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Faith Communities and Environmental Degradation in Northeast Nigeria

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Abstract: Few empirical studies have examined understandings of environmental change within faith communities. This is the case even in regions suffering severely from environmental change like Northeast Nigeria. In highly religious societies such as Nigeria, an appreciation of perceptions and modes of adaptation to change within faith communities is crucial to both understanding the religion-environment connection and as a basis to generate ideas for mitigating environmental degradation. Leaders of Christian and Muslim congregations in Northeast Nigeria were interviewed to explore their interpretations of how faith communities understand environmental change and degradation. Analysis of the interviews reveals that participants offer a wide range of understandings around environmental change. While some attribute change to human activities, others interpret it as 'natural' occurrence or outcome, defining it either as God's way of punishing humans for their wrong deeds or as a fulfilment of 'end times' prophecies. Ways of responding to environmental change within these faith communities are found to range from religious rituals such as special prayers, to active management practices such as tree planting. Our findings suggest that religion plays a more important role in shaping views on problems in 'Sufi' Muslim communities than in Christian and 'Salafi' Muslim communities. The implications of these findings for future research and policy are discussed.

Key words: Faith communities, environmental change, religion, Northeast Nigeria

Introduction

Many observers have criticised the global political response to environmental change, which largely seeks to institutionalise scientific solutions to contemporary environmental problems (e.g. Fromming and Reichel 2012; Gerten 2010; Moore and Nelson 2010). These authors argue that scientific approaches tend to undermine the role of cultural and social forces that shape perception and adaptation to environmental change within societies and can alienate peoples who are most vulnerable to climatic and environmental change. This paper contributes to this debate through a sociological analysis of the role of religion on discussions of environmental degradation, drawing on empirical work conducted in Nigeria.

In many societies across the world, religion provides an important lens for understanding human worldviews, attitudes and behaviour regarding major issues such as social and environmental change (Kaplan 2010; Wardekker, Petersen, and van der Sluijs 2009; Guth et al. 1995). This is so because a majority of people of the world identify with one form of religious tradition or another (Bergmann 2009; Hitzhusen and Tucker 2013) and religious beliefs and perspectives on the natural world continue to influence peoples action and their relationship with the natural environment (Jenkins 2009). Religious beliefs and practices are currently understood to influence people's environmental worldviews and perception of environmental problems in either 'positive' or 'negative' ways (Gerten and Bergmann 2012). On the one hand religion remains a vital resource in fostering environmentally responsible behaviour (Gottlieb 2006; Kanagy and Willits 1993; Woodrum and Wolkomir 1997) and different religiously-inspired environmental movements are gaining footholds across the contemporary world. On the other hand religious worldviews in some communities significantly shape people's perception of environmental problems in ways that suggest fatalism - interpreting environmental problems as 'God-given' - and underscores the prime responsibility of humans in mitigating those problems (Gerten 2010; Gerten and Bergmann 2012). Studies of local knowledge about environmental problems and risks (eg Gardner 2003; Burchell 1998) have generated divergent theories about peoples' understanding of, and modes of adaptation to, environmental change. This diversity of views has generated contestations over the role of religion in global environmental change.

Research studies in different parts of the world have examined how faith communities perceive and adapt to environmental problems such as climate change and global warming, drought and famine, desertification, flooding and so on, reporting a variety of findings. Some studies (Moore and Nelson 2010; Wilkinson 2010) have documented evidence of the attribution of anthropogenic causes to environmental problems, acknowledgement of negative consequences and a moral conviction to mitigate those problems among the 'mainstream' Protestant Churches in the US. Other studies (Djupe and Hunt 2009; Keans 1996) have found that many faith communities not only accept the moral responsibility to combat environmental change but have also institutionalised commitments and developed new theologies to promote environmental sustainability. For instance, Hart (2006) has investigated the 'reformation' of environmental thought within the Catholic Church which emphasises moral narratives that support environmental concern. Roman Catholic environmental theology, according to Hart, also stresses the belief that environmental degradation stems from anthropocentrism which the Church describes as essentially 'unbiblical'. Other studies (Guth et al. 1995) have found that some Protestant denominations, more conservative in worldview than mainstream Protestant communities, are more likely to reject environmental change as a problem. Despite an official proclamation of environmental concern

by the Evangelical Church (see Evangelical Climate Initiative 2006), Smith and Leiserowitz (2013) found evidence of scepticism and disbelief about environmental matters such as global warming among both American Evangelicals and non-Evangelicals. Yet others (Simkins 2008) have noted that 'end times' theologies remain popular among many American religious fundamentalists who view contemporary environmental problems as 'signs' of 'end times'. These studies point to some major differences in understandings of environmental change among different Christian groups.

