'conservation volunteers'

Factor 4 explains 12% of the study variance and has an eigenvalue of 1.88. There are three significant loadings, two from New Ekuri and one from Kanyang II communities. The most dominant discourse represented in this factor is associated with conservation volunteering and the social interactions while working with other group members (2*, +5). Their interests in joining volunteering groups for conservation work is borne out of their concern for the future generations, and the benefits they derive from the forests, and so they are willing to make necessary sacrifices (40*, +4; 33*, -5). The following quotes support this interpretation:

Belonging to volunteer groups is very important to me because we should not wait for any benefit to come before we start working. One has to volunteer even if not very well equipped to go around telling people the importance of conservation, that is why I volunteer to do it and it very important to me.

(Participant 24, Farmer, New Ekuri)

...so, if the government does not give me anything to support me that doesn't make me begin to abuse the forest. I know if I do that it will affect my life presently and the future generations. I don't care if government gives me incentives or not.

(Participant 4, Pastor, Kanyang II)

...the way I see REDD+ is that they will restrict us access to a certain portion of the forest. What we are trying to do is to conserve this forest for our future generations, so if we go into REDD+ arrangement, we are cheating ourselves.

(Participant, 24, Farmer, New Ekuri)

Participants are also happy to donate their extra income to conservation agencies (40*, +4). Consequently, they agree that deforestation levels are exaggerated because they expect more efforts on conservation by the government and NGOs (10, -1; 26*, +1). They perceive conservation as an appropriate way to live in harmony with the natural environment and not because they are afraid of arrests for violations (48, -3). This explains why they stopped patronizing products that are illegally taken from the forests (19*, +1). There is also a strong perception about connectedness to nature by these participants which is not associated with family ties (54, -4), spiritual bonds (12, -2; 28, -2), personal mood (49*, -3), place attachment (4*, -2), or their identity as forest peoples (43, -1). Rather, connectedness is strongly

associated with the forestlands and the environment (21, +4). They also consider the forests and surrounding landscapes as special so much so that they cannot substitute their communities with any other place on earth (51, +3; 9*, +3). However, participants are skeptical about supporting REDD+ activities or signing a long-term conservation agreement with the REDD+ officials (8, -1; 38*, -3). Unlike F3, these participants will continue to conserve the forests even if they do not receive any incentives (50, -1; 41, -4; 37, +2). Since incentives do not really matter, they are not worried about unfulfilled monetary promises made by government or conservation NGOs (1*, -5).

4.5. Factor 5: 'we care but pay us'

This factor has an eigenvalue of 1.58 and it explains 9% of the study variance. It has 4 significant loadings, three from Okokuri and one from New Ekuri communities. It represents a combination of perceptions about the role of incentives, place identity and concern for the welfare of future generations. Like F3, these participants will not continue with conservation if they do not receive any incentives (37*, -3). Therefore, the better the incentives, the more efforts they are willing to put towards forest conservation (50, +2). The participants said:

Previously, the government has been coming to tell us how good they would be to us if we continue with forest conservation. They promised us electricity and roads which have not been provided up till now. The agencies in Calabar collect money and sent people to come and log in the reserves without any benefits to the community. That is why I say before we continue all the incentives must be given to us first, that will encourage us to continue maintaining the forest.

(Participant 14, Community Leader, Okokuri)

Anytime I see the forest there is joy in me showing the beauty of god's creation. God decided that man is not supposed to destroy anything created by him but because man is so stubborn, we have gone contrary to god's will. So, I see the forest as part of me that was equally created by the same god.

(Participant 12, Community Elder, Okokuri)

...we used to go into the forest with a live cock, eggs, spill some blood put it there and do worship. That kind of history is very important to us. Some people who do not believe in God are still doing it up till now. That history reminds me of what happened during the times of our forefathers.

(Participant 13, Farmer, Okokuri)

These participants are not sure if they will continue conserving the forests if incentives are not provided (41*, 0). This perception is not unconnected with their previous experiences about unfulfilled promises that is why they are demanding for incentives first before they agree with any conservation initiative such as REDD+ (1*, +4). Nonetheless, they are still active in environmentalist groups (39, +3), and continue to attend public hearing or meetings about forest management (14, +3). They refused to change their lifestyle or economic practices because they have confidence in their pro-environmental behaviours (18, -1). That is why they are not bothered about scarcity of wood for construction purposes because of strict conservation laws (7, -1; 42, -3). Like F2 and F3 participants, place identity and attachment are another important motivations for forest conservation. They feel so attached to the forests to the extent that they have become a part of them (13, +2). They strongly believe that doing their activities in the communities is more important than doing them in any other place, which is an indication that the place is very special to them (3*, +4). Place attachment in this discourse do not mean that they have not got any other place to go (4, -4), linked to family ties (54, 0), friendships (52*, -2), or participation in volunteer groups (2, -1). Similarly, there is a weak evidence of

connectedness to nature in this discourse as participants are not sure if they have deep love for the forests and surroundings (11,0), or feel happier (49, 0). Instead, these participants value their forests as places of natural and human history which must be kept for the future generations (30, +5; 5, +5). As a result, they do not think that their welfare should be always prioritized over conservation (32, -1). However, there is an indication that these values do not have any religious significance (28, -5). These discourse holders do not have a deep understanding of how their activities are affecting the forests (17, -1), or a remarkable sense of equity between humans and nature (6, -1). Finally, although participants consider the forests as special places (51*, +1), they do not consider it necessary to make financial contributions to improve wildlife and forest conservation (16*, -2), or engage in reforestation programs (36, -5).

4.6. Consensus statements

Analysis of result produced only 3 consensus statements (see appendix), suggesting a general rejection of the narrative that the community forests are under threats and logging has reached an alarming proportion. This implies that the participants think that the problem of deforestation in the study areas is mostly exaggerated by the Forestry Commission to justify the implementation of the logging moratorium in preparation for REDD+ (10*, -1; -3; -2; -1; -2). There is also a consensus across all the factors regarding their confidence in community forest conservation initiatives (7*, -2; -1; -3; -2; -1). This perception is found to be positively correlated with their strong identity and attachment with the forest communities as special places (51*, +2; +2; +3; +3; +1).

5. Discussion

5.1. Livelihoods dependence

Results indicate the existence of utilitarian values of ecosystem services because the forests function as life support systems for the community members. Several studies have argued that millions of people living around tropical forests rely on timber and non-timber forest products (NTFPs) to meet basic household needs, engage in small to medium scale commercial activities, and sometimes as a buffer against livelihood emergencies (Angelsen and Wunder, 2003; Shackleton and Shackleton, 2004; Vedeld et al., 2007; Babulo et al., 2009; Timko et al., 2010; Shackleton et al., 2011; Mahapatra and Shackleton, 2012; Nerfa et al., 2020). In this study, the forest for survival discourse is the most dominant, and participants associated with the discourse have underscored the economic benefits of forests as significant motivation for their conservation activities. In Cross River State, most of the community members are engaged in subsistence farming of staple foods for daily consumption and monetary exchange. Income from NTFPs is also used by these community members for the purchase other consumer goods and services (Ezebilo and Mattsson, 2010). It was also reported that bushmeat hunting is another important economic activity that provides a good source of animal protein to forest communities to the extent that it has become a threat to species biodiversity around protected areas in Cross River State (Enuoh and Bisong, 2014). Prior to the ban on timber by the Forestry Commission in preparation for REDD+, royalties from commercial timber extraction constitute a major source of income used in funding community development projects (Oyebo et al., 2010; Amalu et al., 2016). For example, the Ekuri communities had a sustainable land use management plan that kept a section of the forests for total protection while others are used for selective logging for construction purposes. Occasionally, some timber logs are harvested and sold to fund community projects such as schools and healthcare centers under the supervision of the Ekuri Initiative NGO. This clearly indicates that local communities understand the likely negative consequences of losing forest ecosystem services benefits and are therefore motivated to

participate in conservation activities (Ite, 1996; Fonta and Ayuk, 2013). Similar results were reported by Garcia-Amado et al. (2011, 2013) indicating how local communities were motivated to conserve forest resources because of the ecosystem benefits they derive. In F1 discourse, participants are also aware of the contributions of forests to global climate change mitigation and freshwater supply beyond their local territories. Dobson (2007) identified such motivation as ‘environmental citizenship’, a contested term denoting individuals or collective efforts towards protecting the environment for global benefits. As a result, they perceive participation in the REDD+ program as a necessary step to help avert global environmental disasters. However, successive studies have shown that the state imposition of a logging ban and militarization of forest protection in Cross River State in preparation for REDD+ was threatening community rights and livelihoods (Asiyanbi, 2015; Nuesiri, 2015; Asiyanbi, 2016; Asiyanbi et al., 2017; Isyaku et al., 2017; Amuyou et al., 2021). This has generated a lot of tensions and contestations related to perceived tenure recentralization and lack of equity and justice in the distribution of costs and benefits in the REDD+ process.

5.2. Financial incentives

Recent evidence suggests that incentive payments in cash or in kind are significant motivators of community participation in PES schemes (Authalet et al., 2021; Giefer et al., 2021; Waruingi et al., 2021). In line with the arguments derived from Fisher (2012), this result also indicate the existence of “no pay no care” perception among the study participants particularly those from Kanyang II, Buanchor and Old Ekuri communities. In F3 for example, participants have indicated that the expectations of monetary incentives are strong motivators of participation in the REDD+ program. Payments are expected to serve as a compensation for their hardships and sacrifices. However, in the ‘we care but pay us’ discourse identified in this study, participants expressed their anger and frustration with the Forestry Commission for refusing to allow them to continue with their traditional sustainable forest management from which communities’ development projects are funded. This perception is so strong that participants are threatening to exploit the forests if they do not any receive any payment from the government or conservation NGOs. In some communities like Buanchor and Kanyang II, payment of monetary incentives are prerequisites to accepting the implementation of REDD+. These perceptions reflect how some participants are focusing on short term economic gains instead of maintaining their traditional conservation practices. Amuyou et al. (2021) also argued that majority of the of the REDD+ communities in Cross River State expressed preferences for financial rewards and increased access to forest resources to compensate for their forest carbon sequestration efforts and these will more likely encourage them to participate in the program. This is found to be consistent with the findings of Bremer et al. (2014), and Van Hecken and Bastiaensen (2010) that some communities involved in PES schemes in Latin America are expected to be rewarded for forest access restrictions and personal sacrifices to strengthen already existing conservation behaviours. However, despite repeated demands for monetary incentives by communities, there are documented cases of corruption and financial mismanagement of climate funds by powerful elites and some officials of national governments, thereby affecting the expected performance of the REDD+ program in many countries (Tacconi et al., 2009; Mbow et al., 2012; Sheng et al., 2016; Sundström, 2016). In Nigeria, research have found that the REDD+ benefits are significantly delayed and there are suspicions among pilot communities that the project managers of diverting funds allocated to them (Isyaku et al., 2017; Fadairo, 2018). Therefore, direct allocation of financial incentives is considered as the most preferred option by community members to earn their trusts.