In a similar vein, studies that have discussed perspectives on environmental problems from the Islamic world have also produced a mixture of findings. Some scholars (Foltz 2006; Nasr 2003) have argued that although principles to support nature conservation and stewardship are evident in Islamic scriptures, there is little evidence of strong environmentalism in most of contemporary Muslim communities across the world. However, there is what one observer describes as 'awakening amongst Muslims to the realities of environmental change (Khalid 2002:338) around the Muslim world, for example, one response has been the reintroduction of Islamic environmental ethics to current discussions. Discourse on environmental change in the Islamic world is said by some to be dominated by debates on 'predestination' and 'human free will' (Ammar 2004). In this worldview, Muslims who interpret environmental problems as the 'will of God' may see no point in striving to mitigate them. However, there are other Muslim communities who see environmental crisis as an outcome of human free will to manipulate nature in ways that are not predestined and see a connection between human behaviour and environmental problems. These 'Muslim environmentalists' (Foltz 2006) believe that Muslims also share the blame for ecological crisis by embracing the culture of greed, disrespect for nature and injustice. Like some Christian environmentalists, they accept scientific perspectives on environmental degradation and are making renewed efforts to revive the practice of Islamic environmental principles. Some scholars (Nasr 2003) have also noted a general lack of awareness of the seriousness of ecological problems, as well as lack of will to work towards arresting them, within some Muslim communities.

Empirical studies undertaken in different parts of the Islamic world reflect the divergent positions described above. For instance, Paradise (2005) and Hutton and Haque (2003) have examined peoples' perceptions of ecological problems in Morocco and Bangladesh respectively. Both studies found evidence of deep belief in predestination, a perceived lack of control and even a fatalism among research participants. Their findings support earlier research by Lindskog and Tengberg (1994) who found that although indigenous people's knowledge of the physical reality of land degradation in Burkina Faso corresponded with scientific knowledge of the phenomenon, the local people's perspective on causes of land degradation differed. Lindskog and Tengberg reported that peasants in Burkina Faso 'ascribed the causes of land degradation to Allah or did not know' (ibid.,370). The authors further observed that a traditional explanation for causes of land degradation, drought and famine is that 'it is God's punishment of humanity because of man's lax morals and evil behaviour' (ibid.,373). The local people regarded 'God, Allah, as the only dynamic force who exerts influence on all components, such as man, nature and the process of land degradation' (ibid.,374). By implication, this view prevents the indigenous people from perceiving themselves as actors in the ecosystem, a stance that may negatively affect their behaviour towards land resources. A study from Nigeria, 'Nigeria Talks Climate' (BBC, 2010) validates this finding of attributing environmental changes to transcendental causes. The study found that people's perception of changes in the natural environment is mainly influenced by religious beliefs. The study indicated that while it is common knowledge among many Nigerians that human actions are having adverse effects on the environment, people viewed environmental change as the 'will of God'. According to this study, participants believed adverse environmental changes could be mitigated through prayers and religious rituals. However, the research also found 'a close connection between faith and environmental stewardship'. Religious leaders who participated in the research study stressed the duty on humans to protect the environment. Indeed, other studies have found the clergy and religious leadership to be particularly influential in shaping the environmental worldviews of their congregations (Djupe and Hunt 2009; Simkins 2008). The centrality of the clergy to environmental discourses became, therefore, the focus of our analysis in this paper. Our study sought to understand the views of the clergy and leaders of faith communities on environmental change in a case study region of Nigeria. We aim to extend the discussion on the role of religion in environmental change by adding to current understandings of views on environmental problems, found within faith communities in a region that has not been sufficiently studied.

The complex nature of the religion-environment connection calls for comparative, cross-cultural, and cross-national studies to understand the varieties of religious environmental narratives that are circulating. At present, few empirical studies have been completed that examine the religion-environment nexus in non-western societies, especially those of Africa (Rice 2006) and who are particularly vulnerable to environmental change (see UNFCCC 2007). Findings from research conducted in America and Western Europe are not necessarily transferable to societies with such different socio-economic conditions. Moreover, the disparity in perception of environmental risks between high-income and low-income countries (Leiserowitz 2008) makes researching environmental perspectives of local populations in developing societies crucial. Compared to other regions of the country, Northeast Nigeria provided an interesting case for analysis for a number of reasons. First, the region