5.3. Place attachment and social norms

Place attachment is a generic term that is used in many social

sciences and humanities literature to describe people-place related emotions such as place identity, sense of place, place affect, place social bonding, and place dependence (see Low and Altman, 1992; Riley, 1992; Hidalgo and Hernandez, 2001; Clayton, 2003; Williams and Vaske, 2003; Devine-Wright, 2011; Ramkissoon, 2012). These forms of place attachments are discovered to serve as significant motivators for people to engage in nature conservation or various kinds of pro-environmental behaviours. In this study, identity-related discourses are shared among the discourses indicating how they consider the forests and surroundings as special places. However, place identity motivations are strongly expressed by the forest is beautiful discourse holders from Okokuri and Old Ekuri communities. In this study, place identity is related to the visual aesthetics of the forests as tourist attraction sites which is why they cannot substitute it with any other place on earth. Such identity is also associated with the feeling of affect or connectedness to the forest environment so much so that participants are not willing to live anywhere else even in the face of deteriorating economic circumstances. Sometimes the aesthetic characteristics of the forest landscape is attributed to childhood memories of the participants from which they derive joyful feelings. Chawla (2007), Fisher (2012), Lin and Lockwood (2014) also reported that beauty of the environment and memories of childhood experiences in forest landscapes have positive influence on people’s commitment to biodiversity conservation. This form of place identity underscores the significance of Cross River State as a popular biodiversity and ecotourism destination in Nigeria and communities are usually excited to showcase their socio-cultural heritage during annual cultural festivals (Ajake, 2016; Akpan and Obang, 2012; Amalu et al., 2020). In many other countries, similar studies indicated direct causal relationships between place identities, nature connectedness, recreational activities, and people commitment towards environmentally responsible behaviours (Saito, 2002; Carlson, 2010; Lee, 2011; Kie-ninger et al., 2013; Lee and Lee, 2017).

In the F4 discourse however, place-based motivation is expressed through social bonding because participants feel connected to the social relationships with other conservation volunteers. Sometimes, these social ties are derived from associating with other community members during conservation related meetings and activities in the forests. Result supports the assertion that places can provide contexts for attachments due to formal and informal socio-cultural associations rooted in friendships and kinship networks (Kasarda and Janowitz, 1974; Low and Altman, 1992). In the F3 and F4 discourses, social bonding is extended to family members by seeking to pass such cultural heritage to the future generations even at the expense of present welfare needs. Similar findings in Australia show that affective connections between people and family members living around forest protected areas was encouraging communities to maintain their conservation culture and pass them across to future generations (Lin and Lockwood, 2014; Ramkissoon et al., 2013).

6. Conclusion

Motivation for environmental protection is a contemporary topic in the PES literature, and variety of approaches have been used to examine how monetary and non-monetary incentives have influenced peoples’ pro-environmental behaviours under experimental and empirical settings. In the context of REDD+ policy process in Cross, River State, Nigeria, this study utilized Q methodology to explore local communities’ perceptions of forest values and motivations for forest conservation. Results show that motivations are complex, and they transcend the desire for monetary incentives to include intrinsic motivations that are rooted in place identities, nature connectedness, social norms, and the need to sustain community livelihoods. This is in sharp contrast to popular market environmentalism discourses championed by the REDD+ proponents which portrays communities as harbingers of values and practices that are usually detrimental to forest conservation which should be modified using monetary incentives. I argue that participants’

willingness to maintain traditional conservation culture or to participate in REDD+ is to a large extent determined by their perceptions of forest values and these are not entirely based on monetary incentives. Nonetheless, there is a clear indication that market environmentalism discourses about carbon credits and payments for previous conservation efforts by the REDD+ proponents have raised communities' expectations in the study areas. Evidence has shown that most of these expectations are hardly met which eventually pose serious threats to the success of forest governance projects since the subjectivities of community groups are not considered in the design processes (Gilani et al., 2017; Massarella et al., 2018). Bluffstone et al. (2013) has already cautioned that implementing REDD+ in community-controlled forests in low-income countries is problematic because it could destabilize well-functioning governance systems. In Cross River State, previous studies highlighted the complexities of REDD+ and the challenges of implementation because the legal and institutional arrangements do not include the demands of all stakeholder groups (Asiyanbi, 2016; Isyaku et al., 2017; Asiyanbi et al., 2019). Such situation emanates because there are no conscious efforts by project proponents to recognize diverse community values and motivations for forest conservation. While some are interested in participating in REDD+ in expectation of carbon money or for improved forest conservation, others are skeptical because it interferes with their livelihoods or decades-long traditional practices. Divergent and often conflicting motivations for participation in community-based conservation exposes the overly simplistic assumption about communities as social units that share similar interests and norms. This is found to mask complexities embedded in spatial and temporal differentiations in communities' internal and external relationships with variety of actors and their interests (Agrawal and Gibson, 1999; Berkes, 2004). Cleaver (1999, 2017) opined that community participation in resources governance is a paradox because the idea of a community as an entity with uniform decision making institutions, common power structures and cultural practices, and sufficient knowledge to make informed decisions is a myth. This makes resources management interventions very difficult to implement in different socio-cultural contexts. Paying attention to the complexities of communities and place-specific peculiarities will help policy makers to achieve more inclusive and participatory REDD+ governance.

Declaration of Competing Interest

I declare no conflict of interest in this research.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.forpol.2021.102598>.

References

- Abua, S., Spencer, R., Spencer, D., 2013. Design and outcomes of community forest conservation initiatives in Cross River State of Nigeria: a foundation for REDD+. In: *Conservation Biology: Voices from the Tropics*. Wiley-Blackwell.
- Adams, M.A., Kayira, J., Gruber, J.S., Idemudia, U., Tegegne, Y.T., Nantogmah Attah, A., Ansong, M., 2021. Good governance practices in Ghana's FLEGT voluntary partnership agreement process: an application of Q methodology. *J. Environ. Policy Plan.* 23 (1), 1–15.
- Agrawal, A., Gibson, C.C., 1999. Enchantment and disenchantment: the role of community in natural resource conservation. *World Dev.* 27 (4), 629–649.
- Ajake, A.O., 2016. Tourism marketing strategies performance: evidence from the development of peripheral areas in Cross River State, Nigeria. *GeoJournal* 81 (4), 641–656.
- Akpan, E.I., Obang, C.E., 2012. Tourism: a strategy for sustainable economic development in Cross River State, Nigeria. *Int. J. Bus. Soc. Sci.* 3 (5).
- Amalu, T.E., Ajake, A.O., Obi, P.O., 2016. Impact of royalties from forest resources on community development in Boki Local Government in Cross River state, Nigeria. *GeoJournal* 81 (3), 475–487.
- Amalu, T., Oko, U., Igwe, I., Ehugbo, U., Okeh, B., Duluora, E., 2020. Tourism industry effects on socio-cultural activities of host communities: evidence from Cross River State, Nigeria. *GeoJournal* 1–13.
- Amuyou, U.A., Yi, W., Bisong, F., Antonarakis, A.S., 2021. Livelihood impacts of forest carbon protection in the context of Redd+ in Cross River State, Southeast Nigeria. *Sustainability* 13 (9), 5081.
- Angelsen, A. (Ed.), 2008. *Moving Ahead with REDD: Issues, Options, and Implications*. Cifor.
- Angelsen, A. (Ed.), 2009. *Realising REDD+: National Strategy and Policy Options*. Cifor.
- Angelsen, A., Wunder, S., 2003. Exploring the forest-poverty link. In: *CIFOR Occasional Paper*, Vol. 40, pp. 1–20.
- Asiyanbi, A., 2015. Mind the gap: global truths, local complexities in emergent green initiatives. In: *The International Handbook of Political Ecology*. Edward Elgar Publishing.
- Asiyanbi, A.P., 2016. A political ecology of REDD+: property rights, militarised protectionism, and carbonised exclusion in Cross River. *Geoforum* 77, 146–156.
- Asiyanbi, A.P., 2018. Financialisation in the green economy: material connections, markets-in-the-making and Foucauldian organising actions. *Environ. Plann. A. Econ. Space* 50 (3), 531–548.
- Asiyanbi, A.P., Arhin, A.A., Isyaku, U., 2017. REDD+ in West Africa: politics of design and implementation in Ghana and Nigeria. *Forests* 8 (3), 78.
- Asiyanbi, A.P., Ogar, E., Akintoye, O.A., 2019. Complexities and surprises in local resistance to neoliberal conservation: multiple environmentalities, technologies of the self and the poststructural geography of local engagement with REDD+. *Polit. Geogr.* 69, 128–138.
- Athelet, M., Subervie, J., Meyfroidt, P., Asquith, N., Ezzine-de-Blas, D., 2021. Economic, pro-social and pro-environmental factors influencing participation in an incentive-based conservation program in Bolivia. *World Dev.* 145, 105487.
- Babulo, B., Muys, B., Nega, F., Tollens, E., Nyssen, J., Deckers, J., Mathijs, E., 2009. The economic contribution of forest resource use to rural livelihoods in Tigray, Northern Ethiopia. *Forest Policy Econ.* 11 (2), 109–117.
- Barry, J., Proops, J., 1999. Seeking sustainability discourses with Q methodology. *Ecol. Econ.* 28 (3), 337–345.
- Berkes, F., 2004. Rethinking community-based conservation. *Conserv. Biol.* 18 (3), 621–630.
- Bluffstone, R., Robinson, E., Guthiga, P., 2013. REDD+ and community-controlled forests in low-income countries: any hope for a linkage? *Ecol. Econ.* 87, 43–52.
- Bose, A., Garcia, C., Vira, B., 2019. Mottled motivations and narrow incentives: exploring limitations of direct incentive policies in the Western Ghats, India. *Ecol. Econ.* 156, 511–518.
- Bremer, L.L., Farley, K.A., Lopez-Carr, D., 2014. What factors influence participation in payment for ecosystem services programs? An evaluation of Ecuador's SocioPáramo program. *Land Use Policy* 36, 122–133.
- Brown, S.R., 1980. *Political Subjectivity: Applications of Q Methodology in Political Science*. Yale University Press.
- Brown, S.R., Danielson, S., van Exel, J., 2015. Overly ambitious critics and the Medici effect: a reply to Kampen and Tamás. *Qual. Quant.* 49 (2), 523–537.
- Carlson, A., 2010. Contemporary environmental aesthetics and the requirements of environmentalism. *Environ. Values* 19 (3), 289–314.
- Chawla, L., 2007. Childhood experiences associated with care for the natural world: a theoretical framework for empirical results. *Child. Youth Environ.* 17 (4), 144–170.
- Chervier, C., Le Velly, G., Ezzine-de-Blas, D., 2019. When the implementation of payments for biodiversity conservation leads to motivation crowding-out: a case study from the Cardamoms forests, Cambodia. *Ecol. Econ.* 156, 499–510.
- Clayton, L.W., 2003. *Identity and the Natural Environment: The Psychological Significance of Nature*. Mit Press.
- Cleaver, F., 1999. Paradoxes of participation: questioning participatory approaches to development. *J. Int. Dev.* 11 (4), 597–612.
- Cleaver, F., 2017. *Development through Bricolage: Rethinking Institutions for Natural Resource Management*. Routledge.
- Danbury, T., 1985. An original in-depth segmentation study of the market research industry. *Operant Subjectivity* 8 (4), 113–122.
- Dasgupta, P., Vira, B., 2005. Q methodology for mapping stakeholder perceptions in participatory forest management. In: *Institute of Economic Growth Working Paper Series No. E/264/2005*. Institute of Economic Growth, New Delhi.
- Dawson, N.M., Mason, M., Fisher, J.A., Mwayafu, D.M., Dhungana, H., Schroeder, H., Zeitoun, M., 2018. Norm entrepreneurs sidestep REDD+ in pursuit of just and sustainable forest governance. *Sustainability* 10 (6), 1726.
- Devine-Wright, P., 2011. Place attachment and public acceptance of renewable energy: a tidal energy case study. *J. Environ. Psychol.* 31 (4), 336–343.
- Dobson, A., 2007. Environmental citizenship: towards sustainable development. *Sustain. Dev.* 15 (5), 276–285.
- Dokken, T., Caplow, S., Angelsen, A., Sunderlin, W.D., 2014. Tenure issues in REDD+ pilot project sites in Tanzania. *Forests* 5 (2), 234–255.
- Dryzek, J.S., Niemeyer, S., 2008. Discursive representation. *Am. Polit. Sci. Rev.* 102 (4), 481–493.