suffers from severe environmental degradation in the form of rapid desertification, encroaching at rate of 0.6 km/year (Federal Government of Nigeria 2010); excessive deforestation, estimated at 0.4% reduction per year (Maplecroft 2011); severe erosion, seasonal flash floods, garbage accumulation in urban centres and so on. Second, the region is is inhabited by vulnerable populations whose livelihood depends directly on the quality of the environment. According to the National Bureau of Statistics of Nigeria (2012) 69% of the people of Northeast Nigeria live in "conditions of absolute poverty", while 76.3% live in conditions of "relative poverty". Vulnerability to the impacts of environmental change is high in such region, as the adaptive capacity of individuals and communities is low due to their extreme poverty (Sayne 2011). Third, increasing poverty, population growth and natural resource depletion have been linked to a rise in violent conflict in various parts of the region (see Sayne 2011; Obiaha 2008). Fourth, in terms of religious, ethnic and cultural diversity, the Northeast region is probably the most heterogeneous of all the 6 geo-political regions of Nigeria (Alkali, Monguno, and Mustafa 2012). As mentioned earlier, observers of religion in Nigeria have documented the central role religion plays in both social organisation and consciousness. In a survey by PEW Forum (2010), 87% of Nigerians see themselves as "deeply committed to the practices and tenets of Christianity or Islam". An earlier survey by the BBC (2005) shows that 85% of Nigerians trusted religious leaders and were willing to give them more powers. Hence, the social diversity of the region presents a challenge requiring investigation and it is against this backdrop that our study explores discourses around environmental degradation within faith communities in the region.

Methods

The research we report in this paper is part of a larger study on religion and environmental degradation in Northeast Nigeria that has combined qualitative and quantitative approaches. The data analysed here were collected using in-depth semi-structured interviews in 3 of the 6 states of the Northeast region of Nigeria (Adamawa, Bauchi and Borno). In each of these states, 6 religious congregations were approached to participate in the study and all agreed to be represented by the head clergy (Minister/Imam) or their deputies. The selection of congregations was purposive, based on criteria that included: practical accessibility, a willingness to participate, denominational diversity and size of membership/followership. We resolved that applying these criteria in the selection procedure would enable data gathering with the greatest potential to generate insight to the topic under study. Also taken into consideration is the religious composition of the region. In all, 18 leaders of congregations participated in the study (7 Christian clerics; 6 Salafi Islamic leaders; 5 Sufi Islamic leaders) and interviews were conducted in September and October 2012. The interviews probed the leaders' views on the character of environmental degradation in their region; their understandings of the causes of environmental change; and their perspective on appropriate responses to degradation and change. All the interviews were audio-taped with the permission of participants and each interview session lasted 50-70 minutes. The interviews, mostly conducted in the local language (Hausa), were anonymised then translated and transcribed verbatim. We adopted a systematic, step-by-step approach to extract salient themes from the transcripts and grouped those themes into broader categories that summarized the data. We then used those categories to explore the participants' narratives in light of existing literature. This 'thematic analysis' of the data enables us to understand the ways in which participants' constructed meanings of their own, and their communities', viewpoints and actions (Denscombe 2009). We provide below a brief summary of the participants' main understandings of environmental degradation and change then illustrate in more detail three of the main themes that emerged from the data: the role of government; the role of social pressures; and the role of theology.

Findings

All of the participants perceived environmental change as both a real and existential threat to the livelihoods and wellbeing of their communities. The most common environmental problems that they identified were desertification, erosion, flash floods, resource depletion and garbage accumulation, demonstrating that local leaders recognise the same core set of issues as cited in national and scientific studies. Some of these participants made no reference to religious beliefs and worldviews in their discussion of the causes of environmental change. Others interpreted environmental change from a purely theological point of view. A third sub-set used both religious and non-religious perspectives to illustrate their understanding of environmental change. A number of respondents saw environmental change as rooted in the destruction, over decades, of ecological systems due to human activities. These participants believed that human activities were driven by social and institutional factors and what they perceived as deep rooted problems that created conditions for a negative human-environment relationship. These problems were seen as systemic because they were embedded in the structure of the society, for example weak government, rather than in the actions of individual agents. Other participants attributed degradation to a divine transcendent cause and interpreted environmental change as

either outcomes of human 'sin' or as a sign of 'end times'. In between these dichotomous perspectives were narratives that attributed environmental change to both anthropogenic and divine causes.

The role of govern*ment in participants' views of environmental change*

Almost half the participants shared a view that government had a role in aggravating environmental degradation. Participants' discourses expressed a sense of failure, an unwillingness of the government to combat environmental damage and an inability of government and her agencies to ensure sustainable use and management of resources. 'Weakness' on the part of the government was explicated by participants in three ways: i) a lack of concern for environmental problems; ii) crippling corruption and; iii) a lack of effective institutional and legal mechanisms to combat environmental degradation.

Lack of concern

While maintaining a clear view that governments play a crucial role in environmental protection and management, several participants stated that there was an astonishing 'lack of concern' by government at local, state and national level for environmental sustainability. This, according to the participants, explains the persistence and even worsening of environmental problems such as garbage accumulation, deforestation and soil erosion. Participants contrasted this with governments in "the past" which were "very effective" in managing the environment. Respondents blamed the worsening 'plastic bag crisis' and recent flooding on the government. They were nostalgic about the 'effective' garbage collection and management as well as environmental health policies that governments of the past had pursued. Participants who believed that the government was not giving sufficient attention to environmental management largely cited waste management, environmental sanitation and disaster relief to illustrate their points. However, other aspects of environmental conservation and management were also mentioned, including: negating alternative means of energy, neglecting past and existing desertification control programs and failing to take concrete measures to combat environmental destruction.