- Dunlap, R.E.V.L., Liere, K.V., Mertig, A., Jones, R.E., 2000. Measuring endorsement of the new ecological paradigm: a revised NEP scale. *J. Soc. Issues* 56 (3), 425–442.
- Dutcher, D.D., Finley, J.C., Luloff, A.E., Johnson, J.B., 2007. Connectivity with nature as a measure of environmental values. *Environ. Behav.* 39 (4), 474–493.
- Dziopa, F., Ahern, K., 2011. A systematic literature review of the applications of Q-technique and its methodology. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences* 7 (2), 39–55.
- Eliasch, J., 2008. *The Eliasch Review—Climate Change: Financing Global Forests*. UK Office of Climate Change. www.occ.gov.uk/activities/eliasch.htm (25 Nov. 2008).
- Enuoh, O.O., Bisong, F.E., 2014. Rural livelihoods vulnerabilities and commercial bushmeat hunting challenges in Cross River National Park, Nigeria. *Nat. Res. Forum* 5 (13), 822.
- Ezebilio, E.E., Mattsson, L., 2010. Contribution of non-timber forest products to livelihoods of communities in Southeast Nigeria. *Int. J. Sustain. Dev. World Ecol.* 17 (3), 231–235.
- Fadairo, O.S., 2018. Corruption and the imbalance in climate finance flows in Sub Sahara Africa: the case of cross river, Nigeria and lessons for social science researchers. *Tackl. Sustain. Dev. Afr. Asia Perspect. Next Gener.* 47.
- Fisher, J., 2012. No pay, no care? A case study exploring motivations for participation in payments for ecosystem services in Uganda. *Oryx* 46 (1), 45–54.
- Fonta, W.M., Ayuk, E.T., 2013. Measuring the role of forest income in mitigating poverty and inequality: evidence from South-Eastern Nigeria. *Forests Trees Livelihoods* 22 (2), 86–105.
- Ford, R.M., Williams, K.J., Smith, E.L., Bishop, I.D., 2014. Beauty, belief, and trust: toward a model of psychological processes in public acceptance of forest management. *Environ. Behav.* 46 (4), 476–506.
- Gallagher, K., Porock, D., 2010. The use of interviews in Q methodology: card content analysis. *Nurs. Res.* 59 (4), 295–300.
- García-Amado, L.R., Pérez, M.R., Escutia, F.R., García, S.B., Mejía, E.C., 2011. Efficiency of payments for environmental services: equity and additionality in a case study from a biosphere reserve in Chiapas, Mexico. *Ecol. Econ.* 70 (12), 2361–2368.
- García-Amado, L.R., Pérez, M.R., García, S.B., 2013. Motivation for conservation: assessing integrated conservation and development projects and payments for environmental services in La Sepultura Biosphere Reserve, Chiapas, Mexico. *Ecol. Econ.* 89, 92–100.
- Giefer, M.M., An, L., Chen, X., 2021. Normative, livelihood, and demographic influences on enrollment in a payment for ecosystem services program. *Land Use Policy* 108, 105525.
- Gilani, H.R., Yoshida, T., Innes, J.L., 2017. A collaborative forest management user group's perceptions and expectations on REDD+ in Nepal. *Forest Policy Econ.* 80, 27–33.
- Grillos, T., Bottazzi, P., Crespo, D., Asquith, N., Jones, J.P., 2019. In-kind conservation payments crowd in environmental values and increase support for government intervention: a randomized trial in Bolivia. *Ecol. Econ.* 166, 106404.
- Gupta, J., 2012. Global forest and REDD+ governance: win-win or lose-lose? *Curr. Opin. Environ. Sustain.* 4 (6), 620–627.
- Hajjar, R., 2015. Advancing small-scale forestry under FLEGT and REDD in Ghana. *Forest Policy Econ.* 58, 12–20.
- Handberg, Ø.N., Angelsen, A., 2019. Pay little, get little; pay more, get a little more: A framed forest experiment in Tanzania. *Ecol. Econ.* 156, 454–467.
- Hidalgo, M.C., Hernandez, B., 2001. Place attachment: conceptual and empirical questions. *J. Environ. Psychol.* 21 (3), 273–281.
- Holmes, I., Potvin, C., Coomes, O.T., 2017. Early REDD+ implementation: the journey of an indigenous community in Eastern Panama. *Forests* 8 (3), 67.