Government corruption

Environmental management and conservation was seen to be hampered by the phenomenon of corruption in Nigeria and corruption featured in participants' narratives in several ways. Some participants viewed government corruption as a factor responsible for the weakening of agencies established to protect the environment. Others thought that monetary resources budgeted to combat ecological problems were being diverted to private hands or channelled to different causes. Even when budgets were not being diverted, there was a view that ineffective utilisation of funds often impeded environmental policy implementation. Some officials responsible for implementing environmental policy (e.g. by managing environmental protection agencies) were thought to expect 'bribes' from the public in exchange for their services. Public officials were often viewed as being more concerned with acquiring wealth than with solving extant problems and for that reason were likely to allocate resources to areas where they expected to get maximum 'gains' rather than addressing pressing ecological problems.

Institutional and legal obstacles

Participants suggested that environmental protection and management required strong government institutions and effective laws and that the persistence and worsening of environmental damage in the region was linked to a lack of effective institutions and laws for combating environmental abuse. Despite the size of the threat posed by environmental degradation in Nigeria, participants seemed unaware of the existence of any explicit environmental protection policy or that government agencies might lack the requisite institutional capacity to implement environmental policy. Participants attributed continuous abuse of the environment to a general inefficiency on the part of the government and its agencies, particularly in the provision of necessary infrastructure:

> Very few if any places have been set aside for refuse dumping. No refuse collection system. So the only available place, like undeveloped plots of land, drainage systems and sometimes roads, are used to dump refuse. (01:02)

…because of weak government and inefficiency people build houses everywhere, without observing the rules of urban planning. As we witnessed a few months ago in Jos, people built houses on (natural) drains and gullies and when the flood came, many lives were lost. (03:01)

The majority of participants suggested that mitigating ecological problems required the effective implementation of environmental policy and that at the current time in Nigeria this was absent.

The role of social context in understanding environmental problems

Participants highlighted a range of socio-economic factors that shaped the extant social context and which they associated with increased environmental degradation in the region Issues such as population growth, scarcity of natural resources; access to goods and low ecological awareness, were identified by various participants as playing a role in the persistence and growth of environmental problems. Indeed, some of these factors were seen to constitute barriers to pro-environmental behaviour and in some ways could actively promote environmentally-damaging behaviour.

Population growth and pressure on resources

A narrative on population increase and associated resource depletion was evident across many interviews, for example:

I think this change is due to population increase and scarcity of land and other environmental resources which make people look for where and how to earn a living without regard to the beauty and quality of the place. (10:01)

The scarcity of land as a resource was also noted:

…actually, I think I will still attribute it to poverty, because a man that does not have enough land to farm you can't expect him to allow the land a period of re-nutrition, you understand; leaving the land for a period of time to recover its nutrients before he starts cultivating it. If you are very poor, you want to exploit, farm and cultivate every land available. (01:02)

The inter-weaving of factors such as population, scarcity of resources, poverty and institutional barriers are evident in this account:

Well, people sometimes behave the way they behave, number one due to overpopulation. Once you have too many people to control, you'd have problem. And that is the reason why you cannot see some laws being effectively enforced in the society. And secondly, when the government has failed to do what is expected of her, definitely people will not do what she expects them to do and that is what is happening to the environment. …you can see... if the government says this area is preserved for conservation, what have they (people) been provided with? Look at the growing population… kerosene… which is supposed to be available and affordable has been made very difficult to get... Kerosene is not affordable to many, let alone cooking gas. In Nigeria, cooking gas is for the 'big men and women'. People have to go and collect firewood or burn the bush to get charcoal… So, all I am are trying to say is that the government should take into consideration that as the population grows the government needs to invest more in terms of effort to bring alternative sources of energy. .. The population and the resources available need to be always compared to see how we can avoid catastrophe. (15:02)

This narrative is indicative of the complex situation in which multiple factors combine to create conditions for the continuation of environmental destruction and represents a sophisticated understanding of the problems the region faces. This particular participant also pointed to the relationship between institutional problems - government's failure to implement environmental policy and provide necessary infrastructure and services – and environmental problems –scarcity of land and environmental degradation.

The absence of social pressure

Many participants emphasised the importance of 'social pressure' to activating both environmental concern and environmental behaviour. 'Social pressure' was seen as an important factor in stimulating 'positive'

behaviour and in depressing those behaviours constructed as 'negative'. In their responses, a significant number of participants related a prevalence of negative environmental behaviour to 'insufficient' pressure on individuals from other members of society:

> …in principle, we all have some level of concern for the environment. However, our actions do a lot of harm on the environment. Why is that the case? It may be because the society does nothing to ensure that every individual behaves in environmentally friendly way during their day to day activities… (17:01)

> Even within the congregations we don't express disapproval of behaviours that are causing harm to the environment. Rather, we even send our children with refuse to dump on the streets and in the gutters. They grow up thinking that this is acceptable behaviour. (08:01)

'Expressing disapproval' of environmental damage, 'discouraging' 'improper' disposal of wastes and 'ensuring' that individuals behave in environmentally responsible ways, can all be understood as means of exerting pressure on individuals to stimulate pro-environmental behaviour. Evidently, these participants are suggesting that lack of such social pressure contributes to environmental damage as people 'feel free' to engage in behaviour that harm the environment and less obliged to behave in ways that preserve it.

Low awareness of environmental responsibility

Some interviewees suggested that whilst their communities are aware of the existence of environmental problems and believe in environmental ethics and principles of nature conservation, the people did not see themselves as personally responsible for combating such problems. The most common interpretation of environmental responsibility argued that it was the government's responsibility to protect the natural environment. Although this was the majority view, another perspective suggested that environmental problems like desertification, drought, floods and soil erosion were brought about by global climate change triggered by industrialised nations:

> Many people here would argue that climate change is responsible for desertification and draught in this region and that it (climate change) is a global phenomenon… and there is nothing we Africans can do about it. I think this thinking makes us to continue to behave the way we do (18:01)

In this case, people did not see any reason why they should adjust their ways of life to solve a problem they were not directly responsible for in the first place. Communities were also seen to believe that certain environmental problems were 'too severe' and 'complex' to be solved by individual action such as changes in consumption behaviour, resource use and conservation efforts in their small communities:

> Not all these problems we are talking about are caused by us. We all know what causes this severe flooding, desert encroachment and all that…I think our people should not be held responsible for what is caused by industrial activities in the US, China and other countries… (17:01)

This is an interesting perspective on 'responsibility' for environmental problems. People who link local ecological problems to global climate change feel they are not directly responsible for the problem and are less likely to take any mitigation measures. This understanding was also tied to the way the public 'made sense' of environmental problems and how these problems were socially constructed in the media and other channels of mass communication. One participant stated that foreign radio and television stations like the BBC are their only sources of information about environmental problems affecting the regions as local media hardly give attention to the environment:

> If you turn on the [local] radio or TV all you hear is news about the achievements of the government. Issues like [environmental problems] are mostly heard from foreign radio and TV stations like the BBC because the problem is affecting the whole world. In Nigeria nobody cares. (04:01)

The overwhelming view being expressed here was of a form of helplessness and it seemed that communities in which this was prevalent were unlikely to feel personally responsible for conservation efforts.

The role of theology in understanding environmental concerns

In each of the narratives described above, experience, environmental knowledge and context (rather than religious belief) appeared to influence participants' understandings of environmental change. Those religious

leaders who attributed environmental problems to human activities were explicitly asked whether they believed that ecological problems like erosion and loss of nutrients could be caused by external forces beyond any human influence. A number of them revealed that religious scriptures (Bible and Quran) are clear about the responsibility of humans in managing the natural environment. The failure of humans to live up to that 'God-given' responsibility was seen to produce consequences in the form of environmental problems. Other participants argued that while it is right to see environmental change as 'God's will', human communities should also accept some level of blame for their continued mismanagement of nature.

Some participants situated their understanding of environmental change within a purely theological point of view, attributing ecological problems to supernatural factors and defining them as 'God's will'. One narrative on this discourse saw specific environmental problems such as floods and desertification as God's way of punishing humans for sins such as social injustice, decadence, wastefulness and so on. Another narrative suggested that environmental problems were preordained by God and reference was made to religious scriptures (Quran & Hadith) to support such claims and to explain some changes in the physical environment such as desertification.

Ecological problems as a punishment from God

Environmental problems like desertification, drought and famine and floods were perceived as problems with transcendental causes and interpreted as God's punishment for humans disobeying His commands, violating His divine rules and committing certain 'sinful' acts. Some respondents mentioned social injustice, prevalence of 'immoral behaviour' among the major 'sins' that attract God's anger and resulted in environmental problems as a consequence:

> ...in one Hadith the prophet was reported to have said that when my people commit certain acts, they will be afflicted by certain problems ...The first among the consequences according to the prophet is desertification. That is desert will encroach and drive people from their homes and farmlands. The other consequences mentioned by the prophet are floods, earthquakes, and erosion. (04:01)

> Disobedience and sins can cause destruction of crops and forests. ...Therefore, degradation of the land and decrease in its productivity or other ecological problems occur as a result of human sins and disregard for God's commands. (10:01)