- Hugé, J., Velde, K.V., Benitez-Capistros, F., Japay, J.H., Satyanarayana, B., Ishak, M.N., Dahdouh-Guebaf, F., 2016. Mapping discourses using Q methodology in Matang mangrove forest, Malaysia. *J. Environ. Manag.* 183, 988–997.
- Isyaku, U., 2017. *Beyond Policy Design: REDD+ Implementation and Institutional Complexities of Environmental Governance in Cross River State, Nigeria*. Doctoral dissertation. University of Leicester.
- Isyaku, U., Arhin, A.A., Asiyambi, A.P., 2017. Framing justice in REDD+ governance: centring transparency, equity, and legitimacy in readiness implementation in West Africa. *Environ. Conserv.* 44 (3), 212.
- Ite, U.E., 1996. Community perceptions of the Cross River national park, Nigeria. *Environ. Conserv.* 23 (4), 351–357.
- Kaczan, D.J., Swallow, B.M., 2019. Forest conservation policy and motivational crowding: experimental evidence from Tanzania. *Ecol. Econ.* 156, 444–453.
- Kampen, J.K., Tamás, P., 2014. Overly ambitious: contributions and current status of Q methodology. *Qual. Quant.* 48 (6), 3109–3126.
- Karsenty, A., Ongolo, S., 2012. Can “fragile states” decide to reduce their deforestation? The inappropriate use of the theory of incentives with respect to the REDD mechanism. *Forest Policy Econ.* 18, 38–45.
- Kasarda, J.D., Janowitz, M., 1974. Community attachment in mass society. *Am. Sociol. Rev.* 328–339.
- Kieninger, P.R., Penker, M., Yamaji, E., 2013. Esthetic and spiritual values motivating collective action for the conservation of cultural landscape—a case study of rice terraces in Japan. *Renew. Agric. Food Syst.* 28 (4), 364–379.
- Kits, G.J., Adamowicz, W.L., Boxall, P.C., 2014. Do conservation auctions crowd out voluntary environmentally friendly activities? *Ecol. Econ.* 105, 118–123.
- Langston, J.D., McIntyre, R., Falconer, K., Sunderland, T., Van Noordwijk, M., Boedihartono, A.K., 2019. Discourses mapped by Q-method show governance constraints motivate landscape approaches in Indonesia. *PLoS One* 14 (1), e0211221.
- Lansing, D.M., 2013. Not all baselines are created equal: AQ methodology analysis of stakeholder perspectives of additionality in a carbon forestry offset project in Costa Rica. *Glob. Environ. Chang.* 23 (3), 654–663.
- Lee, T.H., 2011. How recreation involvement, place attachment and conservation commitment affect environmentally responsible behavior. *J. Sustain. Tour.* 19 (7), 895–915.
- Lee, D., Lee, J.H., 2017. A structural relationship between place attachment and intention to conserve landscapes—a case study of Harz National Park in Germany. *J. Mt. Sci.* 14 (5), 998–1007.
- Lin, C.C., Lockwood, M., 2014. Forms and sources of place attachment: evidence from two protected areas. *Geoforum* 53, 74–81.
- Loevinger, J., 1965. Person and population as psychometric concepts. *Psychol. Rev.* 72 (2), 143.
- Lofland, J., Snow, D.A., Anderson, L., Lofland, L.H., 2006. *Analyzing social settings: a guide to qualitative. In: Observation and Analysis*. Wadsworth/Thomson Learning, Belmont, CA.
- Low, S.M., Altman, I., 1992. *Place Attachment*. Springer, Boston, MA, pp. 1–12.
- Mahapatra, A.K., Shackleton, C.M., 2012. Exploring the relationships between trade in natural products, cash income and livelihoods in tropical forest regions of Eastern India. *Int. For. Rev.* 14 (1), 62–73.
- Martin, A., Blowers, A., Boersema, J., 2008. Paying for environmental services: can we afford to lose a cultural basis for conservation? *Environ. Sci. J. Integr. Environ. Res.* 5 (1), 1–5.
- Massarella, K., Sallu, S.M., Ensor, J.E., Marchant, R., 2018. REDD+, hype and disappointment: the dynamics of expectations in conservation and development pilot projects. *World Dev.* 109, 375–385.
- Mauldin, C.R., 1990. A segmentation study of attitudes about advertising. *Operant Subjectivity* 14 (1), 20–33.
- Mayer, F.S., Frantz, C.M., 2004. The connectedness to nature scale: a measure of individuals' feeling in community with nature. *J. Environ. Psychol.* 24 (4), 503–515.