However, it is important to note that not all respondents who understand environmental problems as God's punishment disagreed with scientific explanations of human contributions to environmental degradation:

> All these scientific accounts of the causes of land degradation are not directly rejecting the religious perspective that human's disobedience of God's laws and commands causes environmental problems. (03:01)

Fatalism and helplessness

A belief in predestination offered one explanation for the helplessness felt by communities in preventing environmental harm:

> All the environmental problems you just mentioned which are affecting the entire world including our region have already been predicted by prophet Muhammed (PBUH) in so many narrations. (04:01)

Here, humans were dissociated from being causal agents to environmental problems with the result that inaction was inevitable. Some participants, however, maintained that although ecological problems could result from supernatural forces, humans still had a special responsibility to minimise their impacts. They believed that God has given humans a unique ability and responsibility to do things that would improve the quality of the environment and reduce the threats of ecological problems:

> Sure, there is destiny and some problems have natural causes. However, there are things you as human can do to solve problems that appear 'natural' or lessen their consequences. (09:01)

Some of the actions that participants conceived as capable of reducing the negative effects of ecological problems involved sustainable land use and controlled development. Coping and adaptation strategies revealed by these participants include tree planting, communal environmental sanitation and preaching environmental stewardship.

Spirituality seen as a solution

Some participants who held environmental change as 'natural' prescribed theological solutions and strategies to adaptation. Theological methods of coping with environmental problems were revealed by participants as activities such as special prayers and almsgiving to the poor and needy. These participants considered spirituality in the form of renewal of religious piety, forsaking of materialism, religious rituals, 'repentance' and charity as solutions to environmental change. From their point of view, since God's anger attracted environmental problems, pleasing Him could prevent or arrest such problems:

> ...people must return to God. All these problems we are confronted with are caused by our disobedience of God's commands. So people must return to God and avoid sinful acts. (03:01)

> It is mentioned in the Quran that there were people who refused to give the mandatory 'poor due' or alms to the needy, as commanded by God, and He (God) sent Angels to destroy their farms and crops. When they went to harvest their crops, they discovered that everything had been destroyed. (10:01)

One participant described the significance of Muslim 'special prayers' in mitigating drought and in bringing abundant rainfall. Such rituals, according to the interviewee, were carried out whenever there is drought in the area.

Discussion and conclusion

The goal of this paper was to report on some of the understandings of environmental change within faith communities in Northeast Nigeria and thus contribute to discussions on cultural factors at play in environmental debate. The study built on the findings of Djupe and Hunt (2009) which suggested that religious congregations were effective avenues for the exploration of religious norms and values and that the clergy are said to have significant influence on members perspectives on environmental problems. Thus, our analysis sought to understand the views of the clergy as well their perspective on coping and adapting to change. The findings showed that both Christian and Muslim participants perceived ecological problems as real threats to their communities livelihoods and future sustainability. However, religion played a minor role in influencing understandings of environmental change in all the Christian congregations as well as in some of the Muslim congregations. Leaders of Christian congregations were more likely than their Muslim counterparts to understand causes of environmental problems in ways that were consistent with scientific knowledge of anthropogenic causes. Contrary to reports from studies of Christian communities in the US (Barker and Bearce 2012; Guth et al. 1995) none of the Christian clerics interpreted ecological problems as punishment from God or as fulfilment of biblical 'end times' prophecies. In contrast, Muslim participants reported a variety of understandings of environmental change. Participants representing the Sufi Islamic congregations expressed the view that certain ecological problems like desertification, floods, erosion and drought were 'natural', and saw them either as punishment from God for human 'sinful' acts and 'godlessness' or as signs of 'end times'. A minority of participants representing the Salafi Muslim congregations also described ecological problems as punishment from God for human sins. Other participants from the Salafi sect interpreted ecological problems as caused by human activities such as excessive exploitation of resources and uncontrolled growth. All participants identified pollution due to garbage accumulation as a human-induced environmental problem that threatens the health and wellbeing of their communities. The limited role that religious doctrine played in shaping understandings of environmental change among Christians and the majority of Salafi Muslim participants points to the role of scientific knowledge in dealing with perceived helplessness. All the leaders of Christian congregations and most Salafi clerics interviewed in our study had acquired tertiary 'western' education whereas participants from the Sufi faith communities had experienced lower levels of western education.