- Mbow, C., Skole, D., Dieng, M., Justice, C., Kwesha, D., Mane, L., Virji, H., 2012. Challenges and prospects for REDD+ in Africa: desk review of REDD+ implementation in Africa. *Global Land Project Rep.* 5.
- McKeown, B.F., Thomas, D.B., 1988. *Q Methodology (Quantitative Applications in the Social Sciences Series)*, Vol. 66. Sage, Thousand Oaks, CA.
- Moros, L., Vélez, M.A., Corbera, E., 2019. Payments for ecosystem services and motivational crowding in Colombia's Amazon Piedmont. *Ecol. Econ.* 156, 468–488.
- Narloch, U., Pascual, U., Drucker, A.G., 2012. Collective action dynamics under external rewards: experimental insights from Andean farming communities. *World Dev.* 40, 2096–2107.
- Neeff, T., Göhler, D., Ascuí, F., 2014. Finding a path for REDD+ between ODA and the CDM. *Clim. Pol.* 14 (2), 149–166.
- Nerfa, L., Rhemtulla, J.M., Zerriffi, H., 2020. Forest dependence is more than forest income: development of a new index of forest product collection and livelihood resources. *World Dev.* 125, 104689.
- Neuteleers, S., Engelen, B., 2015. Talking money: how market-based valuation can undermine environmental protection. *Ecol. Econ.* 117, 253–260.
- Nhem, S., Lee, Y.J., 2019. Using Q methodology to investigate the views of local experts on the sustainability of community-based forestry in Oddar Meanchey province, Cambodia. *Forest Policy Econ.* 106, 101961.
- Nuesiri, E.O., 2015. Representation in REDD: NGOs and Chiefs Privileged Over Elected Local Government in Cross River State, Nigeria.
- Nuesiri, E.O., 2016. Local government authority and representation in REDD+: a case study from Nigeria. *Int. For. Rev.* 18 (3), 306–318.
- Nuesiri, E.O., 2017. Feigning democracy: performing representation in the UN-REDD funded Nigeria-REDD programme. *Conserv. Soc.* 15 (4), 384–399.
- Oyebo, M., Bisong, F., Morakinyo, T., 2010. A Preliminary Assessment of the Context for REDD in Nigeria. Federal Ministry of Environment, the Cross River State's Forestry Commission and UNDP Nigeria, Nigeria.
- Pan, Y., Birdsey, R.A., Fang, J., Houghton, R., Kauppi, P.E., Kurz, W.A., Hayes, D., 2011. A large and persistent carbon sink in the world's forests. *Science* 333 (6045), 988–993.
- Paudel, N.S., Vedeld, P.O., 2015. Prospects and challenges of tenure and forest governance reform in the context of REDD+ initiatives in Nepal. *Forest Policy Econ.* 52, 1–8.
- Perkins, H.E., 2010. Measuring love and care for nature. *J. Environ. Psychol.* 30 (4), 455–463.
- Phelps, J., Friess, D.A., Webb, E.L., 2012. Win-win REDD+ approaches belie carbon-biodiversity trade-offs. *Biol. Conserv.* 154, 53–60.
- Ramkisson, H., 2012. *Place Attachment, Place Satisfaction and pro-Environmental Behaviour: A Case Study of the Dandenong Ranges National Park*. Doctoral dissertation. Monash University.
- Ramkisson, H., Smith, L.D.G., Weiler, B., 2013. Relationships between place attachment, place satisfaction and pro-environmental behaviour in an Australian national park. *J. Sustain. Tour.* 21 (3), 434–457.
- Raymond, C.M., Brown, G., Weber, D., 2010. The measurement of place attachment: personal, community, and environmental connections. *J. Environ. Psychol.* 30 (4), 422–434.
- Riley, R.B., 1992. *Attachment to the ordinary landscape*. In: *Place Attachment*. Springer, Boston, MA, pp. 13–35.
- Robbins, P., Krueger, R., 2000. Beyond bias? The promise and limits of Q method in human geography. *Prof. Geogr.* 52 (4), 636–648.
- R-PP, 2013. *REDD+ Readiness Preparation Proposal (R-PP) of the Federal Republic of Nigeria [Www Document]*. URL: <https://www.forestcarbonpartnership.org/nigeria>.
- Ruddell, S., Sampson, R., Smith, M., Giffen, R., Cathcart, J., Hagan, J., Simpson, R., 2007. The role for sustainably managed forests in climate change mitigation. *J. For.* 105 (6), 314–319.