Our findings have two major implications that are important to future research on perceptions of environmental change and on mitigating environmental degradation in the communities studied. First, the findings suggest the need for a rigorous analysis of the role of non-religious factors such as education and socio-economic variables in shaping perception and modes of adaptation to environmental issues. Since religious doctrine was found to play only a modest role in shaping opinions regarding environmental change in some congregations, further research is needed to explore the role of non-religious factors. Second, the 'theocentric' understandings held by some of the participants helps to understand why there is insufficient pressure on the government to find solutions to ecological problems. It also helps to explain why adaptation solutions proposed by environmental scientists and governments are not receiving the support of the local populations. According to the Federal Government of Nigeria (Environment 2012), previous programmes to combat environmental degradation have failed to yield desired results because they did not build on existing local knowledge and capacity. Specifically, the report identified local people's perception of the root causes of ecological problems as posing a challenge to implementation of environmental policies. Future policies therefore need to develop a more holistic approach that recognises and utilises these perceptions in a way that would strengthen the capacities of the people. People who hold fatalistic views about environmental change are likely to ignore or

even reject any policy that recommends measures such as changing lifestyles and consumption patterns. Addressing the challenges posed by rejection of scientific solutions to environmental problems requires understanding of the worldviews that inform such positions. Our work is intended as a contribution to that understanding.

References

Alkali, Muhammad Nur, Abubakar Kawu Monguno, and Ballam Shettima Mustafa. 2012. "Overview of Islamic Actors in Northeastern Nigeria". Oxford.

Ammar, Nawal H. 2004. "An Islamic Response to Manifest Ecological Crisis: Issues of Justice." In This Sacred Earth: Religion, Nature and Environment, edited by Roger S. Gottlieb, 256–268. New York: Routledge.

Barker, David C., and David H. Bearce. 2012. "End-Time Theology, the Shadow of the Future, and Public Resistence to Addressing Global Climate Change." Political Research Quarterly 66 (2): 267–279.

Bergmann, Sigurd. 2009. "Religion in Dangerous Environmental Change." In Climate Change: Global Risks, Challenges and Decisions. IOP Publishing Ltd.

Burchel, Kevin. 1998. "Fractured Environment: Diversity and Conflict in Perception of Environmental Risk". London.

Denscombe, Martyn. 2009. Ground Rules for Social Research: Guidelines for Good Practice. Birkshire: McGraw Hill Open University Press.

Djupe, P.A, and P.K Hunt. 2009. "Beyond the Lynn White Thesis: Congregational Effects on Environmental Concern." Journal for the Scientific Study of Religion 48: 670–687.

Environment, Federal Ministry of. 2012. "National Strategic Action Plan to Combat Desertification". Abuja. http://www.fao.org/fileadmin/templates/great_green_wall/docs/NIGERIA-GGWSAP__FINAL_Oct_2012.pdf.

Evangelical Climate Initiative. 2006. "Climate Change: An Evangelical Call to Action." http://preview.christiansandclimate.org/wp-content/ uploads/2008/05/eci-calltoaction-booklet.pdf.

Federal Government of Nigeria. 2010. "National Action Programme to Combat Desertification". Abuja.

Foltz, R.C. 2006. "Transforming Tradition: Islam." In Oxford Handbook of Religion and Ecology, edited by R.S Gottlieb, 207–219. Oxford: Oxford University Press.

Fromming, U.U, and C Reichel. 2012. "Vulnerable Coastal Regions: Indegenous People under Climate Change." In Religion in Environmental and Climate Change, edited by D Gerten and Sigurd Bergmann, 215–235. London: Bloomsbury Academic.

Gardner, Gary. 2002. "Invoking the Spirit: Religion and Spirituality in the Quest for a Sustainable World". MA.

———. 2003. "Engaging Religion in the Quest for a Sustainable World." In State of the World, 152–175. New York: W.W. Norton and Company.

Gerten, Dieter. 2010. "Adapting to Climatic and Hydrologic Change: Variegated Function of Religion." In Religion and Dangerous Environmental Change: A Transdisciplinary Perspective, edited by S Bergmann and D Gerten, 39–56. Münster: LIT.

Gerten, Dieter, and Sigurd Bergmann. 2012. "Facing the Human Faces of Climate Change." In Religion in Environmental and Climate Change, edited by Dieter Gerten and Bergmann Sigurd, 3–15. London: Bloomsbury Academic.

Gottlieb, R. 2006. "Religion and Ecology- What Is the Connection and Why Does It Matter?" In The Oxford Handbook of Religion and Ecology, edited by R.S Gottlieb, 3–21. Oxford: Oxford University Press.

Guth, James L., John C. Green, Lyman A. Kellstedt, and Corwin E. Smidt. 1995. "Faith and the Environment: Religious Beliefs and Attitudes on Environmental Policy." American Journal of Political Science 39: 364–382. doi:10.2307/2111617. file:///c/Users/Rentaro/Documents/Job/research.Data/PDF/Guth&Green&Kellstadt&Smidt995AJPS-0522540802/Guth&Green&Kellstadt&Smidt995AJPS.pdf.

Hart, John. 2006. "Transforming Tradtion: Catholicism." In Oxford Handbook of Religion and Ecology, edited by Roger S. Gottlieb, 65–91. Oxford: Oxford University Press.

Hitzhusen, Gregory E, and Mary Evelyn Tucker. 2013. "The Potential of Religion for Earth Stewardship." Frontiers in Ecology and the Environment 11: 368–376. doi:10.1890/120322. http://www.esajournals.org/doi/abs/10.1890/120322?af=R&.

Hutton, David, and Emdad C. Haque. 2003. "Patterns of Coping and Adaptation Among Erosion-Induced Displacees in Bangladesh: Implications for Hazard Analysis and Mitigation." Natural Hazards 29: 405–421.

Jenkins, Willis. 2009. "AFTER LYNN WHITE: RELIGIOUS ETHICS AND ENVIRONMENTAL PROBLEMS." Journal of Religious Ethics 37: 283–309. papers2://publication/uuid/B2441A10-F7C7-4903-96EC-278DF1C35BE1.

Kanagy, C, and F.K Willits. 1993. "A 'Greening' of World Religions: Some Evidence from a Pennsylvania Sample." Social Science Quarterly 74 (3): 674–683.

Kaplan, M.S. 2010. "Will Religion Guide Us on Our Dangerous Journey?" In Moral Ground: Ethical Action for a Planet in Peril, edited by K.D Moore and Nelson MP, 263–266. San Antonio: Trinity University Press.

Keans, L. 1996. "Saving the Creation: Christian Environmentalism in the United States." Sociology of Religion 57: 55–70.

Khalid, Fazlun M. 2002. "Islam and the Environment." Edited by Peter Timmerman. Encyclopedia of Global Environmental Change. Chichester: John Wiley and Sons.

Leiserowitz, A. 2008. "International Public Opinion, Perception and Understanding of Global Climate Change". New York.

Lindskog, Per, and Anna Tengberg. 1994. "Land Degradation, Natural Resources and Local Knowledge in the Sahel Zone of Burkina Faso." GeoJournal 33 (4): 365–375.

Maplecroft. 2011. "Deforestation Index". Bath. http://maplecroft.com/about/news/deforestation.html.

Moore, K.D., and M Nelson. 2010. "Introduction." In Moral Ground: Ethical Action for a Planet in Peril, edited by K.D Moore and M Nelson. San Antonio: Trinity University Press.

Nasr, H.S. 2003. "Islam, the Contemporary Islamic, and the Environmental Crisis." In Islam and Ecology: A Bestowed Trust, edited by R.C Foltz, F.M. Denny, and B Azizan, 85–105. Cambridge, MA: Harvard University Press.

National Bureau of Statistics of Nigeria. 2012. "Nigeria Poverty Profile 2010". Abuja.

Obiaha, Emeka. 2008. "Climate Change, Population Drift and Violent Conflict over Land Resources in Northeastern Nigeria." Journal of Human Ecology 23 (4): 311–324.

Paradise, Thomas R. 2005. "Seismic Risk Perception in a Muslim Community: A Case Study from Agadir, Morocco." Environmental Hazards 6 (3): 167–180.

PEW Forum. 2010. "Tolerance and Tension: Islam and Christianity in Sub-Saharan Africa". Washington, DC. http://www.pewforum.org/files/2010/04/sub-saharan-africa-full-report.pdf.

Rice, G. 2006. "Pro-Environmental Behaviour in Egypt: Is There a Role for Islamic Environmental Ethics?" Journal of Business Ethics 65: 373–390.

Sayne, A. 2011. "Climate Change Adaptation and Conflict in Nigeria". Washington, DC. http://www.usip.org/publications/climate-change-adaptation-and-conflict-in-nigeria.

Simkins, R.A. 2008. "Religion and the Environment." Journal of Religion and Society Supplement: 5–26.

Smith, N, and A Leiserowitz. 2013. "American Evangelicals and Global Warming." Global Environmental Change. http://dx.doi.org/10.1016/j.gloenvcha.2013.04.001.

UNFCCC. 2007. "Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries". Bonn. http://unfccc.int/resource/docs/publications/impacts.pdf.

Wardekker, J. Arjan, Arthur C. Petersen, and Jeroen P. van der Sluijs. 2009. "Ethics and Public Perception of Climate Change: Exploring the Christian Voices in the US Public Debate." Global Environmental Change 19: 512–521. doi:10.1016/j.gloenvcha.2009.07.008. http://linkinghub.elsevier.com/retrieve/pii/S0959378009000648.

Wilkinson, KK. 2010. "Climate's Salvation? Why and How American Evangelicals Are Engaging with Climate Change." Environment 52: 47–57.

Woodrum, E, and M Wolkomir. 1997. "Religious Effects on Environmentalism." Sociological Spectrum 17: 223–233.

World, BBC. 2005. "Who Runs Your World?" London. http://news.bbc.co.uk/1/hi/world/africa/4246754.stm .

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