- Saito, Y., 2002. Scenic national landscapes: common themes in Japan and the United States. *Essays Philos.* 3 (1), 1–21.
- Saldana, J., 2014. Coding and analysis strategies. In: *The Oxford Handbook of Qualitative Research*.
- Shackleton, C., Shackleton, S., 2004. The importance of non-timber forest products in rural livelihood security and as safety nets: a review of evidence from South Africa. *S. Afr. J. Sci.* 100 (11), 658–664.
- Shackleton, C., Shackleton, S., Shanley, P., 2011. Building a holistic picture: an integrative analysis of current and future prospects for non-timber forest products in a changing world. In: *Non-Timber Forest Products in the Global Context*. Springer, Berlin, Heidelberg, pp. 255–280.
- Sheng, J., Han, X., Zhou, H., Miao, Z., 2016. Effects of corruption on performance: evidence from the UN-REDD Programme. *Land Use Policy* 59, 344–350.
- Steelman, T.A., Maguire, L.A., 1999. Understanding participant perspectives: Q-methodology in national forest management. *Journal of Policy Analysis and Management: The Journal of the Association for Public Policy Analysis and Management* 18 (3), 361–388.
- Stephenson, W., 1953. *The Study of Human Behavior*. University of Chicago, Chicago.
- Stern, N., 2006. *Stern Review: The Economics of Climate Change*.
- Stern, N., Stern, N.H., 2007. *The Economics of Climate Change: The Stern Review*. Cambridge University Press.
- Sundström, A., 2016. Understanding illegality and corruption in forest governance. *J. Environ. Manag.* 181, 779–790.
- Tacconi, L., Downs, F., Larmour, P., 2009. Anti-corruption policies in the forest sector and REDD+. In: *Realising REDD+: National Strategy and Policy Options*, pp. 163–174.
- Timko, J.A., Waeber, P.O., Kozak, R.A., 2010. The socio-economic contribution of non-timber forest products to rural livelihoods in Sub-Saharan Africa: knowledge gaps and new directions. *Int. For. Rev.* 12 (3), 284–294.
- Trædal, L.T., Vedeld, P.O., 2017. Livelihoods and land uses in environmental policy approaches: the case of PES and REDD+ in the Lam Dong province of Vietnam. *Forests* 8 (2), 39.
- United Nations Development Program, 2012. *Ekuri Initiative, Nigeria. Equator Initiative. Case Study Series*. UNDP, New York.
- Van Exel, J., De Graaf, G., 2005. *Q Methodology: A Sneak Preview*.
- Van Hecken, G., Bastiaensen, J., 2010. Payments for ecosystem services in Nicaragua: do market-based approaches work? *Dev. Chang.* 41 (3), 421–444.
- Van Hecken, G., Merlet, Pierre, Lindtner, Mara, Bastiaensen, Johan, 2019. Can financial incentives change farmers' motivations? An agrarian system approach to development pathways at the Nicaraguan agricultural frontier. *Ecol. Econ.* 156, 519–529.
- Vedeld, P., Angelsen, A., Bojô, J., Sjaastad, E., Berg, G.K., 2007. Forest environmental incomes and the rural poor. *Forest Policy Econ.* 9 (7), 869–879.
- Waruingi, E., Mbeche, R., Ateka, J., 2021. Determinants of forest dependent household's participation in payment for ecosystem services: Evidence from Plantation Establishment Livelihood Improvement Scheme (PELIS) in Kenya. *Glob. Ecol. Conserv.* 26, e01514.
- Watts, S., Stenner, P., 2005. Doing Q methodology: theory, method and interpretation. *Qual. Res. Psychol.* 2, 67–91.
- Watts, S., Stenner, P., 2012. *Doing Q Methodological Research: Theory, Method & Interpretation*. Sage.
- Weber, T., Danielson, S., Tuler, S., 2009. Using Q method to Reveal Social Perspectives in Environmental Research, 54. *Social and Environmental Research Institute, Greenfield, MA*, pp. 1–45.
- Williams, D.R., Roggenbuck, J.W., 1989. Measuring place attachment: some preliminary results. In: *NRPA Symposium on Leisure Research, San Antonio, TX, Vol. 9*.
- Williams, Daniel R., Vaske, Jerry J., 2003. The measurement of place attachment: validity and generalizability of a psychometric approach. *For. Sci.* 49 (6), 830–840.
- Zabala, A., Pascual, U., García-Barrios, L., 2017. Payments for pioneers? Revisiting the role of external rewards for sustainable innovation under heterogeneous motivations. *Ecol. Econ.* 135, 234–245.
- Zabala, A., Sandbrook, C., Mukherjee, N., 2018. When and how to use Q methodology to understand perspectives in conservation research. *Conserv. Biol.* 32 (5), 1185–1194.